

# Demographic characteristics of farmers and the effectiveness of disseminating information on agriculture in Ghana

P.S. OSEI-KOFI\*, E.E. BADU, P.S. DADZIE & J. BANDANAA

(P.S.O-K, E.E.B & P.S.D.: Department of Information Studies, University of Ghana, Accra, Ghana; J.B.: CSIR-Plant Genetic Resources Research Institute, Bunso, Ghana)

\*Corresponding author's email: [oseikofips@gmail.com](mailto:oseikofips@gmail.com)

## ABSTRACT

The study investigates how improved knowledge and understanding of agricultural information could enhance the livelihoods of farmers' and their level of access to agricultural information. The purpose of the research is to explore demographic characteristics of farmers and the effectiveness of disseminating information on agriculture in Ghana. A hypothesis involving three null and alternative issues was discussed to enhance the effective dissemination of agricultural information, where Farmers' educational level influences the effectiveness of disseminating agricultural information (H1:  $\mu > 108$  or H1:  $p = 0.25$ ). The quantitative research approach was applied for the study and a total sample size of 108 farmers was used for the study. Quantitative data gathered were analyzed using Statistical Package for Social Sciences version 25.0. The Fishers' Exact Test was applied to ascertain the significance of relationship between variables. The findings of the study found positive and significant ( $p < 0.05$ ) relationship between formal education and agricultural information dissemination. The study concludes that the middle-aged of 46 years of age were involved in agriculture. The study recommends that the Government of Ghana through the Ministry of Food and Agriculture should continue building capacity of agricultural extension agents to effectively disseminate relevant agricultural information to farmers. The studies advocate that information professionals should work together to strategize on how agricultural information can widely be disseminated to farmers in Africa. Agricultural information policies and strategies on effectiveness of disseminating agricultural information to farmers are urgently needed to address the call for best farming practices among farmers in sub-Saharan Africa.

**Keywords:** Agricultural extension agents; demographic characteristics; disseminating agricultural information; effectiveness; farmers

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## Introduction

Users of agricultural information products in sub-Saharan Africa has gradually increased from 2000 to 2018, where crops and livestock have witnessed the highest increase of growth in agricultural production in sub-Saharan Africa than any continent in the World (Jayne & Sanchez, 2021). Danso-Abbeam *et al.* (2018)

in their view of disseminating agricultural information in improving the livelihood of farmers in rural communities revealed that age and gender do not influence the effective dissemination of agricultural information. The role of agricultural extension agents' information dissemination is affecting different demographic characteristics of farmers in

Ghana because of inadequate agricultural extension and the agents' inability to raise timely circulation of agricultural information to farmers in rural communities in Africa (Mubofu & Elia, 2017). For instance, AEAs are faced with lack of logistics and maintenance of motor vehicles which affects extension delivery to farmers in rural areas. As a result of this, general information on farming practices does not get to the farmers on time, and this has affected agricultural productivity, a gap that needs to be filled.

Farmers and other agricultural workers sole reliance on indigenous knowledge has led to low agricultural productivity in Ghana (Danso-Abbeam *et al.*, 2018). In recent times, rural communities experience deplorable and poor livelihoods among the people (Danso-Abbeam *et al.*, 2018). Again, the inadequate agricultural extension agents (AEAs) results in they not been able to raise timely circulation of relevant agricultural information to farmers in the rural communities in Ghana. Effectiveness of disseminating agricultural information performs an essential role because information dissemination is increasingly becoming a socio-cultural practice influencing farming activities in the continent (Mbagwu *et al.*, 2018). Effective and timely delivery of agricultural information assists farmer group members to apply best agricultural practices towards higher productivity for improved livelihood. The importance of dissemination with regards to this study is that agricultural extension agents would be properly informed in the effectiveness of preferred channels for disseminating information to farmers in rural communities in sub-Saharan Africa.

Age, gender, educational level, income, geographical location, and ethnicity, among others, are some characteristics that make up the demographics of a population (Amegayibor, 2021). According to Shakya

*et al.* (2020), demographics is explained as the socio-economic information of a given population. This implies that demographics is the study of a population based on given characteristics of farmers including age, gender among others. Farmer group members' decision making can be improved by access to repackaged agricultural information leading to higher adoption rate of new innovations, increased crop yield and sustained livelihoods among farmers (Nahar & Ali, 2021). FAO (2020) asset that access and application of relevant disseminated agricultural information raises the possibility that small scale farmers in sub-Saharan Africa will apply agricultural extension methods which can increase productivity, income, food security, well-being and empowerment of farmers in rural communities.

