

*Full Length Research Paper*

# Attitude of farmers of their level of involvement in Agricultural extension in Ethiopia: Policy implications

Kofi J.A,\* Kwesi A.I and Kotei

Department of Agric Economics & Agribusiness, College of Agriculture and Consumer Science  
University Of Ghana. E-mail: [kofi.jacob4571@yahoo.com](mailto:kofi.jacob4571@yahoo.com).

Accepted 11 January, 2015

This study examined farmers' perception of their level of participation in Public Agricultural Extension Service (PAES) in Sodd-zuria Woreda in Southern Ethiopia vis-à-vis seven selected farmers' characteristics; namely, sex, age, educational status, wealth status, farming experience, experience with extension and frequency of contact with extension agents. For this study, 225 farmers were randomly selected and interviewed with a semi-structured questionnaire. The study showed that farmers in Sodd-zuria Woreda perceived their level of participation to be low, and had significant correlation with sex, educational status, wealth status and frequency of contact with extension agents. Female, illiterate and poor farmers' perception of participation in the PAES was found to be lower than their male, literate and resource-rich counterparts. In a regression analysis, sex, educational status and wealth status explained 42.2% of the variance in farmers' perceived level of participation in the PAES, with educational status alone contributing about 35%. To enhance farmers' participation in the PAES, the Sodd-zuria Woreda Bureau of Agriculture and Rural Development need to properly mainstream gender, combine pro-poor development strategies and integrate literacy programmes into the routine extension activities.

**Key words:** Ethiopia, farmers' perception, farmers' participation, public agricultural extension, gender disparity.

## INTRODUCTION

The importance of farmers' participation in agricultural extension services both as a means to an end and as an end by itself is a widely understood phenomenon among development practitioners. In extension, farmers are key stakeholders at grassroots level. Their participation in all stages of extension programme development and delivery processes enhances efficiency and effectiveness of the planned changes as participation facilitates mutual learning among stakeholders, develops ownership of the change programme, and brings about long lasting and sustainable change both on the farm and in the behaviours of farmers. Owing to this effect, the success of an extension programme largely depends on the roles played by farmers in the programme. Out of several

successful outcomes of farmers' participation in development endeavours, the following empirical findings are just some examples to elaborate the issue.

In Ethiopia, Mendesil et al. (2007) and Shamebo and Belhu (1999) reported added values gained in incorporating farmers' indigenous knowledge through their participation in developing effective mechanisms to control sorghum storage pest and in developing sweet potato varieties that address farmers' criteria of valuing, respectively; in India, Hedge (2005) documented farmers' contribution in selecting and developing superior genotypes of crops; in Burkinafaso, Van Asten et al. (2004) were able to identify productive and unproductive spots of farm land with participation of farmers – on those

spots, later on, soil tests were carried out and farmers' assessments were confirmed to be right; in Indonesia, the pioneering work of Integrated Pest Management (IPM) that was basically a result of farmers' cultural practices is of another interesting example [Environmentally and Socially Sustainable Development Network (ESSDN), 1995]. Those aforementioned arguments indicate that successful technological development and meaningful change among clientele require input from the clientele themselves as from the development practitioners.

In Ethiopia, public agricultural extension service (PAES) has a history of more than sixty years, and is entrusted to bring about meaningful change to farmers.

Currently, the PAES has adopted a „participatory demonstration and training extension system“

(PADETES) approach to extension. According to Belay and Abebaw (2004:164), a presumed importance of the PADETES approach is “the promotion of active participation of rural communities in problem identification, analysis, planning, implementation and evaluation”. However, there is little information on how farmers perceive their level of participation, in which stages of the extension process they participate, and the differences in participation levels among different groups of farmers. This study was, therefore, undertaken to get feedbacks on those issues; and the work was part of a wider scale study conducted to assess effectiveness of the PAES in programme development and delivery.

### Objective of the study

The general objective of this study was to understand farmers' perception of their level of participation in the public agricultural extension service to provide feedback for policy directions. The specific objectives were to:

- (1) Determine male and female farmers' perceived level of participation in the different stages of extension;
- (2) Test if there was a difference in perceived levels of participation between male and female farmers;
- (3) Examine relationships between selected characteristics of farmers' and perceived levels of participation; and
- (4) Determine the best predictors of farmers' perceived level of participation in the PAES.

