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Evolution of Agricultural Extension Systems in India

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INTRODUCTION

Agricultural extension is a crucial component of rural development, aimed at improving farmers' knowledge, skills, and productivity. It acts as a bridge between research and farmers by disseminating scientific practices and innovations. In a country like India, where a large population depends on agriculture, an effective extension system is essential for enhancing agricultural productivity, ensuring food security, and improving rural livelihoods. Over the years, India's extension system has evolved in response to changing agricultural needs, technological advancements, and policy priorities.

2. Concept of Agricultural Extension

Agricultural extension refers to a system of education and communication designed to help farmers adopt improved technologies, practices, and innovations. It involves training, demonstrations, advisory services, and capacity building to enhance farm productivity and income.

The main objectives of agricultural extension include:

- Transfer of technology from research to farmers
- Improvement of agricultural productivity
- Enhancement of farmers' skills and knowledge
- Promotion of sustainable farming practices
- Rural development and livelihood improvement

Source: https://prezi.com/

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3. Pre-Independence Period (Before 1947)

Before independence, agricultural extension activities in India were limited, unorganized, and largely fragmented. The primary focus of the colonial administration was on maximizing land revenue and promoting the production of commercial crops rather than improving farmers' welfare or productivity. As a result, extension services were not systematically developed, and farmers had limited access to scientific knowledge and improved agricultural practices.

During this period, agriculture mainly emphasized cash crops such as cotton and indigo to meet the demands of British industries. However, some institutional developments took place, including the introduction of agricultural departments and the establishment of research institutions to study crop improvement and farming techniques.

Key features of this phase included minimal government involvement in farmer education, lack of coordinated extension services, and limited outreach to rural communities. Notable initiatives such as the Agricultural Improvement Schemes in the early 1900s and the Grow More Food Campaign during the 1940s were introduced to increase production, especially during food shortages.

4. Post-Independence Period (1947–1960s)

After independence, India recognized the need to strengthen agricultural extension services to improve food production and rural livelihoods. This period marked the beginning of organized and government-supported extension programs aimed at community development and agricultural improvement.

4.1 Community Development Programme (1952)

The Community Development Programme was launched to promote overall rural development through active participation of local communities. It focused on multiple sectors such as agriculture, education, health, and rural infrastructure. The program aimed to uplift rural living standards by introducing improved farming practices and encouraging self-reliance among villagers.

4.2 National Extension Service (1953)

The National Extension Service was introduced to expand extension services across rural areas and support the Community Development Programme. It aimed to bring scientific knowledge and modern agricultural practices directly to farmers.

Features:

- Use of multi-purpose extension workers to address various rural issues
- Emphasis on overall rural development rather than only agriculture
- Limited technical specialization among extension personnel

Although these programs helped create awareness and laid the foundation for extension systems, their overall impact remained limited due to inadequate coordination, insufficient resources, and weak implementation mechanisms.

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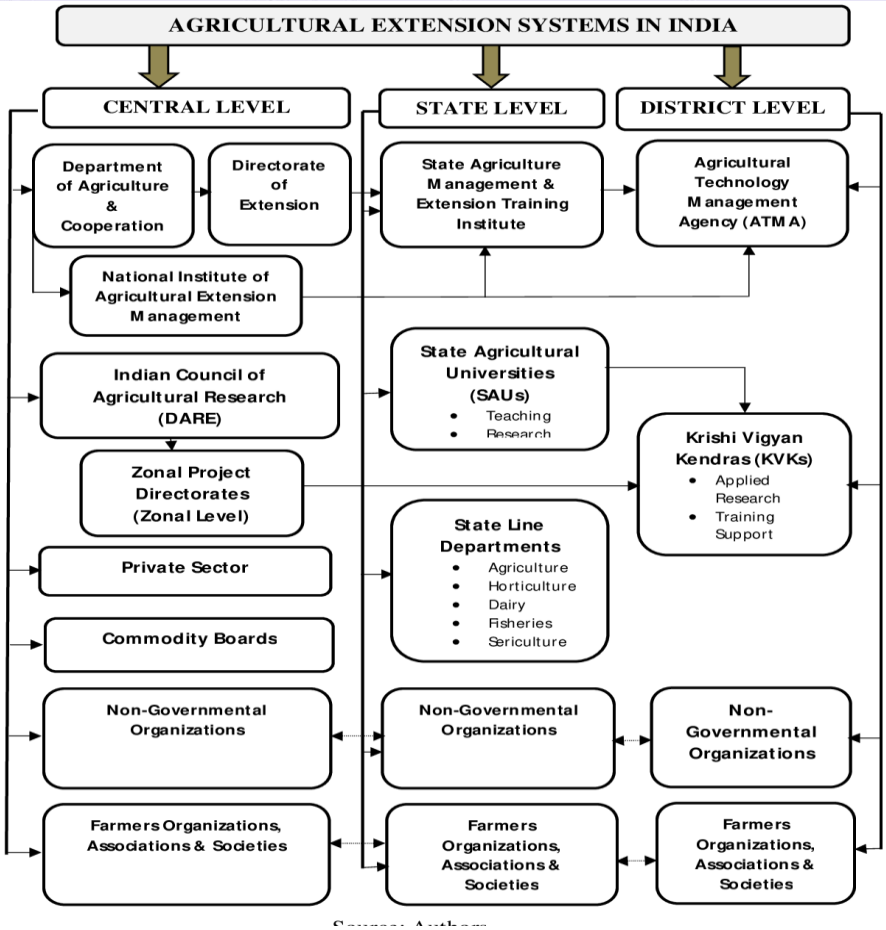

