

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 7; July 2025; Page No. 405-409

Received: 23-04-2025
Accepted: 29-05-2025

Indexed Journal
Peer Reviewed Journal

Assessment of beneficiaries' knowledge regarding the Agricultural Technology Management Agency (ATMA)

¹Asha Rani, ²Neena Sareen and ³Bidyut P Gogoi

¹Ph.D. Scholar, Department of Extension Education and Communication Management, Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan, India

²Professor, Department of Extension Education and Communication Management, Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan, India

³Ph.D. Scholar, Dairy Extension Division, ICAR-NDRI, Karnal, Haryana, India

DOI: <https://www.doi.org/10.33545/26180723.2025.v8.i7f.2157>

Corresponding Author: Bidyut P Gogoi

Abstract

The Agricultural Technology Management Agency (ATMA) plays a vital role in strengthening agricultural extension services by promoting technology dissemination and capacity building among farmers. This study was conducted to assess the knowledge level of ATMA beneficiaries and evaluate its effectiveness in enhancing agricultural practices. The research was carried out using an ex-post facto design, with data collected from 200 beneficiaries selected through a combination of purposive and simple random sampling methods in Bikaner and Sriganganagar districts of Rajasthan. The findings revealed that the majority of the beneficiaries (99.05%) possessed a medium to high level of overall knowledge regarding ATMA activities, indicating the effectiveness of the agency's initiatives. The study highlights the importance of understanding the beneficiaries' knowledge levels to identify gaps in implementation and improve the outreach and impact of ATMA programs also underscoring the need for continuous evaluation and feedback mechanisms to ensure that beneficiaries are well-informed about the available resources and opportunities provided by ATMA.

Keywords: Agricultural extension, ATMA beneficiaries, knowledge assessment

Introduction

India's agricultural sector, which employs nearly half of the country's workforce and contributes significantly to its GDP, plays a pivotal role in ensuring food security, poverty alleviation, and overall economic development (Chand *et al.*, 2017 ^[1]; Rao *et al.*, 2018) ^[2]. However, the sector faces numerous challenges, including low productivity, limited access to modern technologies, inadequate extension services, and the adverse effects of climate change (Joshi *et al.*, 2020) ^[3]. To address these challenges and bridge the gap between research and on-field implementation, the Government of India launched the Agricultural Technology Management Agency (ATMA) in 2005, a flagship program designed to promote the dissemination of agricultural innovations to farmers through a decentralized and participatory approach.

The concept of ATMA was introduced in 1999 as an autonomous organization under the National Agricultural Technology Project (NATP) by providing flexible working environment with an objective of integrating research, extension and all other stake holders at the district level to support the farmer's needs and interest through an integrated approach of strategic plan. ATMA is a society of Key stake holders of all the line departments, research organizations, non-governmental organizations and agencies associated with agricultural development in the district.

Involvement of farmers can be achieved at the village level through farmer's interest groups (FIGS) at the block level as a member of farmer advisory committee (FAC) and at district level as the member of ATMA Governing Board. Each research extension (R-E) unit would retain its institutional identity and affiliation but programmes and procedures concerning district-wise R-E activities would be determined by ATMA Governing Board to be implemented by its management committee (AMC). ATMA is conceived as a novel extension model that would empower farmers to actively participate in the technology dissemination process, fostering a bottom-up approach driven by the demands and needs of farmers and farmers' groups (Singh *et al.*, 2016) ^[4]. At the grassroots level, ATMA facilitates the formation of farmer interest groups (FIGs) and farmer field schools (FFSs), wherein farmers can actively participate in technology demonstrations, capacity-building programs, and knowledge-sharing activities (Rasheed Sulaiman & Hall, 2004) ^[5]. Additionally, ATMA aims to strengthen research-extension-farmer linkages by promoting collaboration among various agricultural institutions, non-governmental organizations (NGOs), and private sector entities (Chaudhary *et al.*, 2019) ^[6]. However, despite the ambitious goals and potential benefits of ATMA, its effectiveness and impact on the ground level have been subjects of ongoing debate and scrutiny. While some studies have highlighted

the positive outcomes of ATMA in certain regions, such as improved adoption of sustainable agricultural practices and increased farmer incomes (Karthikeyan & Nagarajan, 2020) [7], others have raised concerns about implementation challenges, resource constraints, and the need for continuous evaluation and improvement (Joshi *et al.*, 2021) [8].

