



Role of Extension Agents in Bridging the Gap Between Research and Farmers

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Agriculture is the backbone of India's economy, supporting nearly half of the workforce and contributing significantly to the national GDP. Despite strong agricultural research institutions, many scientific innovations fail to reach farmers' fields. This gap between research and practice leads to lower productivity and income losses for farmers. Extension agents play a crucial role in addressing this challenge by acting as a link between researchers and farmers. They simplify complex scientific information and demonstrate its practical application on farms. Through trainings, field demonstrations, and advisory services, extension agents promote improved farming practices. Their efforts help increase crop yields, ensure sustainable resource use, and improve rural livelihoods. By making research accessible to millions of farmers, extension agents strengthen agricultural development and food security. Extension Agent is a person who works as a link between research and farmers and helps in the transfer of agricultural technology, information, and skills to farmers. In India, extension agents evolved from Village Level Workers (1952) to a pluralistic extension system involving government, private, and NGOs.

Farmer - Extension Agent Ratio

This ratio was recommended by the Government of India's Committee on Doubling Farmers' Income (DFI Committee), Ministry of Agriculture & Farmers' Welfare. Mentioned in the DFI Report-Volume XI (Empowering Farmers through Extension) in the year 2017.

- In **irrigated areas**, farmers need more technical guidance → so fewer farmers per extension worker (1:750).
- In **rained areas**, crops are fewer and less intensive → one extension worker can handle more farmers (1:1000).
- In **hilly areas**, villages are scattered and difficult to travel → ratio should be low (1:400).
- In **intensive farming areas**, more crops, more problems → ratio around (1:500).
- In General average, the ratio of farmer and extension agent is 1: 800-1000. This varies based on farming intensity, accessibility, and cropping pattern.

Major Roles of Extension Agents

1. Transfer of Technology: Extension agents explain and promote new

- Crop varieties
- Fertilizer use
- Pest control methods
- Farm machinery
- Irrigation methods

They help farmers understand and adopt new technologies developed by universities and research institutes.

2. Conducting Demonstrations

- Method demonstrations
- Result demonstrations
- Field trials

This helps farmers **learn by seeing and doing**.

3. Training and Education

Extension agents organize:

- Farmer trainings
- Workshops
- Exposure visits
- Field days

They improve farmers' knowledge and skills.

4. Advisory Services

They provide advice on:

- Crop production
- Animal husbandry
- Marketing
- Post-harvest management
- Government schemes

5. Feedback to Research

Extension agents collect farmers' problems and send feedback to:

- Agricultural Universities
- Research Stations
- KVKs

So scientists can develop suitable technologies.

6. Communication Link

They act as:

Research → Extension Agent → Farmer → Extension Agent → Research

So they are a **two-way communication link**.

7. Rural Development Role

They also help in:

- Organizing farmer groups
- Self Help Groups (SHGs)
- Watershed programs
- ATMA programs
- Rural development schemes

How to Fill the Farmer - Extension Agent Gap

The gap between farmers and extension agents is increasing due to a large number of farmers and a limited number of extension workers. This gap can be filled by using the following methods:

1. Use of ICT (Information and Communication Technology)

- Mobile phones
- WhatsApp groups
- Mobile apps
- SMS advisories
- Video conferencing

These help extension agents reach many farmers quickly.

2. Farmer-to-Farmer Extension

- Progressive farmers train other farmers
- Lead farmers act as local extension agents
- This method is cost-effective and practical

3. Group Approach

- Form Farmer Interest Groups (FIGs)

- Self Help Groups (SHGs)
 - Farmer Producer Organizations (FPOs)
- Extension agents can train groups instead of individual farmers.

4. Strengthening Extension Systems

- Increase number of extension staff
- Provide better training to extension workers
- Provide transport and digital tools

5. Use of Extension Institutions

Extension institutions help reduce the gap, such as:

- Krishi Vigyan Kendra (KVKs)
- Agricultural Technology Management Agency (ATMA)
- Agricultural Universities
- NGOs and private extension services.

6. Mass Media Methods

- Radio programmes
- Television programmes
- YouTube videos
- Community radio

These reach a large number of farmers at once.

7. Training Local Extension Workers

- Train rural youth
- Train input dealers
- Train NGO workers

They can work as para-extension workers.

8. Public–Private Partnership (PPP)

- Government + Private companies + NGOs work together
- Improves extension service coverage

The farmer–extension agent gap can be filled by using ICT tools, farmer-to-farmer extension, group approach, mass media, strengthening extension staff, using institutions like KVK and ATMA, training para-extension workers, and public–private partnerships.

Extension agents play a crucial role in bridging the gap between research and farmers by acting as a link between scientists and the farming community. They help in transferring new agricultural technologies, organizing trainings and demonstrations, and providing advisory services to farmers. They also communicate farmers' problems and feedback to research institutions so that suitable technologies can be developed. Through education, communication, and motivation, extension agents help farmers adopt improved practices and increase agricultural productivity. Thus, extension agents are an important part of the agricultural development process and rural development.