Source: https://www.semanticscholar.org/

5. Green Revolution Era (1960s–1980s)

The Green Revolution marked a major turning point in the evolution of agricultural extension systems in India. During this period, the focus shifted toward increasing agricultural productivity through the adoption of modern technologies such as high-yielding varieties (HYVs), chemical fertilizers, and irrigation.

Key Developments:

5.1 Intensive Agricultural District Programme (IADP)

The Intensive Agricultural District Programme (IADP) was introduced to concentrate resources and efforts in selected high-potential districts. It promoted the use of improved seeds, fertilizers, plant protection measures, and assured irrigation facilities to maximize crop yields.

5.2 Training and Visit (T&V) System (1974)

The Training and Visit (T&V) System, introduced with the support of the World Bank, aimed to strengthen extension services through a structured and systematic approach.

Features of T&V System:

- ❖ Regular training of extension workers by subject matter specialists
- ❖ Scheduled and periodic visits to farmers for knowledge dissemination
- ❖ Strong linkage between research institutions and extension services

Impact:

- ❖ Rapid adoption of high-yielding crop varieties
- ❖ Significant increase in food grain production
- ❖ Strengthening of extension infrastructure and institutional framework

6. Diversification and Decentralization Phase (1990s)

The 1990s marked an important shift in agricultural extension in India with economic liberalization. The focus moved from a

centralized system to a more diversified, participatory, and sustainable approach. This phase emphasized farmer involvement, location-specific solutions, and collaboration among multiple stakeholders.

6.1 Agricultural Technology Management Agency (ATMA)

The Agricultural Technology Management Agency (ATMA) was introduced as a major institutional reform to decentralize extension services at the district level. It aimed to make extension more effective, flexible, and responsive to farmers' needs.

Key features of ATMA include:

- Strong farmer participation in planning and decision-making
- Bottom-up planning approach based on local needs
- Integration and coordination among different line departments such as agriculture, horticulture, livestock, and fisheries
- Focus on technology dissemination through Farmer Interest Groups (FIGs) and Self Help Groups (SHGs)

6.2 Privatization and Pluralism

During this phase, extension services were no longer limited to government agencies. A pluralistic system emerged involving multiple actors.

Main developments include:

- Increased involvement of NGOs and voluntary organizations in extension activities
- Entry of private sector companies, especially agri-input firms, in advisory services
- Growth of public–private partnerships (PPP) in agricultural development
- More market-oriented and technology-driven advisory systems

7. ICT and Digital Extension Era (2000s–Present)

The ICT and digital extension era (2000s to present) has transformed agricultural extension systems through the rapid development of information and communication technologies. This phase focuses on delivering timely, accurate, and user-friendly information directly to farmers using digital platforms.

Key Initiatives:

- Kisan Call Centers: Provide toll-free advisory services where farmers can ask questions and receive expert guidance in local languages.
- e-Choupal: A rural digital initiative that provides farmers with real-time market prices, weather updates, and agronomic advice through internet-enabled kiosks.
- mKisan Portal: Offers SMS-based advisories on weather, crop management, and pest control directly to farmers' mobile phones.
- Digital India Initiative: A government program aimed at strengthening digital infrastructure and improving online service delivery across rural and urban areas.

