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## Role of stakeholders in agricultural innovation system

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### Abstract

Generating and applying new knowledge is important for all enterprises, including farming. New knowledge enhances the productivity, competitiveness, and sustainability in farming, but it is not widely adopted. In this situation, one has to search for new ways and means. Limitations of NARS and AKIS have provided the reasons for the Agricultural Innovation System (AIS) in India. AIS help to understand how the process of agricultural innovation takes place and how its relevance and quality can be enhanced. The transfer of technology is an important role played by the stakeholders through informal meetings in their villages with friends or neighbours twice to thrice in a week, where they exchange the information. Media has also played an important role in creating awareness among the stakeholders and the people. It was worked independently with professional interest. Various stakeholders play different roles that may broadly classified as facilitator, communicator, collaborator coordinator, knowledge source, networking policy formulator and implementer in AIS. The present study was conducted in all six districts (Banaskantha, Patan, Sabarkantha, Gandhinagar, Mehsana and Aravalli) of North Gujarat region. From each district, 5 researchers, 5 extensionist, 5 in-charge of NGOs, 5 manager of private agencies, 10 owner of agro-service providers and 10 progressive farmers were selected. In all, 30 researchers, 30 extensionist, 30 in-charge of NGOs, 30 managers of private agencies, 60 owner of agro-service providers and 60 progressive farmers were selected. This way, 240 stakeholders were included in the study. Majority (86.67%) of the researchers executes their excellent role in AIS. In case of extensionist, little more than half (56.67%) of them performed their excellent role in AIS. Further, 53.33% of the In-charge of NGOs performed their excellent role in AIS. With respect to manager of private agencies, two-third (66.67%) of them performed excellent role in AIS. As far as the agro-service providers were concerned, 58.33% of them performed their good role in AIS. While, 06.67% of agro-service providers executed their excellent role in AIS. Moreover, majority (70.00%) of the progressive farmers performed their good role in AIS.

**Keywords:** Role, stakeholders, agricultural innovation system

### Introduction

Change is the core of development. The world is changing fast and so are its needs. With the change in context of agricultural development, the approaches to innovation have also been changed. During 1980s, the concept of the National Agricultural Research System (NARS) was developed to guide investments in agricultural development. It is focused on strengthening research supply by providing infrastructure, capacity, management and policy support at the national level. In present scenario NARS has limitations to respond the rapid changing in market conditions especially, to supply emerging and high-value niche markets.

It is realized that research is not only means of generating or gaining access to knowledge. Hence, the concept of Agricultural Knowledge and Information System (AKIS) become popular. The AKIS recognizes the multiple sources of knowledge that contributes to agricultural innovation and gives attention to develop channels of communication. It clearly recognizes that education improves the ability of farmers to engage in innovation processes, but the AKIS is also suffering from some shortcomings such as the focus is restricted to actors, processes in the rural environment, limited attention to the role of input and output markets, private sector and the enabling policy environment. However, the AIS is more holistic approach for planning, knowledge, production and use. Overall, these three systems are interlinked; NARS focuses on the generation of knowledge, AKIS on the generation and diffusion of knowledge and AIS on the generation, diffusion and application of knowledge (Roseboom, 2015) [2]. The World Bank (2012) [3] indicated as a network of organizations, enterprises and individuals focused on bringing new products, processes and forms of organization into economic use, together with the institutions and policies that affect their behaviour and performance.

According to Wikipedia (2020) <sup>[4]</sup>, a role is a set of connected behaviors, rights, obligations, beliefs and norms as conceptualized by an individual in a social situation. Various stakeholders in an innovation system play different roles that can be broadly classified as facilitator, communicator, collaborator, coordinator, knowledge source and networking policy formulator and implementer. The extension system as an innovation system also has a good chance to come out of its conventional technology. AIS is mode of transfer into a flexible institution of innovation that changes over time. Strengthen research systems may increase the supply of new knowledge and new technologies, but they may not necessarily improve the capacity for innovation throughout the agricultural sector. The study was undertaken with the following specific objective.

### Objective

To measure the role of stakeholders in Agricultural Innovation System.

### Methodology

This section describes the approaches and methods employed for data collection and analysis. The first sub-section of this chapter presents the description of the study area. Then the details of methodology used to conduct the overall study were discussed in subsequent sub-sections. The present study was conducted in all six districts (Banaskantha, Patan, Sabarkantha, Gandhinagar, Mehsana and Aravalli) of North Gujarat region. These districts were under Sardarkrushinagar Dantiwada Agricultural University Jurisdiction. The state and national level Line Departments, Research Stations, NGOs and Private stakeholders have been exploring extension activities to farming community which enhancing the Agricultural sector in these districts. Form each district, 5 researchers, 5 extensionist, 5 in-charge of NGOs, 5 manager of private agencies, 10 owner of agro-service providers and 10 progressive farmers were selected. In all, 30 researchers, 30 extensionist, 30 in-charge of NGOs, 30 managers of private agencies, 60 owner of agro-service providers and 60 progressive farmers were selected. Weightage of proportion given according to population, looking to the higher population of the owner of agro-service providers and progressive farmer's weightage of proportion given higher to them. This way, 240 stakeholders were included in the study. A simple understanding about role was the function assumed