In the view of Antwi-Agyei & Stringer (2018), agricultural extension agents (AEAs) have a mandate of managing climate risks and to address climate change effects. Knowledge gap remains a serious issue in connection with capacity building needs of AEAs. It is important to understand the capacity building needs of the AEAs to assist farmers to effectively adapt to best agricultural practices for higher productivity for sustainable livelihoods in rural communities (Abdul-Razak & Kruse, 2017). It is upon this reason that this study finds out the impact of demographic characteristics of farmers on the use of agricultural information received through agricultural extension agents in Abuakwa South and Abuakwa North Municipalities in the Eastern Region of Ghana.

Dissemination of agricultural information dates as far back as in the 10,000 BC where human activities shifted from being hunter-gatherers to being subsistence farmers and herders (Crowther *et al.*, 2018). The next phase occurred during the British Agricultural

Revolution in the eighteenth century which was later characterized by the Green Revolution in the 1960's (John & Babu, 2021). The literature on effective dissemination of agricultural information has developed in a particular fashion to that of indigenous knowledge.

The previous literature were concerned with a study by US farmers indicating that advocacy groups, environmental groups, researchers, farmers, the government, the media, and industry organizations were most trusted sources of agricultural technology information (Jude, 2018); an essential input in agricultural education, research, development and extension services (Nicholas-Ere, 2017); how Agricultural development depends on the successful implementation of the disseminated agricultural research information to farmers (Lampety et al., 2016), and low farmer awareness of current agricultural technologies (Uguru et al., 2015). *It was far from being a mature literature, focused on empirical research and was more prescriptive than analytic. It was basically prescriptive advocacy for a particular model based on little analysis of disseminating agricultural information in improving the livelihoods among farmers in rural areas, a view shared by Zhang et al. (2016).*

The current stage focuses on the shift in the late 1980s and early 1990s where the question of technical know-how in teaching farmers how to apply best climate practices emerges (Sousa et al., 2016). Despite the increasing interest of effective disseminating agricultural information, very little research has been carried out in Ghana. Malekani & Mubofu (2020) have not been able to deal with the issues in details hence climate smart agricultural practices need to be enforced to call for effective dissemination of agricultural information to farmers in rural communities for improved livelihoods.

### *Literature review*

There are studies of how the role of agricultural extension agents' information dissemination is affecting different demographic characteristics of farmers in sub-Saharan Africa. Mittal & Mehar (2015) suggest that farmers' selection of agricultural information sources is characterized by several indicators such as personal, economic, institutional and psychological issues. These indicators are classified as internal characteristics that vary among farmers and therefore require an assessment of farmers' sources of information on agriculture. Age, gender, income level, and other personal characteristics are examples of factors that can influence farmers' selection of agricultural information sources.

Lindblom et al. (2017) argue that farmers' ability to acquire specific agricultural information decreases with age as they may have limited resources to invest in acquiring the latest agricultural innovations. However, Acheampong et al. (2017) found that age is not related to farmers' information-seeking behaviour. Gender is an important factor in agricultural development, according to Palacios-Lopez et al. (2017). Women make up a large portion of the agricultural labor force, but they may face challenges in accessing agricultural information. Farmers' educational level is another factor that influences their preferences for various agricultural information sources, as suggested by Chen & Lu (2019). Income level is also a determinant of farmers' utilization of different agricultural information, as found by Anang & Asante (2020).

Farming experience may be related to age. Danso-Abbeam et al. (2018) found that as experience increases, the ability to use agricultural information may decrease. However, Donkoh et al. (2019) found no significant relationship between farmers' skills and their agricultural information practices.

Farmers can also play a role in the disseminating agricultural information, as farmers' group members may be more familiar with the resources of their fellow farmers, as noted by Danso-Abbeam *et al.* (2018). A study by Yagah (2019) revealed that agricultural extension agents provide the major source of climate smart agricultural information to farmers' group members. In his opinion, he contended that the search for climate smart agricultural information dissemination has produced poor results in Ghana. In the same study, he asserted that there is gender differential in accessing climate smart agricultural information which is bias towards male farmers in rural communities. This calls for involvement of female farmers in deciding meeting schedules with agricultural extension agents to enable them gain access to climate smart agricultural information. The agricultural sector must be empowered in the effective dissemination of climate smart agriculture practices.