### METHODOLOGY

The research was a survey with a correlation design aimed at describing farmers' perceived level of participation in the PAES and determining relationships between some characteristics of farmers and their level of participation. The study was conducted in Soddo-zuria *Woreda* (equivalent to a district) of Wolaita Zone, Southern Ethiopia. The research subjects were selected with a multi-stage selection process. First, 9 *Kebeles* (lowest administrative unit below a district level) were randomly selected out of 31 *Kebeles* of the *Woreda*. In each of the nine *Kebele* offices, lists of all farmers who

had been participating in the PAES, stratified by sex and wealth status, were obtained as a sampling frame. Accordingly, based on the proportions of male and female headed households and their wealth statuses, 225 farmers were included in the study. The instrument used to collect data was a questionnaire with two parts.

The first part was on farmers' characteristics listed above and the second part was on farmers' level of participation in the different stages of the PAES. Prior to the development of the questionnaire, a thorough discussion was made with staff members of the *Woreda* Bureau of Agriculture and Rural Development to identify comprehensive and non-overlapping stages in extension programme development and delivery process.

Accordingly, seven different stages were identified and the questionnaire was developed in line with those stages. For face validity of the questionnaire, the researchers made all the necessary precautions. For content validity, a panel of three experts drawn from Hawassa University, Southern Agricultural Research Institute, and Bureau of Agriculture and Rural Development of the Southern Region of Ethiopia evaluated the questionnaire. The questionnaire was field-tested by taking 30 farmers in Damot-wyde, a neighbouring *Woreda* where it was believed that the respondents exhibit more or less similar characteristics to those included in the study. The second part of the questionnaire, on farmers' level of participation, was measured on a Likert type scale. To assess the consistency of the items identified to measure the construct “level of participation” a Cronbach's alpha coefficient of reliability analysis was made and found out to be 0.80.

## RESULTS AND DISCUSSION

### Characteristics of farmers

The selected characteristics of farmers included sex, age, educational and wealth statuses, farming experience, experience with the PAES and frequency of contact with extension agents. The findings are summarized in Table 1.

### Sex composition

The total number of farmers included in the study was 225 with 177 male and 48 female. At a glance, the number of female farmers seems small; that is because of the small size of female headed households in the *Woreda*. The total households in the *Woreda* are 27,768, out of which 24,527 are male-headed and 3,241 female-headed (Soddo-zuria, 2001). This shows that in the *Woreda*, the female headed households are only about 11.7%. Thus, quite an adequate number of female farmers (21.3%) were included in the study.

### Age structure

The majority of both male (92 or 52%) and female (26 or 54%) farmers fall in the 40 to 50 years age category. Mean ages for male and female farmers were 42.31 and 40.77 years. The study did not indicate variations in level of participation in extension as a result of age variations. Belloncle (1989) argues that young farmers better

**Table 1.** Some selected characteristics of the respondent farmers.

Characteristics of farmers	Sex disaggregated values		
	Male	Female	Total
Sex composition	177	48	225
<b>Age composition (in year)</b>			
20-39	74	22	96
40-59	92	26	118
60 and above	11	0	11
Mean	42.31	40.77	
SD	9.8	7.4	
<b>Educational status</b>			
Unable to read and write	45	31	76
Just able to read and write only	5	2	7
Grade 1-4	31	4	35
Grade 5-8	62	8	70
Grade 9-12	34	3	37
<b>Wealth status</b>			
Poor	77	30	107
Medium	82	15	97
Better off	18	3	21
<b>Farming experience (in year)</b>			
1-10	28	8	36
11-20	61	27	88
21-30	54	12	66
31-40	24	1	25
41-50	8	0	8
51 and above	2	0	2
Mean	22.73	17.81	
SD	10.52	6.99	
<b>Experience with the PAES (in year)</b>			
Less than 5	1	3	4
5-10	27	5	32
Greater than 10	149	40	189
Mean	10.7	7.58	
SD	6.93	4.7	
<b>Frequency of contact with extension agents (in Likert type scale)</b>			
Once per month (1 = very low)	26	18	44
Twice per month (2 = low)	66	15	81
Trice per month (3 = high)	55	10	65
Greater or equal to four times per month (4 = very high)	30	5	35
Mean	2.50	2.04	
SD	0.94	1.01	
Mode	Twice	Once	

participate in extension than older farmers owing to their versatile nature. On the other hand, Nwachukwu (2005)

reported low level of participation of young farmers in extension owing to resource limitations.