Features:

- Mobile-based advisory services reaching farmers in remote areas
- Real-time dissemination of weather, market, and crop-related information
- Use of SMS alerts, mobile apps, internet platforms, and social media tools
- Integration of satellite data, GIS, and artificial intelligence in modern extension systems

Impact:

This era has significantly improved farmers' access to reliable information, reduced dependency on intermediaries, and enhanced awareness about modern agricultural practices. It has also strengthened decision-making capacity at the farm level, leading to better productivity, profitability, and risk management. Overall, ICT-based extension systems have made agricultural services more efficient, transparent, and farmer-centric.

8. Challenges in Agricultural Extension Systems

Despite significant progress in agricultural extension over the years, several challenges still limit its effectiveness and reach. These

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challenges reduce the impact of extension services on farmers, especially in developing and remote regions.

- **Limited reach in remote areas:** Many rural and tribal regions still remain underserved due to difficult terrain, poor transport facilities, and inadequate communication infrastructure. As a result, farmers in these areas often lack access to timely advisory services.
- **Lack of trained personnel:** There is a shortage of well-trained extension workers with updated technical knowledge. In many cases, existing staff are overburdened or not adequately trained in modern digital and climate-smart agriculture practices.
- **Weak research–extension–farmer linkage:** The gap between research institutions, extension agencies, and farmers continues to be a major issue. Innovations developed in research stations often fail to reach farmers effectively due to poor coordination.
- **Digital divide among farmers:** Although ICT tools have improved communication, many small and marginal farmers still lack smartphones, internet access, or digital literacy, limiting the benefits of digital extension services.
- **Inadequate funding and infrastructure:** Extension programs often suffer from limited financial support, insufficient field infrastructure, and lack of mobility resources for field staff.

9. Role of Extension in Sustainable Agriculture

Agricultural extension systems play a vital role in promoting sustainable agriculture by transferring knowledge, technologies, and best practices to farmers. The main objective is to ensure productivity while maintaining environmental quality and resource conservation for future generations.

One of the key areas supported by extension services is Climate-smart agriculture, which helps farmers adapt to climate variability, reduce greenhouse gas emissions, and improve resilience against extreme weather conditions. Extension agents educate farmers on improved crop varieties, weather-based advisories, and adaptive management practices.

Another important focus is Organic farming, which promotes the use of natural inputs, composting, and biological pest control methods to reduce dependence on chemical fertilizers and pesticides, thereby improving soil health and food safety.

Extension also encourages Integrated farming systems, where crop production is combined with livestock, fisheries, and agroforestry to maximize resource efficiency and diversify farmer income.

In addition, Soil health management is promoted through soil testing, balanced fertilizer use, green manuring, and organic amendments to maintain long-term soil fertility and productivity.

Extension services further support Water conservation technologies such as drip irrigation, rainwater harvesting, and mulching, which help in efficient water use and drought mitigation.

10. Future Prospects of Agricultural Extension in India

The future of agricultural extension in India will be more digital, participatory, and climate-oriented. Modern technologies such as artificial intelligence, machine learning, remote sensing, and mobile applications will play a key role in providing real-time and location-specific advisory services to farmers. Farmer-led extension models will also become important, where progressive farmers share knowledge and experiences within their communities to improve adoption of innovations.

The role of Farmer Producer Organizations (FPOs) will strengthen collective marketing, input supply, and technology dissemination. Public–private partnerships will further enhance service delivery by combining government support with private sector efficiency. In addition, climate-resilient extension strategies will help farmers adapt to changing weather patterns

and resource constraints. Overall, integrating modern digital tools with traditional knowledge systems will improve productivity, sustainability, and resilience in Indian agriculture, making extension services more effective and farmer-friendly.

CONCLUSION

The agricultural extension system in India has evolved significantly from traditional practices to modern, technology-driven approaches. Each phase has contributed to improving agricultural productivity and farmer livelihoods. However, addressing existing challenges and adopting innovative strategies is essential for building an efficient, inclusive, and sustainable extension system.

REFERENCES

Manobharathi, K. (2024). The Evolution of Agricultural Extension Services. *Rural Development and Agricultural Extension*, 59-73.

Meena, M. S., Singh, K. M., & Swanson, B. E. (2013). Pluralistic agricultural extension system in India: Innovations and constraints.

Nedumaran, S., & Ravi, N. (2019). Agriculture extension system in India: A meta-analysis. *Research Journal of Agricultural Sciences*, *10*(3), 473-479.

Singh, A. K., Dubey, S. K., Sah, U., & Singh, L. (2016). Temporal adaptation of agricultural extension systems in India. *Current science*, 1169-1177.

Singh, K. M., Meena, M. S., Swanson, B. E., Reddy, M. N., & Bahal, R. (2014). In-Depth Study of the Pluralistic Agricultural Extension System in India.