The Andhra Agric. J 62(3): 699-706, 2015

Extent of Awareness and Adoption Level of Technologies by the Beneficiaries of Agricultural Technology Management Agency (ATMA) Programme in Dimapur District of Nagaland, India

Chonbenthung Ngullie, Sanjoy Das, NK Patra, A K Sahu, A K Makar
Department of Agricultural Economics, SASRD, Nagaland University, Medziphema Campus, Medziphema, Nagaland, PIN – 797106, India

ABSTRACT

In Nagaland ATMA programme has been working as a district level society since 2005-06 in disseminating agricultural technologies at district level. Present study was conducted to ascertain the extent of awareness and adoption level of some important technologies by ATMA beneficiaries in Dimapur district of Nagaland covering two rural development blocks. Altogether 80 respondents were selected for the study from different SHGs. Study revealed that 43.75 per cent of the total respondents were found aware about all selected five technologies, 18.75 per cent were aware of four technologies and 16.25 per cent reported not aware about all the five technologies. Although, the level of awareness on all the five selected technologies increased after ATMA intervention, a maximum percentage of respondents did not adopt the technologies. Only 6.25 per cent respondent, have adopted all the five technologies and 21.25 per cent did not adopt at all.

Key words : ATMA, Awareness, Adoption, Technology.

In addressing the constraints observed in T & V and post T & V system, the new extension reform programme namely ATMA (Agricultural Technology Management Agency) was introduced during 2005-06 by the Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Govt. of India to make extension system more farmer driven and farmer accountable. ATMA is a district level society under Innovations in Technology Dissemination (ITD) component of National Agricultural Technology Project (NATP) and involved in agricultural activities for sustainable agricultural development in the district. It is a focal point for integrating the research and extension activities and decentralisisng the day to day management of the agricultural technology system. ATMA is responsible for all technology dissemination activities at district level. It has linkages with several line departments, research organizations, NGOs and some other agencies associated with agricultural development in the district.

In Nagaland, ATMA programme was launched during 2005-06 in three districts only viz. Dimapur, Kohima and Mokokchung and it was continued as such upto 2006-07. This programme later on extended to all the 11 districts of the state during 2008-09 covering all (52) rural development blocks. Since then, ATMA programme was seen as one of the vital programmes in the state with due attention from all concerned. In the state, Director of Agriculture is acting as State Nodal Officer (SNO) for this programme and all central funds are routed through SNO to all the 11 districts. Project Directors (PDs) are responsible for implementation and utilization of funds at district level as per the criterian of activities prescribed for this programme.

As ATMA is still in nascent stage in delivering its' services towards development of rural economy, it is felt important to study about ATMA programme in Nagaland to know its' way of functioning and present status in order to give impetus to speed up the programme. Prakash and De (2008) in their on knowledge level of ATMA beneficiaries about bee keeping have reported that majority of respondents had medium knowledge about bee keeping and a significant association between knowledge and independent variables *viz.,* age, education, family type, family size etc. through

ATMA intervention. Singh *et at.,* (2009), in their study on agricultural reforms in Bihar have reported that a considerable improvement was noticed in adoption of new technologies and farm practices by different categories of farmers after ATMA interventions. Keeping in view all above, the present study was designed to study systematically the extent of awareness and adoption level of some selected technologies by ATMA beneficiaries in the State of Nagaland.

MATERIAL AND METHODS

This is a Master's level research work carried out at Nagaland University, Nagaland, India. Study was pertaining to Dimapur District, an important district of North Eastern States of Nagaland, India. An attempt was made to study the impact of ATMA programme on awareness and adoption of level of beneficiaries on some important agricultural technologies. Two blocks *viz.,* Niuland and Medziphema were selected purposively for this study out of total four blocks in the district, as these are the most convenient blocks to carry out the study. From each block 10 SHGs were selected randomly that are sponsored or supported by ATMA and from 1 SHG, 4 member beneficiaries were selected as respondents. Altogether 80 respondents were selected from 20 SHGs for the study and due consideration was given on selection of SHGs, so that SHGs with less than 3 years of existence could not be taken into consideration. Out of the various topics covered under ATMA training programme, the most common five technologies that were covered several times in the study area were selected for the study. Both primary and secondary data were collected. Primary data were collected pertaining to year 2010-11. 2005-06 was considered as base year and 2010-11 as current year.