### Educational status

Out of the five categories of educational status, the majority of the male farmers, 62 or 35%, fall in the „grade 5 to 8“ followed by other 45 or 25.4% in „unable to read and write“ category. Regarding with the female farmers, the majority, 31 or 64.6%, were in the category „unable to read and write“. If the data are aggregated, the majority of the farmers fall in the category „unable to read and write“ because of the highest number of the female farmers in that category. The 35% of the male farmers in grade 5 to 8 is, even, specifically true only for that area in the country. Berhanu (2008), for instance, in a study conducted in North-Central part of Ethiopia indicated much lower numbers of farmers who reach to grade level educational status. Therefore, a high level of illiteracy among farming communities, and particularly in female farmers is a characteristic feature in Ethiopia. Several authors (Apantaku et al., 2003; Belloncle, 1989; FAO and World Bank, 2000; Hegde, 2005; UNESCO, 2005; Weir and Knight, 2000) reported the importance of education among farmers for effectiveness of extension. For instance, Apantaku et al. (2003) argues that low educational status of farmers is a limiting factor to make better use of extension services. In this respect, women farmers in the study area are in a more disadvantageous position.

### Wealth status

In Ethiopia, as stated under the method, at present, all farmers have been categorized into poor, medium and better off in terms of their wealth status. In this study (Table 1), the majority of the male farmers fall in the „medium“ (82 or 46.3%) and „poor“ (77 or 43.5%) categories. On the other hand, a great proportion of the female farmers [30 (62.5%)], fall in the „poor“ category.

This indicates that female farmers are poorer than male farmers although on aggregation the majority of the farmers in the study area were also poor. Several other authors have also indicated that women farmers are on the average poorer than male farmers (Anandajayasekeram et al., 2008; Belloncle, 1989; Saito and Weidemann, 1990).

### Farming experience

Regarding with farming experience, the majority of both the male and female farmers fall in the categories of 11 to 20 and 21 to 30 years. Mean farming experiences were 22.7 for male and 17.8 years for female farmers. This indicates that in the study area, female farmers have shorter farming experiences than the male farmers.

### Experience with the PAES

The mean male farmers' experience with the PAES was

10.7 years with standard deviations of 6.9; and that of the female farmers" was 7.6 with standard deviations of 4.7.

There were no female farmers who had more than 20 years of experience with the PAES. But, there were male farmers who had experience with the PAES up to 35 years. Both the range and the mean values indicate that female farmers had shorter years of experience with the PAES. This was, in fact, in agreement with their shorter years of farming experience presented earlier.

### Frequency of contact with extension agents

The study showed that mean frequencies of contacts with extension agents were 2.50 for male and 2.04 for female farmers. Male farmers' mean frequency of contact was somehow close to the „high“ category; whereas, female farmers' frequency of contact was in the „low“ category.

This shows that male farmers had better frequency of contact with extension agents than the female farmers. Lahai et al. (2000) have found a direct relationship between farmers' frequency of contact with extension agents and their levels of participation in extension. In their view, frequent contact of farmers with extension agents helps them to internalize well the extension education they receive as issues can be clarified whenever the contact occurs. Different authors have also argued that farmers' frequency of contact with extension agents has a direct relationship with effectiveness of extension - the more the frequency of contact of farmers with extension agents the better the effectiveness of the extension service (Aphunu and Otoikhian, 2008; Sarker and Itohara, 2009).