In the understanding of Setsoafia *et al.* (2022), the indicators preventing small holder farmers' intentions to apply sustainable agricultural practices (SAPs) were investigated. In similar research, Setsoafia *et al.* (2022) disclosed that application of sustainable agricultural practices was motivated by the social demographics of all the three sustainable agricultural practices involving individual household, plot-level, extension programs and locations, which leads to positive and other significant difference on farm income and enhance food security. Farmers' agricultural workers may be strengthened to implement sustainable agricultural practices to increase farmers' income and food security to a high extent.

In addition, Kughur *et al.* (2018) reveal that a major factor affecting disseminating agricultural information to farmers in rural communities was challenges of low level of

education where none of the socio-economic indicators was significant. Again, the study of Muhanguzi & Ngubiri (2022) reveal that there is poor application of climate smart agricultural practices due to low level of education in the rural communities in sub-Saharan Africa. In their studies, they examined constraints that farmers encounter trying to obtain value from agricultural information from few agricultural extension agents. This implies that low level of education among farmers do not motivate farmers to apply advanced agricultural information products on the farms for higher productivity.

Policy makers perform an essential role in promoting agricultural information innovations via the dissemination of agricultural information products. In Ghana, the Council for Scientific and Industrial Research (CSIR), has developed and implemented a digital agricultural innovation hub to collect, preserve, and distribute agricultural information products. The Planting for Food and Jobs flagship policy has been implemented in improving the dissemination of agricultural information products in Ghana (Ansah *et al.*, 2020). However, Pauw (2022) notes that the Ghanaian government's monitoring and evaluation system may not be well-positioned to examine the impacts of the program.

In summary, socio-demographic characteristics can influence farmers' choice of agricultural information sources. The role of agricultural extension officers' information dissemination should consider these factors to ensure that information reaches its intended audience. Policy makers play an important role in promoting agricultural technology via the dissemination of agricultural information products, but effective monitoring and evaluation systems are needed to measure the impacts of such programs. From the literature reviews, the study can provide a useful function

linking policy and decision makers from other less developed countries to emulate plans to enhance agricultural development. Adults' classes can be organized for farmers to enhance their educational levels in sub-Saharan Africa. In the view of Azumah *et al.* (2018), the agricultural extension agents (AEAs) use channels such as radio, technology demonstration fields, and farmer-to-farmer approach for disseminating best agricultural information practices to farmers in rural communities in Ghana. In their view, dissemination channels provide opportunity to bridge the gap between innovation and dissemination through influencing spread of information among farmers and other stakeholders. However, little is known about the individual farmer group members to obtain their agricultural information. Methods to ascertain the effectiveness of dissemination were documented through the framework of information dissemination, including influential users circulating agricultural information among farmers in rural communities (Mubofu & Elia, 2017).

Important information can be circulated by sending a message rapidly through the agricultural extension agents (AEAs) preferred channels for disseminating agricultural information to farmer group members. In the understanding of Damba *et al.* (2020), examining the effectiveness of disseminating agricultural information is essential for improving the livelihoods of people in rural communities. Few preferred AEAs channels are accessible for dissemination of credible agricultural information, this therefore help to develop and implement methods of measuring the continued emphasis of agricultural information as they spread among farmer group members in the communities.

### Materials and Methods

Abuakwa South and Abuakwa North Municipalities of the Eastern Region of Ghana are selected for the study on demographic characteristics of farmers and the effectiveness of disseminating information on agriculture in Ghana. The Abuakwa South Municipality shares boundaries with six districts, namely: Atiwa West District to the North-West, Fanteakwa South District to the North, Kwaebibrem Municipality to the West, Abuakwa North Municipality to the East, Denkyemba District to the South-West, and Suhum Municipality to the South. The capital of the Abuakwa South Municipality is Kibi which is 55 km from Koforidua, 105 km from Greater Accra and 197 km from Kumasi the capital of Ashanti Region of Ghana. The de facto population in Ghana Census Night from the population and housing census 2021 stands at 30,792,608 with 50.7% male and 49.3% female, at a growth rate of 2.1 (GSS, 2021), of which Abuakwa South and Abuakwa North are part. The 2020 population for the Abuakwa South Municipality stands at 104,189 with 48.7% male and 51.3% female, at a growth rate of 2.1 (GSS, 2021).