The collected data were tabulated and processed to suit the various objectives of the study. Appropriate statistical tools were used for drawing valid conclusions and interpretation. Correlation and regression analysis was carried out to determine the extent of relationship that exist between dependent variable (awareness and adoption level) and independent variables viz. age, qualification, occupation, land holding, house type, number of family members, year of existence of SHGs etc.

RESULTS AND DISCUSSION

Extent of Awareness Level as well as Adoption of Technologies

To study the extent of awareness and adoption level of the sample respondents, five (5) specific technologies on agricultural development were selected. The technologies incorporated in this study were high yielding varieties (HYVs), scientific control of pest and diseases, artificial insemination, tools and implements used and seed treatment. Level of awareness was analyzed based on "awareness before ATMA and awareness after ATMA", while level of adoption was based on "Adopted and Not-adopted".

Awareness and adoption level of HYVs of crops under ATMA

Around 27.5 per cent and 20.0 per cent of the respondents under Medziphema and Niuland blocks respectively were aware about HYVs before implementation of ATMA programme in the district, that increased to 72.5 and 70.0 per cents respectively after ATMA intervention (Table 1). In totality, 23.75 per cent of the total respondents were aware about the technology before ATMA was implemented that increased to 71.25 per cent after implementation of the ATMA programme. In case of level of adoption of the technology by the respondents, it was found that 62.07 per cent and 60.70 per cent of respondents from Medziphema and Niuland blocks respectively adopted the technology, while 37.93 per cent and 39.3 per cent of respondents from Medziphema and Niuland respectively did not adopt the technology. As a whole, 61.4 per cent of the total respondents adopted the technology, while 38.6 per cent of the total respondents did not adopt the technology. As overall adoption percentage after ATMA interventions was much higher than the awareness level (before ATMA), it can be concluded that adoption percentage increased because of ATMA. However, a significant percentage of respondents did not adopt the technology even though they were aware and it may be because of less familiarization of HYVs seed by the farmers, less availability of HYV seeds in the study area, and overall prevalent of traditional agriculture.

Table 1. Awareness and adoption level of HYVs of crops by sample respondents.

Level of Awareness and Adoption	Medziphema Block		Niuland Block		Total	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Awareness before ATMA	11	27.5	8	20	19	23.75
Awareness after ATMA	29	72.5	28	70	57	71.25
Awareness because of ATMA	18	45.0	20	50	38	47.5
Adopted	18	62.07	17	60.7	35	61.4
Not Adopted	11	37.93	11	39.3	22	38.6

Table 2. Awareness and adoption level of scientific control of pest and diseases by sample respondents.

Level of Awareness and Adoption	Medziphema Block		Niuland Block		Total	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Awareness before ATMA	10	25.0	8	20.0	18	22.5
Awareness after ATMA	27	67.5	27	67.5	54	67.5
Awareness because of ATMA	17	42.5	19	47.5	36	45.0
Adopted	17	63.0	16	59.3	33	61.1
Not Adopted	10	37.0	11	40.7	21	38.9

Table 3. Awareness and adoption level on artificial insemination of livestock.