### Farmers' perceived level of participation in the PAES

The results showed that the overall mean participation levels of male and female farmers in the PAES were 1.99 and 1.63, respectively. Both these values fall between „low“ and „very low“ of the scale. An independent t-test, however, showed that the mean participation level difference was statistically significant ( $p < 0.05$ ) implying that female farmers' participation in the PAES is adversely very low (Table 2). With the exception of „selecting appropriate methods for extension“ where percentages of male and female farmers participated in it were almost the same, in the other stages, the proportion of female farmers was lower than that of the male farmers. Regarding with participation levels, male farmers' means were above 2.0 for „need assessment and problem identification“, „identifying alternative courses of actions for extension“ and „monitoring implemented extension programmes“. For the female farmers, a value of above 2.0 was observed only for „need assessment and problem identification“; this was, even, with wide dispersion as a high standard deviation of 0.83 shows.

**Table 2.** Farmers' participation level in the different stages of the PAES disaggregated by sex.

Stages in extension	Sex of farmer	N	Mean	SD
Need assessment and problem identification	M	158 (89.3)	2.51	0.58
	F	34 (70.8)	2.09	0.83
	M + F	192 (85.3)	2.44	0.65
Identifying alternative courses of actions for extension	M	144 (81.4)	2.16	0.64
	F	29 (60.4)	1.83	0.66
	M + F	173 (76.9)	2.10	0.66
Identifying appropriate extension educational activities	M	126 (71.2)	1.94	0.60
	F	30 (62.5)	1.67	0.71
	M + F	156 (69.3)	1.88	0.62
Selecting appropriate extension contents	M	105 (59.3)	1.88	0.66
	F	26 (54.2)	1.65	0.63
	M + F	131 (58.2)	1.83	0.66
Selecting appropriate methods for extension	M	105 (59.3)	1.79	0.65
	F	29 (60.4)	1.52	0.58
	M + F	134 (59.6)	1.73	0.64
Monitoring implemented extension programmes	M	156 (88.1)	2.14	0.70
	F	35 (72.9)	1.49	0.66
	M + F	191 (84.9)	2.02	0.74
Evaluating outcomes of extension programmes	M	155 (87.6)	1.66	0.76
	F	38 (79.2)	1.50	0.69
	M + F	193 (85.8)	1.63	0.75
Overall stages	M	177(100)	1.99	0.42
	F	48 (100)	1.63	0.44
	M + F	225 (100)	1.91	0.45

M = male, F = female, M + F = male and female. Scale: 1 = Very low participation, 2 = low participation, 3 = high participation, 4 = very high participation.

The low participation level of farmers in the PAES in this study is, in contrary to what is stipulated by the federal and regional bureaus of Agriculture and Rural Development (GFDRE, 2002; MoARD, 2006; BoARD, 2007) that claim participatory processes in the extension system. This shows existence of mismatches between farmers' own perception of their level of participation and the agricultural development practitioners.

#### **Farmers' characteristics and their participation in the PAES**

With the exception of ages of farmers, all the key characteristics of farmers assessed in the study showed a direct relationship with the level of farmers' participation in the PAES (Table 3). Based on Davis (1971) convention, the association between ages of farmers,

farming experience and experience with the PAES with farmers' level of participation in the PAES can be described as „negligible“. On the other hand, sex of farmer, wealth status and frequency of contact with extension agents had „moderate“ associations with farmers' level of participation in the PAES. Educational status had a „substantial“ association with the level of participation in the PAES. In general, all the farmers' characteristics that had „moderate“ and „substantial“ associations with farmers' level of participation were also statistically significant. A stepwise regression analysis was also made in order to determine the best predictors of farmers' level of participation (Table 4). The fitness of the regression model to the data was checked and found fit because the significance value of the F-statistic in the ANOVA was below 0.05 (95% confidence interval). Therefore, the dependent variable, farmers' perceived level of participation (Y) can be explained with the model.

**Table 3.** Relationship between the independent variables and the dependent variable, level of participation in the PAES (N = 225).

Independent variables	Correlation coefficient (r)	Significance	Type of correlation analysis	Strength of associations (Davis, 1971)
Sex	0.326	0.000	Point biserial	Moderate
Age	-0.087	0.192	Pearson product moment	Negligible
Educational status	0.594	0.000	Biserial	Substantial
Wealth status	0.380	0.000	Biserial	Moderate
Farming experience	0.001	0.991	Pearson product moment	Negligible
Experience with the PAES	0.079	0.236	Pearson product moment	Negligible
Frequency of contact with extension agents	0.317	0.000	Pearson product moment	Moderate

p < 0.05.