The Abuakwa North Municipality which is another selected study area and is surrounded by Fanteakwa North District, New Juaben North Municipality to the South-East, and Yilo Krobo Municipality to the East. The center of the Municipality (Kukurantumi) is closer to Koforidua, the Eastern Regional capital. The 2020 projected population for the Municipality stands at 198,755 at a growth rate of 1.9% (GSS, 2021). Majority of the work force are engaged in farming activities.

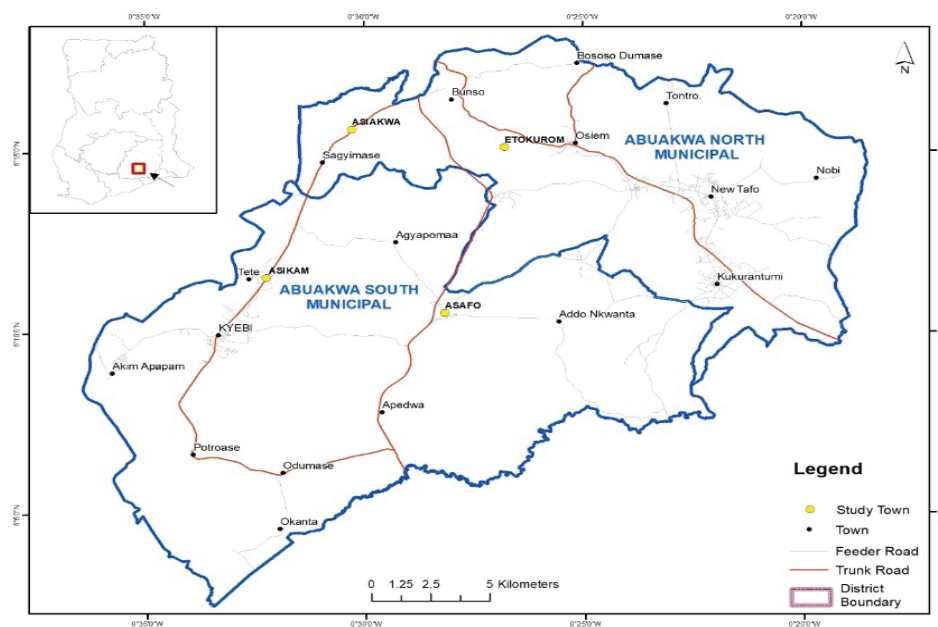


Fig. 1: Map of Abuakwa South and Abuakwa North Municipalities within study communities

The study uses a quantitative research method for analysis. This agrees with Kivunja & Kuyini (2017) advocacy for positivist paradigm for positivist view of the study. The positivist paradigm is about applying survey research method being adopted appropriately at any stage in the research. Eastern Region of Ghana has thirty-six municipalities in which two municipalities were considered ideal for the study since each municipality was found to back initial preposition of the research. The cases are Abuakwa South and Abuakwa North Municipalities in the Eastern Region of Ghana because majority of work force are engaged in agricultural activities and had higher rate of poverty.

The selection of subjects for the research was undertaken with a population of 200 farmers' group members in both municipalities. Using 200 farmers' group members and 5% margin of error, a minimum

sample size of 108 response rate was obtained according to Taherdoost (2017) Table for determining minimum return sample size, with sample percentage of 66% to ascertain the number chosen from each stratum in relationship to population of numbers. Stratified sampling method was used to select the study sample. The Stratified sampling technique was applied to choose the farmers in Abuakwa South and Abuakwa North Municipalities for the study. The population was categorized based on strata made because of some demographic characteristics such as locations of population data (Trochim, 2020). The sample population of the study was 108 and was sub-grouped as follows: Akim Asafo (30), Asiakwa (33), Asikam (24), Etikurom (9), Kukurantumi (6), and Tontro (16). Using sampling percentage of 66%, a random sampling was undertaking to choose the number from each stratum in relation to the



population of numbers. Data were collected from June to August 2022.

