

# *Innovative Farming Techniques through Agricultural Extension: A Focus on Capacity Building and Knowledge Transfer*

**Akansha Joshi<sup>1\*</sup>, Basu Anand<sup>2</sup> and Disha Agarwal<sup>3</sup>**

<sup>1,3</sup>Ph.D. Research Scholar, Department of Agricultural Communication, College of Agriculture, G.B.P.U.A&T, Pantnagar, Uttarakhand-263145.

<sup>2</sup>Ph.D. Research Scholar, Department of Agricultural Extension and Communication, N.M.C.A, NAU, Navsari, Gujarat-396450

**Corresponding Author**

Akansha Joshi

Email: mineakansha98@gmail.com



**OPEN ACCESS**

**Keywords**

Agricultural extension, Knowledge transfer, Sustainable farming, Participatory approach, Capacity building, Technological advancement

*How to cite this article:*

Joshi, A., Anand, B. and Agarwal, D. 2024. Innovative Farming Techniques through Agricultural Extension: A Focus on Capacity Building and Knowledge Transfer. *Vigyan Varta* 5(11): 206-209.

## **ABSTRACT**

Agricultural extension is considered the most important entity that transfers knowledge, ideas, and technologies from researchers to farmers. As 43.00% of the Indian workforce is occupied by agriculture (Gulati & Juneja, 2021), there has been a tremendous transformation in the extension system there. These driving forces include technological progress, demographic transition, dynamics in markets, and the search for sustainability in agriculture and allied sectors. Key initiatives include Krishi Vigyan Kendras, Kisan Call Centers, Agri-Clinics, and Agri-Business Centers, all earmarked for empowering farmers through access to information and training. The system now embarks on participative approaches, e-platforms, and farmer-centric methods for the facilitation of knowledge dissemination and capacity building. Extension services should always be dynamic to access solutions to challenges of food insecurity and to overcome the societal economic imbalances that a sustainable future realizes through the motto of "No Poverty" as defined by the Sustainable Development Goals. The stakeholder collaboration for which research to

extension linkages to be strengthened would improve innovation and enhance agricultural resilience.

## INTRODUCTION

**A**gricultural extension refers to the work of transferring knowledge, ideas, and technologies from source to farmers and other stakeholders in agriculture. The term extension means "to outstretch", which is the dissemination of innovations in society. The focus of agricultural extension is on improving farming practices besides an increase in resource utilization and improvement in crop yields. As per Gulati and Juneja (2021), almost 43.00% of India's workforce is either directly or indirectly engaged in agriculture activities.

So, effective extension services would bridge the gap between the scientists and the end-user farmers. Some of the initiatives that have been initiated to strengthen the agricultural extension service system in India are Prasar Bharati, DD Kisan, and SMAE under *Krishonnati Yojana*. Other schemes such as the Kisan Credit Card (KCC) scheme and *Paramparagat Krishi Vikas Yojana* empower the farmers.

There are two types of extension services: central and state level. Efficiency improvement in extension services demands felt and latent needs of the farmers, preferred sources of information, and adequate resources for trainers and trainees. All these factors put together will result in increased productivity and livelihood for rural farm communities in India.

### Origin of Agriculture Extension

The origins of agricultural extension can be traced back to early civilizations when farmers shared knowledge and methods. However, it was not until the late 19<sup>th</sup> and early 20<sup>th</sup> centuries that agricultural extension emerged

as a formal discipline. In the United States, this idea gained momentum in the late 19<sup>th</sup> century, with the establishment of agricultural colleges and experiment stations dedicated to scientific research and farmer education. The Smith-Liver Act of 1914 further accelerated the development of agricultural extension by creating a cooperative extension service that connected farmers to research-based knowledge.

Success with the U.S. model for agricultural extension inspired other nations to adopt a similar approach, targeted at spreading information about agriculture and new technologies in farming across the globe. Some major technological changes in the agricultural extension of India took place after 1947 when India attained independence.

The Indian Council of Agricultural Research established in the year 1929 and Krishi Vigyan Kendras or Agricultural Science Centers started in the decade of 1970s proved to be the milestones that supported the development of extension services in the country. These institutions and the state agricultural universities developed the packages of farmer-centric extension programs, hence training the extension professionals to take Indian agriculture to high-level achievements.

### Initiatives by Agriculture Extension System

**Krishi Vigyan Kendra (KVK):** KVK is the agricultural extension center of India for extension education among farmers. It promotes innovative farming techniques, conducts research, and delivers information that improves rural productivity and sustainability.

**Kisan Call Center (KCC):** Kisan Call Centers are toll-free helplines for Indian farmers to discuss crop cultivation, pest control, fertilizer usage, government schemes, weather updates, and market prices, among others. It is available in multiple languages to facilitate the service by catering to farmers all over the country.