**Table 4.** Stepwise multiple regression on farmers' characteristics and their perceived level of participation in the PAES.

Predictors	$\beta$ -weight	t	Significance	R <sup>2</sup>	Adjusted R <sup>2</sup>	Adjusted R <sup>2</sup> Δ	F regression	F significance
$\alpha$	1.098	14.804	0.000				55.484	0.000
Educational status (X <sub>1</sub> )	0.145	9.030	0.000	0.353	0.350	0.350		
Wealth status (X <sub>2</sub> )	0.171	4.739	0.000	0.416	0.410	0.06		
Sex (X <sub>3</sub> )	0.138	2.330	0.021	0.430	0.422	0.012		

N = 225; p < 0.05.

Out of the four farmers' characteristics including sex, educational status, wealth status and frequency of contact with extension agents that were significantly correlated with farmers' perceived level of participation, the first three became important predictors of the dependent variable. If we take the adjusted R-square, the three independent variables together explained 42.2% of the variance in the dependent variable. The contribution of each of the three independent variables can be seen in the equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where  $\alpha$  is the intercept;  $\beta_1$  to  $\beta_3$  are the regression coefficients for the three independent variables; and  $e$  is an error term which points out

the proportion of the variance in the dependent variable, farmers' perceived level of participation in the PAES, that is not explained by the regression equation. In other words, the error term is the residue obtained when we compute  $1 - R^2$ .

This is a measure of the unexplained variance in the dependent variable which may arise as a result of some combinations of the influence of other variables, measurement errors and random chances. If the model is appropriate for the data, the distribution of the residuals will show a normal curve (Bryman and Cramer, 2005). Substituting the values for  $\alpha$ , and  $\beta$ -weights we get:

$$Y = 1.098 + 0.145X_1 + 0.171X_2 + 0.1389X_3 + e$$

As we used the standardized  $\beta$ -weights, the

relative contribution of the three independent variables to the change on farmers' perceived level of participation can be easily seen from the regression coefficients. With the issue of sex, in the present study, male farmers' participation level was significantly higher than female farmers' participation. So, the explanation is that as the situation becomes more favourable for female farmers', their participation can also increase.

Thus, proper mainstreaming of gender into the routine extension activities is by far essential for this change to occur.

## Conclusions

In many cases, farmers' participation level in

extension is reported to the high side when data are collected and analyzed only from the responses of agricultural professionals. This indicates the need for triangulating source of information by including farmers' own responses for valid conclusions. On matters that have to do directly on farmers' life such as extension, their direct response is particularly important. In this study, as it was found out from farmers' response, their level of participation in the PAES was low, and contrary to the naming „participatory demonstration and training extension system" and the guidelines on participation that the country is presumed to follow. Significant differences were also observed in levels of participation in the PAES owing to sex, educational status, and wealth status of the farmers. Keeping other things constant, female farmers, poor farmers and illiterate farmers had lower levels of participation in the PAES.

### Policy implications

Based on the findings, the following recommendations can be made with the aim to enhance farmers' participation.

- (i) Mainstream gender properly into the routine extension activities including establishing women extension groups that facilitate peer education and free interaction for exchange of knowledge and information; and recruiting more female extension agents who can better understand women farmers' extension problems and with whom the female farmers would be at ease to communicate and enhance their participation;
- (ii) Design contextually relevant and pro-poor strategies of development such as, for instance, interventions that enable poor farmers to participate more in the extension activities by using their family labour rather than mere focus on capital intensive extension packages; and
- (iii) Integrate functional literacy into the extension programmes.