The components of information used for the study were effective because they were from the right sources and were reliable, as well as cited in a high impact journals by authors such as Damba *et al.* (2020), Azumah *et al.* (2018), and Jude (2018). Findings of this article would be published to add to recent body of knowledge and literature on the subject. The variables for the study were demography of farmers, and dissemination of agricultural information. Fisher's Exact Test was used to ascertain the significant relationship between the two variables. Primary data gathered using questionnaires were inspected for correctness, coded, and then digitized. Data gathered from the quantitative data were analysed using Statistical Package for Social Sciences (SPSS) version 25.0 (Rahman & Muktadi, 2021). A cross-tabulation analysis of the variables was conducted to ascertain whether there exists a relationship between the demographic characteristics of the study sample and the participants' responses from the application of agricultural information. Fisher's Exact Test was run to determine the significance of the relationship between farmers' age, gender, education level, and the effectiveness of disseminating agricultural information among farmers in the Abuakwa South and Abuakwa North Municipalities in the Eastern Region of Ghana.

#### *Limitations of the study*

The scholarly article on "reaching more farmers-innovative approaches to scaling up climate smart agricultural practices acknowledge the lack of data for empirical

downscaling of research output to the local level". The study covers only active farmers' group members, and this may not be spread to the entire farming population of the study municipalities since several groups of farmers have different needs and problems. Additionally, the research was centered on data collected from 124 participants. This implies that, the findings of the study may not apply to the whole population of Ghana. Conversely, similarities among farmers in Ghana and Africa was recognized.

### **Results and Discussion**

The results section of the study analyzes data on descriptive statistics on socio-demographic characterization of farmers' use of agricultural information, and analysis to relate demographic characteristics of farmers and effectiveness of agricultural information dissemination. Again, effectiveness of disseminating agricultural information among farmers' demographics are analyzed in this section.

#### *Descriptive statistics on socio-demographic characteristics of farmers in Ghana*

Demographics is explained as the socio-economic information of a given population-based on given characteristics involving gender, age, and marriage, among others (Amegayibor, 2021). Data was collected on the demographic characteristics of farmers' use of agricultural information which determined the role played in disseminating agricultural information in Ghana. Table 1 shows the socio-demographic characterization of farmers from both municipalities. The demographic data for this study includes age, educational level, gender and among others (Table 1.)

TABLE 1

*Socio-demographic characterization of farmers' use of agricultural information*

<b>Variables</b>	<b>Abuakwa North</b>		<b>Abuakwa South</b>		<b>Total</b>	
<b>Age category</b>	<b>Freq.</b>	<b>%</b>	<b>Freq.</b>	<b>%</b>	<b>Freq.</b>	<b>%</b>
30 and below	4	3.70%	1	0.93%	5	4.63%
31–40	4	3.70%	13	12.04%	17	15.74%
41–50	20	18.52%	38	35.19%	58	53.70%
51 and more	0	0.00%	28	25.93%	28	25.93%
<b>Total</b>	<b>28</b>	<b>25.93%</b>	<b>80</b>	<b>74.07%</b>	<b>108</b>	<b>100.00%</b>
<b>Gender</b>						
Female	11	10.19%	17	15.74	28	25.93%
Male	28	25.93%	52	48.15	80	74.07%
<b>Totals</b>	<b>39</b>	<b>36.11%</b>	<b>69</b>	<b>63.89</b>	<b>108</b>	<b>100%</b>
<b>Educational Level</b>						
WASSCE	2	2%	12	11%	14	13%
None	2	2%	42	38%	44	40%
J.S.S.	2	2%	0	0	2	2%
G.C.E. 'O' Level	8	7%	16	15%	24	22%
Diploma	3	3%	2	2%	5	5%
Degree	2	2%	3	3%	5	5%
MSLC	9	8%	5	5%	14	13%
<b>Totals</b>	<b>28</b>	<b>26%</b>	<b>80</b>	<b>74%</b>	<b>108</b>	<b>100%</b>

Findings from Table 1 show that 79% of the respondents were above forty years while the majority were between the ages of 41–50 years. This is an active group that has the responsibility of generating income that can improve their livelihoods. The aged 51 years and above were about 26%. The active farmers group have enough capacity to engage themselves in commercial ventures and this is why they are more than other groups. Table 1 shows the gender of the respondents. Survey data was obtained from 108 male and female respondents between both municipalities showing the comparisons of 74.07% and 25.93% farmers from Abuakwa South and Abuakwa North Municipalities respectively.