**Agri-Clinics and Agri-Business Centers (ACABC):** The Ministry of Agriculture in coordination with NABARD launched a scheme on Agri-Clinics and Agri-Business Centers. Agri-Clinics provides technical advice for productivity improvement, while Agri-Business Centers train farmers in agriculture business enterprises. These training modules cover not only the maintenance of equipment and market linkage but also post-harvest management.

**Agricultural Technology Management Agency (ATMA):** ATMA is a government program that aims at agricultural productivity and an increase in farmer's income through transfer and building capacity by the technology system. It supports district-level initiatives in farmer's training, on-farm demonstrations, exposure tours, and market connections for the promotion of sustainable agricultural growth and innovation at local levels.

### Approaches Followed in the Agriculture Extension System

a. **Training and Visit (T&V) System:** This approach provides routine, systematic guidance and training to the farmers. The extension agents pay regular visits to farms to give technical training, demonstrate new and innovative farming techniques, and counsel farmers regarding crop management and pest control. This model gives a large amount of freedom to the farmers in making decisions and learning.

b. **Participatory Approach:** This approach either involves or engages the stakeholders in a decision-making process, solves problems, and develops a project in combination with farmers, extension agents, and researchers. Social inclusion, ownership, and shared responsibility are achieved through this approach to make it more sustainable and locally appropriate in agricultural solutions.

c. **Farming System Approach:** A holistic perspective of agriculture, the Farming system approach takes into account cropping and animal production, soil, water, and socioeconomic factors. It supports integrated and synergistic farming practices focusing on higher productivity, more sustainability, and resilience. The interventions are tailored to local conditions; they indicate long ecological, economic, and social impacts of farming activities.

d. **Project approach:** It involves systematic planning and implementation of agricultural activities or interventions with clear objectives, defined timelines, and resource allocation. In agriculture, it may entail new farming techniques, infrastructural setup, or marketing campaigns. Projects would generally follow the structured process indicated by design, implementation, monitoring, and evaluation as a means of achieving specific goals, such as in the case of the Farmers FIRST model.

### Evolving Agriculture Extension System

Transformation of the agriculture extension system is on the agenda because of a combination of factors and is emerging in response to new challenges arising. As per Singh *et al* 2016 considering the high population growth of India i.e. 1.21 billion there still exist the pressure of feeding quality produce to the population. Technological

development and changing demographic features among farmers, the dynamic market trends, and ultimately calls for sustainable agricultural practice bring about some of the key drivers. The reasons why transformation needs to be done include the increasing need for closing the knowledge gap, enhancing information access to the farmer, and introducing innovative farming techniques, and modern technologies.

These issues are to be addressed by integrating participatory approaches, embracing digital platforms, and focusing on farmer-centric methods through the change in extension systems. The research and extension structures must be strengthened for stakeholder collaboration, efficient know-how transfer, and capacity-building efforts as well as enhancing decision-making on the part of farmers.

Chand (2022) stated that India has been able to achieve food grain sufficiency in terms of quantity, but there exists an overall gap between the food availability and the demand of a large section of the population. This aligns with one of the primary SDG goals for 2030, "zero poverty." The socio-economic gap that is widening between the poor and the economically strong calls for more effective policy development and strategic implementation at grassroots levels. Because these structures, channels of information, and understood needs of people keep changing in society, agricultural extension approaches should be dynamic and flexible enough to respond to these changes.

## CONCLUSION

The future of agricultural extension lies in its capacity to adapt to technological and societal changes. The improvement in digital platforms to enhance the interaction of all stakeholders focuses on tailored and locally appropriate solutions essential for agricultural productivity enhancement. Modern technologies in agriculture must include increased access to farmers, reduce socio-economic inequalities, and integrate climate-resilient practices. Extension systems to achieve long-term impacts must be dynamic and responsive to the changing needs of farmers as they achieve global sustainability goals.

## REFERENCES:

- Chand, R. (2022). Indian agriculture towards 2030—Need for a transformative vision. *Indian agriculture towards, 2030*, 1-7.
- Department of Agriculture and Farm Welfare. (2023, May 28). *Department of Agriculture and Farm Welfare*. Ministry of Agriculture & Farmers Welfare, Government of India. <https://agricoop.nic.in/>
- Singh, A. K., Dubey, S. K., Sah, U., & Singh, L. (2016). Temporal adaptation of agricultural extension systems in India. *Current science*, 1169-1177.
- Gulati, A. (2021, November 22). From plate to plough—Repeal of farm laws: Tactical retreat or surrender? *The Financial Express*.