Level of Awareness and Adoption	Medziphema Block		Niuland Block		Total	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Awareness before ATMA	12	30.0	9	22.5	21	26.25
Awareness after ATMA	31	77.5	31	75.5	62	77.5
Awareness because of ATMA	19	47.5	22	55.0	41	51.25
Adopted	22	70.9	20	64.5	42	67.7
Not Adopted	9	29.1	11	35.5	20	32.3

Awareness and adoption level of scientific control of pest and diseases under ATMA

Around that 25 per cent and 20 per cent of the respondents under Medziphema and Niuland block respectively were aware about scientific control of pest and diseases before ATMA programme was implemented in the district, that increased to 67.5 per cent for both after the ATMA programme. In totality, 22.5 per cent of the total respondents were aware about the technology before ATMA was implemented, that increased to 67.5 per cent after ATMA (Table 2). In case of level of adoption of the technology by the respondents, it was found that 63 per cent and 59.3 per cent of respondents from Medziphema and Niuland blocks respectively adopted the technology, while 37.0 per cent and 40.7 per cent of respondents from Medziphema and Niuland blocks respectively did not adopt the technology. Overall, 61.1 per cent of the total respondents adopted the technology, while 38.9 per cent of the total respondents did not adopt the technology. As overall adoption percentage after ATMA much higher than the awareness level (before ATMA), it can be stated that adoption percentage after ATMA was increased. However, because of non availability of chemicals in most of the areas as well as non development of scientific temperament among the farming communities, a good percentage of respondents did not adopt the technology even though they were aware of that.

Awareness and adoption level on artificial insemination of livestock

About 30.0 per cent and 22.5 per cent of the respondents under Medziphema and Nuiland blocks respectively were aware about the technology before the implementation of ATMA in the district, that increased to 77.5 per cent for both after the programme. In totality, 26.25 per cent of the total respondents were aware about the technology before ATMA was implemented, that increased to 77.5 per cent after ATMA intervention (Table 3). In case of level of adoption of the technology by the respondents, it was found that 70.9 per cent and 64.5 per cent of respondents from Medziphema and Niuland blocks respectively adopted the technology, while 29.1 per cent and 35.5 per cent of respondents from Medziphema and Nuiland blocks respectively did not adopt the technology. Overall, 67.7 per cent of the total respondents adopted the technology, while 32.3 per cent of the total respondents did not adopt the technology. It can also be inferred that adoption percentage increased after ATMA interventions.

Awareness and adoption level about tools and implements

About 17.5 per cent and 15.0 per cent of the respondents under Medziphema and Nuiland blocks respectively were aware about tools and implements used for agricultural purpose before implementation of ATMA programme in the district, that increased to 62.5 per cent for both (TAble 4). Overall, 16.25 per cent of the total respondents were aware about the technology before ATMA was implemented while 46.25 per cent of the total respondents reported aware about the technology through ATMA. In case of level of adoption of the technology by the respondents, it was found that 64 per cent of the total awareness level of the respondents from both Medziphema and Niuland blocks respectively adopted the technology, while 36 per cent for both did not adopt the technology. Overall, 64 per cent of total awareness level adopted the technology, while 36 per cent did not adopt the technology. However, ATMA intervention has increased the adoption level of tools and implements among the farming communities, although many reported that they did not adopt.

Awareness and adoption level of seed treatment by sample respondents

Around 17.5 per cent and 12.5 per cent of the respondents under Medziphema and Nuiland blocks respectively were aware about technology before of ATMA programme was implemented in the district, that increased to 62.5 per cent each for both the blocks after ATMA intervention (Table 5). In the district, 15.0 per cent of the total respondents were aware about the technology before ATMA was implemented, that increased to 62.5 per cent through ATMA. In case of level of adoption of the technology by the respondents, it was found that 68 per cent and 64 per cent of total awareness level of the respondents from Medziphema and Niuland respectively adopted the technology, while 32.0 per cent and 36.0 per cent from Medziphema

Table 4. Awareness and adoption level on tools and implements.

Level of Awareness and Adoption	Medziphema Block		Niuland Block		Total	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Awareness before ATMA	7	17.5	6	15.0	13	16.25
Awareness after ATMA	25	62.5	25	62.5	50	62.5
Awareness because of ATMA	18	45.0	19	47.5	37	46.25
Adopted	16	64.0	16	64.0	32	64.0
Not Adopted	9	36.0	9	36.0	18	36.0

Table 5. Awareness and adoption level of seed treatment by sample respondents.