### REFERENCES

- Anandajayasekaram P, Puskur R, Workneh S, Hoekstra D (2008). *Concepts and practices in agricultural extension in developing countries: A source book*. IFPRI (International Food Policy Research Institute) and ILRI (International Livestock Research Institute), Nairobi.
- Apantaku SO, Oloruntoba A, Fakoya EO (2003). Farmers' involvement in agricultural problems identification and prioritization in Ogun State, Nigeria. *South Afr. J. Agric. Exten.* 32:45-59.
- Aphunu A, Otoikhian CSO (2008). Farmers' perception of the effectiveness of extension agents of Delta State Agricultural Development Programme (DADP). *Afr. J. General Agric.* 4(3):165-169.
- Belay K, Abebaw D (2004). Challenges facing agricultural extension agents: A case study from south-western Ethiopia. *African Development Bank*, pp. 139-168.
- Belloncle G (1989). Proposal for a new approach to extension services in Africa. In N. Roberts (Ed.), *Agricultural extension in Africa*. (pp. 45-52) World Bank, Washington D.C.
- Berhanu A (2008). Matching extension service with farmers needs: Towards combining social and agro-ecological approaches in Ethiopian extension. *Eastern Africa Soc. Sci. Res. Rev.* 25(2):1-25.
- BoARD, Bureau of Agriculture and Rural Development (2007). *Guideline on participatory extension and delivery system*: Working paper.
- Bryman A, Cramer D (2005). *Quantitative data analysis with SPSS 12 and 13*. Routledge, Taylor and Francis Group, London and New York.
- Davis JA (1971). *Elementary Survey Analysis*. Prentice-Hall, Englewood Cliffs/NJ.
- FAO, World Bank (2000). *Agricultural knowledge and information systems for rural development: Strategic vision and guiding principles*. FAO and World Bank, Rome.
- GFDRE, Government of Federal Democratic Republic of Ethiopia (1994E.C/2002). *Rural Development Policies, Strategies, and Tactics*. Addis Ababa: Press and Audiovisual Department [Translated from the Amharic Version. The former date is in Ethiopian Calendar].
- ESSDN, Environmentally and Socially Sustainable Development Network (1995). Participation in agricultural extension. *Social Development Notes*, No. 11.
- Hegde NG (2005). Traditional extension methods in modern agriculture. *Indian Farming Special Issue on World Food Day*. October 2005:45-47.
- Lahai BAN, Goldey P, Jones GE (2000). The gender of the extension agent and farmers' access to and participation in agricultural extension in Nigeria. *J. Agric. Educ. Exten.* 6(4):223-233.
- Mendesil E, Abdeta C, Tesfaye A, Shumeta Z, Jifar H (2007). Farmers' perceptions and management practices of insect pests on stored sorghum in South Western Ethiopia. *Crop Protect.* 26:1817-1825
- MoARD, Ministry of Agriculture and Rural Development (1998E.C/2006). *Guideline on agricultural extension in Ethiopia*. Working Paper, MoARD [Translated from the Amharic Version].
- Saito KA, Weidemann CJ (1990). *Women Farmers in Africa*. 103 World Bank Discussion Paper. The International Bank for Reconstruction and Development, Washington DC.
- Sarker, MA, Itohara Y (2009). Farmers' perception about the extension services and extension workers: The case of organic agriculture extension programme by PROSHIKA. *Am. J. Agric. Biol. Sci.* 4(4):332-337.
- Shamebo D, Belehu T (1999). Peasants' participatory evaluation in release of early maturing sweet potato varieties in southern region of Ethiopia. *Journal of Extension Systems*, 15(1), June, 70-78. Retrieved on 23 June 2009 from <http://www.jesonline.org/1999jun.htm>
- Soddo-zuria Woreda (2001 E.C/2009). *Soddo-zuria Woreda population size*. Working Paper, Soddo-zuria Woreda, Wolaita Zone.
- UNESCO Institute for Education (2005). *Foundations of Adult Education in Africa*. UNESCO Institute for Education, Cape Town.
- Van Asten PJA, Barro SE, Wopereis MCS, Defoer T (2004). Using farmer knowledge to combat low productive spots in rice field of a Sahelian irrigation scheme. *Land Degrad. Develop.* 15:383-396.
- Weir S, Knight J (2000). Adoption and diffusion of agricultural innovations in Ethiopia: The role of education. *Centre for the Study of African Economies*, Oxford.