Understanding the knowledge levels of ATMA beneficiaries is crucial for evaluating the program's impact and identifying areas for improvement. Knowledge assessment provides insights into how well farmers are informed about ATMA activities, resources, and services, which are pivotal for the successful adoption of agricultural innovations. This study aims to assess the knowledge levels of ATMA beneficiaries, offering evidence to enhance the program's effectiveness in achieving its objectives and improving the livelihoods of farmers.

Methodology

The present study was purposively conducted in the Bikaner district (arid region) and the Sriganganagar district (irrigated region) of Rajasthan, utilizing an ex-post facto research design. Two taluks from each district were selected based on the highest number of Farmer Interest Groups (FIGs) functioning under ATMA. From each taluk, five villages were chosen, and 10 ATMA beneficiaries were randomly selected from each taluk, resulting in a total sample size of 200 respondents. To assess the knowledge of beneficiaries regarding ATMA, a slightly modified version of the procedure developed by Alawa (2014) was employed. For this study, knowledge level was defined as the extent of scientific information known about the activities undertaken under ATMA. Ten knowledge statements/items on ATMA were selected to assess the knowledge level of the beneficiaries. The test constituted ten knowledge questions which were provided with two alternative answers *viz.*, 'correct answer' and 'incorrect answer'. The knowledge test was administered to the respondents and they were asked to choose among the alternatives. Quantification of knowledge item/answers was made by giving a score of 'one' and 'zero' for 'correct answer' and 'incorrect answers', respectively. The scores of all the ten knowledge items were summed up to get knowledge score of the respondents. The summation of scores for a particular respondent indicated his/her knowledge level about ATMA. The maximum score

one would get was ten and the minimum score was zero. Based on the total score obtained for all the ten knowledge items, the respondents were classified into three categories namely, 'low', 'medium' and 'high'. Data collection was conducted through interviews using a pretested, structured schedule designed specifically for this purpose. The data were analyzed using statistical tools such as mean, standard deviation, frequency, and percentage.

Results and Discussion

Knowledge level of the beneficiaries

The findings presented in Table 1 reveal that all ATMA beneficiaries (100%) correctly identified that ATMA is implemented through the agricultural department. A significant majority demonstrated accurate knowledge of various ATMA initiatives, including the understanding that farm schools serve as mechanisms for farmer-to-farmer extension (80%), and that farmers' organizations or interest groups coordinate demonstrations, on-farm trials, and provide feedback to extension and research (80%). Additionally, 77.5% of the respondents acknowledged that a major activity of ATMA is the transfer of technology related to agriculture and allied aspects. A similar proportion (76%) recognized that agricultural entrepreneurs supplement extension workers by offering critical technical advice to farmers, while the same percentage understood the role of the "Farmer Friend" as a vital link between the extension system and farmers at the village level. Further, 72.5% of beneficiaries were aware that ATMA facilitates credit availability to resource-poor and marginal farmers, particularly SC/ST and women farmers, and 71% recognized the agency's role in involving the private sector in agricultural input provision. However, only 63% understood ATMA's bottom-up planning approach, and 61.5% acknowledged the role of the District Farmers Advisory Committee in offering feedback for district-level planning. These results suggest that frequent contact with extension agencies and active participation in extension activities, including training programs, have significantly enhanced respondents' knowledge about ATMA. The results are in lined with the studies conducted by Kenchanahouder, (2007) [9]; Prakash and Deepak (2009) [10]; Jagdish *et al.* (2020) [11]; Jakkawad *et al.* (2017) [12].