Level of Awareness and Adoption	Medziphema Block		Niuland Block		Total	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Awareness before ATMA	7	17.5	5	12.5	12	15
Awareness after ATMA	25	62.5	25	62.5	50	62.5
Awareness because of ATMA	18	45.0	20	50.0	38	47.5
Adopted	17	68.0	16	64.0	33	66.0
Not Adopted	8	32.0	9	36.0	17	34.0

and Niuland blocks respectively did not adopt the technology. Altogether 66.0 per cent of the total respondents adopted the technology, while 34 per cent of the total respondents did not adopt the technology. Moreover, as present level of adoption percentage was much higher than the awareness level (before ATMA), it can be concluded that ATMA has positively impacted for increment of adoption percentage.

Summary of awareness and adoption level of technologies by sample respondents

In Medziphema block, 47.5 per cent of the respondents reported their awareness about all the five selected technologies followed by 15 per cent for awareness on four technologies, 7.5 per cent each for awareness on three, two and one technology(s), while 15 per cent respondents reported not aware on any of the selected technologies. Although 47.5 per cent of the respondents were aware about all the five technologies, only 5 per cent reported adoption of all the five technologies in Medziphema block (TAble 6). Maximum number of respondents were found in adopting three technologies out of the five (25 per cent) followed by 20 per cent for adopting four technologies, 15 per cent each reported for adopting two and one technology (s) out of the five. It was also found that 20 per cent of the respondents under Medziphema block did not adopt any of the selected technologies.

In case of Niuland block, 40 per cent of the respondents reported their awareness on all the five selected technologies followed by 22.5 per cent

Table 6. Summary of awareness and adoption level of technologies by respondents at block level.

Name of the Block	Awareness level					
	Number of respondents					
	All (5) technologies	Four (4) technologies	Three (3) technologies	Two (2) technologies	One (1) technology	Not aware at all
Medziphema	19 (47.5)	6 (15.0)	3 (7.5)	3 (7.5)	3 (7.5)	6 (15.0)
Niuland	16 (40.0)	9 (22.5)	6 (15.0)	0 (0.0)	2 (5.0)	7 (17.5)
Total	35 (43.75)	15 (18.75)	9 (11.25)	3 (3.75)	5 (6.25)	13 (16.25)
Name of the Block	Awareness level					
	Number of respondents					
	All (5) technologies	Four (4) technologies	Three (3) technologies	Two (2) technologies	One (1) technology	No adoption at all
Medziphema	2 (5.0)	8 (20.0)	1 0(25.0)	6 (15.0)	6 (15.0)	8 (20.0)
Niuland	3 (7.5)	9 (22.5)	5 (12.5)	5 (12.5)	9 (22.5)	9 (22.5)
Total	5 (6.25)	17 (21.25)	15 (18.75)	11 (13.75)	15 (18.75)	17 (21.25)

for awareness on four technologies, 15 per cent for awareness on three technologies, 5 per cent respondents reported awareness on only one out of the five selected technologies, while 17.5 per cent of the respondents reported unawareness on any of the five technologies. Although in case of Niuland block, maximum numbers of the respondents were aware about all the five technologies, only 7.5 per cent reported adopting all the five technologies. It was also found that 22.5 per cent each reported on adoption of four technologies and adoption of only one technology, 12.5 per cent each reported on adoption of three and two technologies out of the five. It also appeared that 20 per cent and 22.5 per cent of the respondents from Medziphema and Niuland block did not adopt any of the selected technologies.

As a whole in the district, 43.75 per cent of the total respondents were found awareness about all the five technologies followed by 18.75 per cent for awareness on four technologies, 11.25 for three technologies, 6.25 for one technology, and 3.75 per cent for two technologies. In case of adoption level, adoption of four out of the five technologies topped the list with 21.25 per cent followed by 18.75 per cent each for adoption of three and one technology (s) out of the five, while 13.75 per cent of the respondents reported adoption of two technologies out of the five. It was also found that 16.25 per cent of the respondents were not at all aware on any of the selected technologies, while 21.25 per cent of the total respondents did not adopt any of the technologies though some were aware about some of the technologies.