There were slightly more male respondents (48.2%) than their female counterparts (25.93%). A great margin exists between the sexes. Respondents were chosen from each of the rural communities of farmers such as small scale, medium scale and large scale. From Table 1 there were additional male respondents (69) than their female counterparts (39). A typical example is that access to farmland is limited to female farmers when it becomes commercialized. Results from Table 1 indicate that 10% of farmers had obtained basic education, whereas 37% had secondary education which accounted for 3.7% of tertiary education. Nearly half (40%) the famers' group members had no formal education, and many of them reside in Abuakwa South Municipalities.



*Analysis to relate demographic characteristics of farmers and effectiveness of agricultural information dissemination*

Figure 2 indicates the effective use of agricultural information between two municipalities. Farmers need three different agricultural practices for the effective use of agricultural information on their farms.

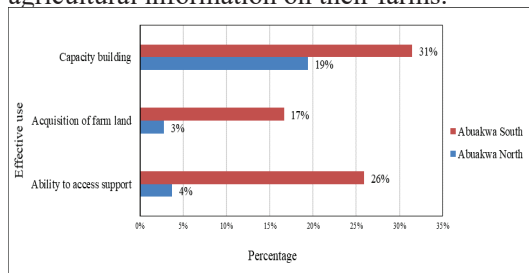


Fig. 2: Responses on effectiveness of disseminating agricultural information by municipalities; Source: Field survey, 2022

The respondents were asked about three agricultural practices which helped the effective use of agricultural information in solving agricultural problems. It was found that information on capacity building (50%), and ability to access financial supports (30%) were the ones that were mostly used in solving agricultural problems in the Abuakwa North and Abuakwa South Municipalities. Findings from Figure 2 disclosed that farmers in Abuakwa South Municipality applied advanced knowledge acquired through capacity building (31%) in solving problems in agricultural production as the highest effective use of agricultural information, and as two times contributions from the acquisition of agricultural lands.

*Test of hypothesis on the effectiveness of disseminating agricultural information*

A hypothesis involving three null and alternative issues was discussed in relation to the farmers’ gender, age, and educational level to enhance the effective dissemination of agricultural information (Table 2).

*Null hypothesis*

The effectiveness of disseminating agricultural information is not influenced by the farmer’s age, gender, and educational background.

*Alternative hypothesis*

The effectiveness of disseminating agricultural information is influenced by the farmer’s age, gender, and educational background.

TABLE 2  
*Effectiveness of disseminating agricultural information between farmers’ age, gender, and educational level*

Variable	Effectiveness of disseminating agricultural information		
	No	Yes	
<b>Gender</b>			
Male	13 (12.03%)	56 (51.85%)	0.682
Female	8 (7.41%)	31 (28.70%)	
<b>Age</b>			
<b>30 and below</b>	1 (0.92%)	4 (3.70%)	0.673
31–40	4 (3.70%)	13 (12.04%)	
41–50	9 (8.33%)	49 (45.37%)	
51 and above	7 (6.48%)	21 (19.44%)	
<b>Educational level</b>			
Degree	2 (1.85%)	3 (2.77%)	0.051*
Diploma	0 (0.00%)	5 (4.63%)	
O’ Level/MSLC	4 (3.70%)	30 (27.77%)	
JSS	0 (0.00%)	2 (1.85%)	
WASSCE	5 (4.63%)	10 (9.25%)	
None	10 (9.25%)	37 (34.26%)	

<sup>1</sup> Fisher’s Exact Test

Table 2 shows the effectiveness of disseminating agricultural information between farmers' gender, age, and educational level. Male farmers recorded 52% for effective use of disseminated agricultural information while female farmers accounted for less effectiveness of disseminating agricultural information. Table 2 indicates analysis of farmers' age in which majority of farmers who make effective use of disseminated agricultural information fall into the 41–50 years age bracket. The mean age computed was 46 years which constitute the active group of farmers in the agriculture sector in Ghana. Table 2 indicates analysis of educational background of farmers where 40% of farmers had no formal education and are unable to make effective use of disseminated agricultural information.

There is a positive and significant difference ( $p < 0.051$ ) between farmers' educational level and the effectiveness of disseminating agricultural information. Therefore, Farmers' educational level or background influences the effectiveness of disseminating agricultural information, thus null hypothesis 3 is rejected. In conclusion, age and gender do not influence the effective dissemination of agricultural information, however, the level of education of the farmer does.