Table 1: Distribution of the respondents based on their Knowledge level about ATMA (n=200)

Sl. no	Knowledge items	Correct knowledge		Incorrect knowledge	
		No.	Percentage	No.	Percentage
1	ATMA is implemented through agricultural department	200	100.00	00	0.00
2	Major activity of ATMA is transfer of technology on agriculture and allied aspect	155	77.5	45	22.5
3	ATMA follows bottom up planned procedure by considering farmers input into programme	126	63	74	37
4	ATMA facilitates the availability of credit to resource poor and marginal farmers, particularly SC/ST/women farmers	145	72.5	55	27.5
5	District Farmers Advisory Committee provides farmers feedback for district level planning	123	61.5	77	38.5
6	Agricultural entrepreneurs supplement the efforts of extension workers by providing critical technical advice to farmers	152	76	48	24
7	Farmers friend serves as vital link between extension system and farmers at village level	152	76	48	24
8	Farm school will serve as a mechanism for farmer to farmer extension	160	80	40	20
9	Farmers organizations/Farmers interest groups will co-ordinate in organizing demonstrations, on-farm trials and give feedback to extension and research	160	80	40	20
10	ATMA facilitates the involvement of private sector in providing agricultural inputs	142	71	58	29

Overall knowledge of beneficiaries

Table 2 and Figure 1 reveal that 70.5% of the beneficiaries possessed a high level of overall knowledge regarding ATMA, while 29% exhibited a medium level, and only 0.5% had a low level. The results indicate that a substantial majority (99.05%) of the beneficiaries have a medium to high level of knowledge about ATMA. These findings align with previous studies. For instance, Sahu *et al.* (2012) ^[13] found that 79% of beneficiaries demonstrated a medium level of knowledge about ATMA programs, though gaps existed in specific areas like training programs. Similarly, Shalini *et al.* (2020) ^[14] reported that 78.3% of ATMA beneficiaries had a medium level of knowledge about the program. Pawar *et al.* (2019) ^[15] also observed that farmers had comprehensive knowledge regarding ATMA headquarters and grassroots-level planning.

The probable reasons for these findings include frequent interaction with extension workers, active participation in training sessions, and exposure to field demonstrations, which have been central to ATMA's operational framework.

Additionally, the participatory approach of ATMA, which involves farmers in program planning and implementation, likely contributes to the beneficiaries' knowledge levels. However, the findings also indicate areas where knowledge dissemination needs improvement, particularly concerning ATMA's procedural mechanisms like bottom-up planning and private sector involvement in agricultural inputs. Similar studies, such as Sahu *et al.* (2012) ^[13] and Shalini *et al.* (2020) ^[14], have also highlighted the need for targeted interventions to address specific gaps in farmers' knowledge.

Table 2: Distribution of the respondents based on their overall Knowledge about ATMA

Sl. no	Knowledge category	Number	Percentage
1	Low(<4.82 Score)	1	0.5
2	Medium (4.82 to 6.18)	58	29
3	High (>6.18)	141	70.5
Total		200	100.00
Mean 7.55 and SD is 1.76			