Because of hilly terrain in nature of the State, all developmental activities including agriculture is moved at very slow rate. Although Government and other NGOs have started lot many activities in popularization of agri and allied activities in the State, still it may take another few years to make it an effective and people friendly. Moreover, infrastructural and other bottlenecks hampered severely in development of agriculture. Lack of market, lack of communication facilities *etc.,* retards the pace of development in the State. Farmers of Nagaland are still practicing subsistence

Table 7. Correlation and regression co-efficient of different independent variables with awareness and adoption level of technologies.

Independent Variables	Awareness		Adoption	
	Correlation coefficient	Regression coefficient	Correlation coefficient	Regression coefficient
Intercept	-	-4.66**	-	-6.81*
Age	-0.28*	0.00 NS	-0.10 NS	0.04**
Qualification	0.60**	0.91**	0.45**	0.79**
Occupation	0.34**	0.82**	0.45**	0.77**
Land holding	0.25*	0.28 NS	0.39**	0.60**
House type	0.15 NS	0.09 NS	0.06 NS	-0.23*
Family members	0.06NS	0.02 NS	0.07 NS	0.01 NS
Years of existence of the SHGs	0.23*	0.22 NS	0.25*	0.07 NS
		R^2 =0.66		=0.66

*denote significant at 5% ** denote significant at 1%, NS is Not Significant

farming in many areas and as a result some of the technologies although they were seen aware, not adopted.

Correlation and regression co-efficient of different independent variables with awareness and adoption level of technologies

In order to analyse the degree of association among awareness and adoption level of technologies with different independent variables, correlation co-efficient were calculated (Table 7). Independent variables such as qualification, occupation, land holding and year of establishment had high positive and significant correlation to awareness and adoption level, indicating that these variables were highly responsible for enhancing the awareness and adoption level of the sample respondents. However, the variable like age showed high negative correlation to awareness level and non-significant in case of adoption level.

The variables like size of family members, house type had showed non-significant but positive correlation indicating that the family size had little impact on the awareness and adoption level of the sample respondents.

Taking awareness level and adoption level of the respondents as dependent variables and all other variables as independent variables, multiple linear regression analysis was also done to study the relationship between the selected dependent and independent variables. The R-Square value for both awareness level and adoption level was found to be 0.66 (Table 7).

Conclusions :

The analysis presented in this paper gives an idea on extent of awareness and adoption level of certain important technologies for agriculture development in Nagaland. As there is a huge gap on technology generation and it's adoption in agriculture field, study on extent of awareness and adoption level, certainly helps to understand the magnitude of the problem in the study area. As a whole in the district, 43.75 per cent of the total respondents were found to have awareness about all the five technologies followed by 18.75 per cent on four technologies, 11.25 per cent for three technologies, 6.25 per cent for one technology, and 3.75 per cent for two technologies. In case of adoption level, adoption of four out of the five technologies selected for study topped the list with 21.25 per cent followed by 18.75 per cent each for adoption of three and one technology (s) out of the five, while 13.75 per cent of the respondents reported adoption of two technologies out of the five. It was also found that 16.25 per cent of the respondents were not at all aware on any of the selected technologies, while 21.25 per cent of the

total respondents did not adopt any of the technologies though some were aware about some of the technologies.

In a state like Nagaland, where agriculture is still in subsistence level, a study like this can help the policy makers, planners to develop their plans and programmes effectively. However, detail and in-depth study pertaining to the above issues can only give more accurate and authentic information.

LITERATURE CITED

Prakash Satya and De Dipak 2008 Knowledge level of ATMA beneficiaries about bee-keeping. *Indian Research Journal of Extension Education*, 8 (2/3) 62-62.

Singh K M, Meena M S and Jha A K 2009 Impact assessment of agricultural extension reforms in Bihar. *Indian Research Journal of Extension Education*, 9 (2), 110-114.

(Received on 18.07.2013 and revised on 22.11.2013)