#### *Discussion of key findings and their implications*

The study was guided by Competency Theory developed by Mulder (2014), where a review of related scientific publications on the demographic characteristics of farmers and the effectiveness of disseminating information on agriculture in Ghana was carried out. The discussion sought to emphasize whether the findings confirm or disagree with previous related studies on the topic in question. The study emphasized the impact of demographic characteristics of farmers on

the use of agricultural information received through agricultural extension agents. Other authors such as Hale (2021), developed and implemented core competency models for agricultural sector in sub-Saharan Africa. The theory was a hinge upon which people were encouraged to obtain appropriate qualifications for applying best climate smart agricultural practices towards improved livelihoods in rural communities. The findings of the study indicated that 40% of the farmers had no formal education as this revealed a positive and significant ( $p < 0.051$ ) relationship between formal education and agricultural information dissemination i.e., farmers' educational background influenced effective dissemination of agricultural information in enhancing the livelihoods among farmers in Ghana. The results of the study showed that farmers' educational level influenced the effectiveness of disseminating agricultural information ( $p < 0.051$ ).

Regarding educational background, the findings showed that low education among some farmers has been found to affect farmers' ability to apply best agricultural practices in their farms. Agricultural extension agents established a better relationship with farmers' group members which enable them to apply best farmers' climate smart agricultural practices for higher productivity. The finding is consistent with Levi (2015), in which some of these farmers were not motivated to implement new technologies in their farms since some farmers have a perception that fertilizer use affects their soils. It was further realized during the survey that, the farmers with low level of education were also not well-versed in accessing and applying disseminated advanced agricultural information products. Another factor that supported the findings of the study was observed by Sumberg *et al.* (2017), and Levi (2015), where results on the educational

background of respondents conformed to the research outcomes. This analysis of data particularly of the demographic characteristics of farmers in Ghana, showed that there was a positive and significant ( $p < 0.051$ ) relationship between formal education and agricultural information dissemination. The impact of these situations limits farmers' ability to access timely and relevant agricultural information for farming activities in rural communities.

The findings have implications for the framework of information dissemination which provides the background of people records, educational background, and professional records (Gambetta-Tesini *et al.*, 2014). The framework further explains that agricultural extension agents were likely to continue to use relevant agricultural information repository for agricultural production. Findings from the survey indicated that 70% of farmers' group members were above 40 years with majority fallen between 41–50 years bracket. The mid-age computed was 46 years old which was the active group of farmers in the agricultural sector in sub-Saharan Africa. The active group in agriculture were involved in farming as major livelihood activities. Agricultural extension agents strategized to encourage active group farmers and old age farmers to apply best farmers' climate smart agricultural practices in their farms for higher productivity. The result agreed with David (2017) who stated that the age group between 41–50 years was the most prevalent among farmers due in part to the responsibilities they had to feed their families. This implied that the active group was involved in agriculture as a major livelihood activity. Generally, most participants (53.7%) were 46 years of age or older. In actual sense, most respondents in the Abuakwa South and Abuakwa North Municipalities were in the 41–50 years old category, recorded at 18.52% and 35.19% respectively.

Additionally, the number of agricultural information users was highly different among each group. Gradually, the age of farming respondents in this study should be gathered to assess if there was any relationship with the use of agricultural information dissemination channels. However, older people engaged a reduction in agricultural productivity, and this had led to a reduction in output which could have been increased by 5.7% (Tauer, 2019). This was because productivity increases with age, peaks at mid-life and then reduces with age. It was given this that older farmers were less likely to apply agricultural information products to innovations. The active farmers' group on the other hand were less risk averse, motivated to experiment, and more likely to be influenced by social expectations (Brown *et al.*, 2018). Kidido & Lengoiboni (2019) contended that household lands were the important building blocks for the active farmers' group and as such, they should have access to agricultural lands to expand and increase yields towards improving the livelihoods of farmers in sub-Saharan Africa.

Besides, it is usually said that “the youth are the future leaders and one of the keys for obtaining sustainable development in less developed countries was where a large number of youths reside in the rural communities” (FAO, 2021). This must be taken seriously since the employment and engagement of young people in the agricultural sector was essential for the prospects of the country. Many youths lived in the world of crises involving reliance on indigenous knowledge, climate and environmental change, and global inequalities in food security, job opportunities, and human well-being among others. Unfortunately, these situations have been worsened by COVID-19 diseases. This has moved many youths to the urban centers and overseers for greener pastures. The need to make the agri-food sector

more attractive by promoting young people to generate income and enhance food security and well-being in rural communities was crucial. Regarding gender, the findings revealed that there were more male respondents (69) than their female counterparts (39). This implied the strong participation of males than females in farming since most of the lands were used for cocoa production and required masculine hands. Their involvement in agricultural activities was high since they depended on farming for their livelihoods. The analysis and findings on the gender of the municipalities further revealed that a greater margin exists between sexes and was more connected to farming with much responsibility to feed the households. Agricultural extension agents highlighted issues of gender differences in information access, in the areas of COVID-19, HIV, food and nutrition, among others.