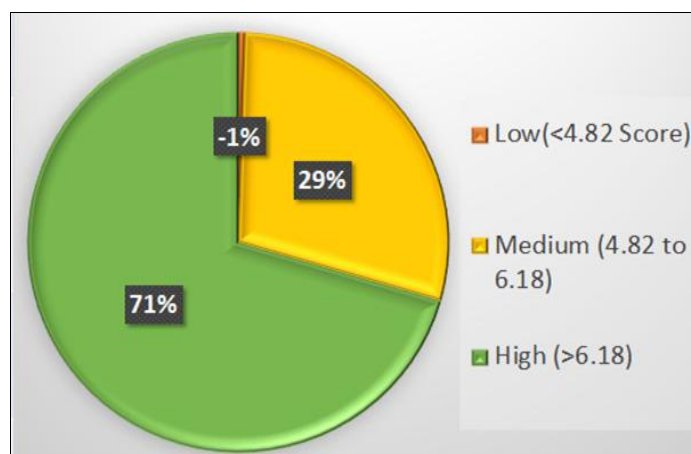


Fig 1: Overall Knowledge of Beneficiaries

Relational analysis of knowledge of ATMA and independent variables

The relational analysis of the knowledge of ATMA farmers and their independent variables reveals several statistically significant relationships. Age, education, land, cropping intensity, mass media exposure, innovativeness, and achievement motivation all influence the knowledge levels of ATMA farmers in distinct ways. Age and education show positive correlations, indicating that as the age and educational qualifications of the respondents increase, their knowledge about ATMA also improves. This can be attributed to the experience and cognitive capacity that often comes with age and education, enhancing the ability to assimilate new agricultural practices and technologies (Kumar *et al.*, 2020) ^[16]. Conversely, land ownership exhibited a negative correlation, suggesting that farmers with larger landholdings may have less knowledge about ATMA, potentially due to limited participation in extension activities or a higher reliance on traditional practices (Sharma *et al.*, 2019) ^[17]. Cropping intensity and mass media exposure were positively related to knowledge,

indicating that farmers engaged in more intensive farming practices and those exposed to media outlets have better access to updated agricultural information, which may encourage them to adopt new techniques and strategies (Patel and Gupta, 2018) ^[18]. Innovativeness was another positive factor, showing that farmers who are more open to new ideas and technologies tend to be more knowledgeable about ATMA, likely due to their willingness to explore different agricultural methods (Kumar *et al.*, 2020) ^[19]. Achievement motivation, on the other hand, showed a negative relationship, implying that farmers with higher achievement motivation may focus more on personal goals or profit-making, rather than on comprehensive knowledge about extension programs like ATMA. Non-significant relationships with other variables suggest that factors such as family size or socio-economic status may not directly impact knowledge acquisition under ATMA. These findings are consistent with the existing literature, which highlights the importance of education, media exposure, and innovativeness in enhancing agricultural knowledge (Singh & Sharma, 2017 ^[20]; Sahu *et al.*, 2019) ^[13].

Table 3: Relational analysis of knowledge of ATMA and independent variables

Model	Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	99.0% Confidence Interval for B
	B	Std. Error	Beta			Lower Bound Upper Bound
Constant	-2.455	9.014		-.272	.786	-25.915 21.005
Age	.068	.030	.341	2.282	.024	-.010 .146
Education	.665	.181	.476	3.678	.000	.194 1.135
Land	-.397	.094	-.584	-4.207	.000	-.643 -.152
Occupation	-1.764	1.562	-.071	-1.129	.260	-5.829 2.301
Annual Income	-3.990e-7	.000	-.041	-.688	.492	.000 .000
Social Participation	-.207	.175	-.088	-1.187	.237	-.661 .247
Farming Experience	-.053	.032	-.243	-1.663	.098	-.136 .030
Irrigation Facilities	-.178	.156	-.101	-1.143	.255	-.584 .227
Cropping Intensity	.021	.005	.587	4.395	.000	.009 .033
Exposure with Other Development Agencies	-.229	.215	-.102	-1.062	.290	-.790 .332
Mass Media Exposure	1.006	.286	.221	3.520	.001	.262 1.749
Innovativeness	.840	.158	.547	5.331	.000	.430 1.250
Achievement motivation	-.545	.111	-.305	-4.899	.000	-.835 -.256

a. Dependent Variable: knowledge

Conclusion

The knowledge assessment of ATMA beneficiaries revealed that a significant majority had medium to high knowledge about ATMA, with factors like age, education, land, cropping intensity, mass media exposure, innovativeness, and achievement motivation influencing knowledge levels. Older and more educated farmers showed greater knowledge, likely due to their experience and cognitive capacity, while larger landholders had lower knowledge, possibly due to less involvement in extension activities. Farmers engaged in intensive farming and those with higher media exposure had better knowledge, suggesting the importance of these factors in knowledge dissemination. Innovativeness positively correlated with knowledge, whereas achievement motivation negatively affected it. The findings highlight the significance of frequent interaction with extension services and participation in activities like training programs to enhance knowledge. The study suggests that targeted interventions based on socio-economic factors can improve the effectiveness of the ATMA program, helping to address knowledge gaps and strengthen agricultural extension services.