or part played by a person or thing in a particular situation. There have been six types of stakeholders in AIS and each has different roles. A structured scheduled was developed in context to AIS for measuring the identified role of stakeholders. For researchers: Producing modified knowledge, Communicator, Innovative Research, Policy implementation, Problem diagnosis, Strengthening research, Demand based research, Location specific research, Technology refinement and assessment Transfer of technology and Develop IFS model for doubling farming income. For Extensionist: Disseminate latest research findings, Information dissemination, Communicator, Collaborator, Coordinator, Facilitator, Location specific extension work, Training for improving knowledge and skill, Vocational training, Evaluation, Demonstration/ field trip and Capacity development. For In-charge of NGOs: Funding, Facilitating Communication, Supporting Innovation, Technical Assistance, Training, Research, Policy implementation, Monitoring, Collaborator, Evaluation and Transfer of technology. For Managers of Private Agency: Planning, Organizing, Decision making, Supervising, Coordinating, Communicating, Directing, Leadership, Controlling, Maintain human relation, Collaboration, Input distribution, Research and Development and Provide Market linkage. For Owner of Agro-service providers: Timely supply of inputs, Transfer of technology, Technical assistance to farmers, Knowledge suppliers, Technical services, Demonstration and Campaigner. For Progressive farmers: Receiver of Technology, Transfer of technology, Creating awareness, Information dissemination, Using agricultural innovation, Provide knowledge to small farmers, Leadership, Initiator and Feed backer.

The Researcher as stakeholder contains 14 roles, Extensionist contains 12 roles, In-charge of NGOs contains 11 roles, Manager of private agency contains 14 roles, Agro-service provider contains seven roles and Progressive farmer contains nine roles in AIS. The responses of stakeholders about their role were recorded on three point continuum which were frequently, sometime and never with 2, 1 and 0 score, respectively. An arbitrary method was used for categorization to each section as well as for pooled. For that the higher score was subtracted from the lower score and divided by the number of categories. The obtained score was added into the lower score until you get the highest score. Moreover, the figures in decimal were round up in this case.

**Table 1:** Categorization of respondents according to their score

Sr. No.	Categories	Class range (Score)					
		Researcher	Extensionist	In-charge of NGOs	Managers of Private agencies	Owner of agro-service provider	Progressive farmers
1	Poor role	0 to 9	0 to 8	0 to 7	0 to 9	0 to 5	0 to 6
2	Good role	10 to 19	9 to 16	8 to 15	10 to 19	6 to 9	7 to 12
3	Excellent role	20 to 28	17 to 24	16 to 22	20 to 28	10 to 14	13 to 18

### Results and Discussion

Role means a function assumed or part played by an individual in particular situation. For the present study, it can be referred as a set of connected behaviour, rights,

obligations, beliefs and norms as conceptualized by stakeholders in AIS. Information regarding role of each stakeholder in AIS were collected through structured schedule and respondents were grouped into three categories.

**Table 2:** Distribution of respondents according to their role in Agricultural Innovation system

Sr. No.	Type of stakeholders	Poor Role	Good role	Excellent role	Total
1	Researchers (n = 30)	00 (00.00)	04 (13.33)	26 (86.67)	30 (100.00)
2	Extensionists (n = 30)	00 (00.00)	13 (43.33)	17 (56.67)	50 (100.00)
3	In-charge of NGOs (n = 30)	00 (00.00)	14 (46.67)	16 (53.33)	30 (100.00)
4	Managers of private agencies (n = 30)	00 (00.00)	10 (33.33)	20 (66.67)	30 (100.00)
5	Owner of agro-service providers (n = 60)	21 (35.00)	35 (58.33)	04 (06.67)	60 (100.00)
6	Progressive farmers (n = 60)	02 (03.33)	42 (70.00)	16 (26.67)	60 (100.00)
	Pooled (n = 240)	23 (09.58)	118 (49.17)	99 (41.25)	240 (100.00)

From the table 2, it can be observed that majority (86.67%) of the researchers executes their excellent role and 13.33% of them performed their good level of role in AIS. In case of extensionist, more than half (56.67%) of them performed their excellent role and 43.33% executed their good role in AIS. Further, 53.33% of the In-charge of NGOs performed their excellent role and 46.67% of them executed their good role in AIS. In respect to managers of private agencies, two-third (66.67%) of them performed excellent role and 33.33% of them executed their good role in AIS. As far as the agro-service providers were concerned, 58.33% of them performed their good role and 35.00% executed their poor role in AIS. Remaining 06.67% of agro-service providers executed their excellent role in AIS.

Moreover, majority (70.00%) of the progressive farmers performed their good role and 26.67% of them executed their excellent role in AIS. Remaining 03.33% of them performed poor role in AIS.

The pooled data show that less than half (49.17 and 41.25%) each of the stakeholders performed their good and excellent role in AIS, followed by 09.58% of them execute their poor role in AIS.

Thus, from the above data it is clear that overwhelming majority (90.42%) of the respondents as stakeholders executed their good to excellent role in AIS. The probable reason might be due to their information seeking behaviour, extension participation and communication ability.

## Conclusion

Hall *et al.* (2006) <sup>[1]</sup> stated that AIS is a network of organizations of varying dynamics and functions with complex elements that change constantly over time, strongly influenced by the spatial pattern of their components. Various stakeholders play different roles that may broadly classified as facilitator, communicator, collaborator coordinator, knowledge source, networking policy formulator and implementer in AIS. Majority (86.67%) of the researchers executes their excellent role in AIS. In case of extensionist, little more than half (56.67%) of them performed their excellent role in AIS. Further, 53.33% of the In-charge of NGOs performed their excellent role in AIS. With respect to manager of private agencies, two-third (66.67%) of them performed excellent role in AIS. As far as the agro-service providers were concerned, 58.33% of them performed their good role in AIS. While, 06.67% of agro-service providers executed their excellent role in AIS. Moreover, majority (70.00%) of the progressive farmers performed their good role in AIS.

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