Danso-Abbeam et al. (2018) in their view of disseminating agricultural information in improving the livelihood of farmers in rural communities revealed that age and gender does not influence the effective dissemination of agricultural information, however, the level of education of the farmer does. This was contrary to the views of Gebre et al. (2019), where mean age computed in Kenya was 49 years, where demographic characteristics of the farmer was disaggregated by gender. In a similar study, Murage et al. (2015) disclosed that the intensity of improved innovations controlled by gender and joint decision making were important for higher productivity. In their studies, they asserted that policies and programs that push for developing and effective dissemination of improved crop varieties in Southern Ethiopia should support women and young farmers.

The findings from the study corroborated the study of Medagbe et al. (2020), who revealed how males dominated agricultural production because of their

commitment to the communities they lived in. This view was also supported by Mensah & Fosu-Mensah (2020), who contended that male farmers outnumbered female farmers in agricultural production. In their studies, they revealed that obtaining gender balance was a moral issue. Though a great sense of gender equity in the operational areas has been found over the years to be undertaken, other authors such as Krook & Norris (2014) addressing equity as important to good governance.

However, the findings contradict findings of Naveed & Hassan (2021). Their study revealed that rural women provided 50% of agricultural labour force. Despite the large numbers of men in agricultural production in sub-Saharan Africa, women perform essential roles and contribute to 70% of agricultural production in sub-Saharan African. Studies by FAO (2019) and World Economic Forum (2015) also revealed that there were more women involved in farming than men in Southwest Kisumu Ward of Kenya. These findings have implications for the framework of information dissemination which provided the background of people's age and gender (Gambetta-Tessini et al., 2014; Derso et al., 2014). The framework further explains that agricultural extension agents were likely to continue to support women, young and old age farmers on best farming practices to increase crop and animal production in enhancing food security of farmers. The main limitation of the study was on how the study focused on farmer-based organizations and how the research outcomes could not be spread over the entire farmers in the municipalities and represent the overall population of Ghana.

#### *Summary of findings*

The summary of findings of the study covered the impact of demographic characteristics of farmers on the use of agricultural information

received through agricultural extension agents.

- Middle-aged were involved in agriculture as a major livelihood activity, and mid-age computed were 46 years of age.
- Strong participation of males than females in farming activities in the Abuakwa South and Abuakwa North Municipalities in the Eastern Region of Ghana.
- Farmers' educational level influenced the effectiveness of disseminating agricultural information.

### Conclusion and Recommendations

The study points out strong participation of males than females in farming activities in the Abuakwa South and Abuakwa North Municipalities in the Eastern Region of Ghana. The study concludes that effectiveness of disseminating agricultural information has increasingly become a socio-cultural practice influencing farming activities in Ghana. It is established that, farmers group members' decision making has improved access to repackaged agricultural information leading to higher adoption rate of new innovations, increasing yield and sustain livelihoods among farmers in rural communities in Ghana. In reference to the findings and conclusion of this study, the research made the following recommendations:

- Due to inadequate agricultural extension agent (AEAs), Government of Ghana through the Ministry of Food and Agriculture (MofA), should continue to build capacity of agricultural extension agents to effectively disseminate relevant agricultural information to farmers.
- In view of male dominant in agriculture production in the municipalities, the Government and other agricultural agencies should empower women and youth farmers with agricultural

information products in rural communities in Ghana.

- Studies should therefore focus on gender inequality in agricultural information accessed by investigating into the frequency of use and preference of agricultural information by gender in rural communities in sub-Saharan Africa.
- Agricultural information policies and strategies on effectiveness of disseminating agricultural information to farmers are urgently needed to address the call for best climate smart agricultural practices among farmers in rural communities in Ghana.

For future research, further studies into how the age and gender of farmers can promote the needs of smallholder farmers, and how information exchange between agricultural agencies and farmers in rural communities in Ghana can be improved, is recommended.

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