References

- Chand R, Srivastava SK, Singh J. Changing structure of rural economy of India: Implications for employment and growth. New Delhi: NITI Aayog, Government of India; 2017.
- Rao KPC, Kumaran M, Bantilan C. Dynamics of agricultural extension services in India: Status, new challenges and future strategies. *J Rural Dev.* 2018;37(4):761-784.
- Joshi PK, Joshi L, BIRTHAL PS. Indian agriculture towards 2030: Pathways for enhancing farmers' income, nutritional security and sustainable food systems. *Agric Econ Res Rev.* 2020;33(1):1-24.
- Singh KM, Swanson BE, Jha AK, Meena MS. Extension in India by public sector institutions. *MANAGE Int J Agric Ext.* 2016;8:1-13.
- Rasheed Sulaiman V, Hall A. India: The emergence of extension-plus: Future for extension beyond technology transfer? In: Rivera W, Alex G, editors. *Decentralized systems, case studies of international initiatives.* Vol. 1. Washington (DC): The World Bank; 2004. p. 179-207.
- Chaudhary KR, Pandey DK, Kundu KK. Effectiveness of Agricultural Technology Management Agency (ATMA) in transfer of agricultural technologies in northern India. *Indian J Ext Educ.* 2019;55(1):26-30.
- Karthikeyan C, Nagarajan R. Effectiveness of Agricultural Technology Management Agency (ATMA) in Tamil Nadu: An appraisal. *Indian J Ext Educ.* 2020;56(2):50-55.
- Joshi AD, Shahi AS, Sawant S. Challenges and opportunities of Agricultural Technology Management Agency (ATMA) in Konkan region of Maharashtra. *J Ext Educ.* 2021;33(2):1-8.
- Kenchanagoudar SM. An analytical study on Sampoorana Grameen Rozgar Yojana in Gadag district of Karnataka State [M.Sc. (Agri.) thesis]. Dharwad (India): University of Agricultural Sciences; 2007.
- Prakash S, Deepak De. A study on institutional innovations in technology dissemination: A World Bank assisted project. *J Global Commun.* 2009;23(2):17-18.
- Jagdeesh V, Lakshminarayan MT, Narayanareddy R. Knowledge of ragi growers towards Agricultural Technology Management Agency. *Int J Curr Microbiol Appl Sci.* 2020;9(3):484-491.
- Jakkawad SR, Sawant RC, Pawar SB. Extent of participation and knowledge level of the beneficiaries about various aspects of ATMA model and benefits availed. *Trends Biosci.* 2017;10(24):5051-5055.
- Sahu BP, Chaturvedi MK, Sahu SS, Yadaw KN. Knowledge level of ATMA beneficiaries towards the activities of Agricultural Technology Management Agency (ATMA). 2012.
- Shalini R, Kumar D, Singh M. Assessment of knowledge levels among ATMA beneficiaries in selected districts. *Int J Curr Microbiol Appl Sci.* 2020;9(5):1234-1240.
- Pawar S, Patil S. Extent of participation and knowledge level of the beneficiaries about various aspects of ATMA model and benefits availed. *J Rural Dev.* 2019;38(1):15-22.

16. Kumar N, Yadav SR, Mishra A, Mishra S. Constraints faced by ATMA and Non-ATMA farmers in the adoption of wheat crop technology in the central zone of UP. *J Pharmacogn Phytochem*. 2020;9(4S):559-562.
17. Sharma P, Singh R, Sharma S. Relationship between socio-economic variables and knowledge level of farmers in rural India. *Indian J Ext Educ*. 2019;29(4):47-53.
18. Patel K, Gupta M. Role of mass media exposure in agricultural knowledge dissemination. *Int J Agric Sci Res*. 2018;6(3):19-28.
19. Kumar S, Sharma R, Singh A. Influence of socio-economic factors on knowledge level of agricultural extension programs in India. *J Ext Educ*. 2020;41(3):25-31.
20. Singh B, Sharma V. Effect of innovativeness on the adoption of agricultural practices among farmers. *Asian J Agric Ext*. 2017;35(2):121-127.