INTRODUCTION

The problem of limited application of technologies, inadequate infrastructure (e.g., roads and irrigation), and basic support services are major threats to productivity improvement, food security and poverty reduction in Sub-Saharan Africa (SSA) (Mageni, 2016). Inadequacy of basic support services such as agricultural extension and credit undermines the full and sustainable utilization of limited resources by smallholders, consequently, reducing farm productivity in SSA (Moharry, 2013). Agricultural productivity improvement is the basis for economic transformation in agricultural-based post-conflict economics such as Liberia (Zhou & Bally, 2015). Investment in R&D to generate new agricultural technologies and their dissemination to farmers increases productivity (Fausten et al., 2015). Further, extension services play a critical role in the transfer of knowledge to influence farmers’ attitudes towards making appropriate farm-level decisions to adopt new technologies (Swanson & Rijalath, 2010).

In Liberia, agriculture is the primary source of livelihood for about 80% of the population contributing about 36% to GDP (Tyson, 2017). Rice, as the leading staple food, accounts for about 50% of adult calorie intake (Adeola, 2010) with a per capita annual consumption of 108 kg, one of the highest in SSA compared to 55 kg in Nigeria and 43 kg in Ghana (FAO, 2020). Despite the important role of the crop, its annual yield hovers between 1.2 and 1.6 metric tons per hectare (Mt/ha) against that of 2.6 Mt/ha in India and 4.7 Mt/ha in Senegal (FAO, 2019). As a result, Liberia imports more than one-third of its annual rice demand which drains the scarce foreign exchange resources.

Following the cessation of the 14-year civil war conflict in 2003, several committees were established by the Government of Liberia and partners to transform the agricultural sector to spur an agricultural-led economic growth. Despite the interventions, less than 10% of rice farmers are reached by extension service providers or linked to platforms to access new technologies while those using fertilizers and improved seeds are below five percent (CII, 2016, 2018).

Previous studies have focused on extension delivery methods and human resource capacity of extension staff in Liberia (Lah et al., 2018 & Miners, 2016). There is a huge dearth of empirical evidence about the drivers of rice farmers’ access to extension services and use intensity particularly in Gibi District of Liberia, the largest rice-producing area in Margibi County, Liberia. Yet, studies indicate that understanding the drivers of farmers’ access to extension services and use intensity improves the quality of extension services and technology transfer for rural poor farmers that leads to favorable attitude towards acceptance of new technologies, increase levels of farm output and welfare (Ragasa et al., 2013; Tadesse, 2017; Wissen et al., 2015).

OBJECTIVE

• Compare the socio-economic characteristics of smallholder rice farmers by access to extension services and

• Assess the determinants of smallholder rice farmers’ access to extension services and the intensity of use in Gibi District, Liberia.

MATERIALS AND METHODS

Study Area and Sampling Method

The study was conducted in Gibi District in Margibi County, Liberia. The district is the highest rice producing zone in the country. A multistage sampling technique was used to sample 296 rice farmers in the district (144 accessors and 152 non-accessors).

Theoretical framework

• Farm household decision to seek extension services is a behavioral response to the need to increase agricultural productivity based on its production objectives. Assuming the household is faced with an inescapable decision between consumption and production, the underlying motivation for seeking extension services can be explained by the agricultural household model (AHM) of Singh et al. (1988). The model posits that farm output is consumed by producing households, with the surplus being marketed.

• Descriptive statistics was used to compare the socio-economic characteristics of rice farmers.

• The Heckoprox sample selection model was used to simultaneously account the determinants of access and intensity of use of extension services both decisions were considered a two-step decision-making process. First, the farmer decides to access the services or not and in the second stage, he decides how much of the services to use contingent on the choice decision in the first stage.

RESULTS

Household socio-demographic characteristics

Table 1 presents a comparison of the socio-economic characteristics of households.

• On average, farmers were 44 years old and spent 15 years in farming and earn monthly farm income was US$43.1. Extension accessors earned a significantly higher income than non-accessors. The high farm income earned by accessor is likely due to improvement in crops as a result of the services they accessed.

• On average, distance to the nearest extension source was four kilometers and majority of the rice farmers practiced crop diversification.

• More than two-thirds of the farmers were aware of the existence of NGO extension programs in Gibi District. Significant higher proportion of the accessors were aware of the non-accessors.

• Further analysis of the results shows that more than half of the farmers owned a mobile phone with significant difference in non-accessors category. On average, only 35.9% of the rice farmer used improved seeds and more than half owned cash crops.

• Both monthly farm income and commercialization of crops had a positive and significant influence on access to extension services at 1% and 5% levels respectively, implying that an unit increase in farm income and sale of crops increase the probability to access by 0.8 and 1.4% respectively.

• Awareness of extension services had a significant positive influence on access to extension services at 1% level. This means that being aware of extension services increased the probability of a farmer to access extension services by 20%. For the intensity of use, awareness had a negative effect at 1% level, indicating that if farmers are aware of extension services, the probability of use decreases by 58%.

CONCLUSION

• Access to extension services increased farmers’ income and higher income increases the need for extension services.

• Crop commercialization was found to be a key driver of access to extension services but remains low among the farmers because their production is basically for subsistence purposes.

• While farm households are mostly headed by males, females headed households have higher intensity of use of extension services.

• Furthermore, use of improved seeds has positive effect on the use of extension services. However, most farmers in Gibi District do not have access to improved varieties because they are not available or the farmers are not aware of their existence.

It is recommended that the government:

• Promotes demand-pull approach through contract farming between farmers and agribusiness entrepreneurs to provide seeds and inputs.

• Implement policies that will promote high farm yield and increase farmers’ income through greater levels of crop commercialization among rice farmers.

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Factors Influencing Smallholder Farmers’ Access to Extension Services and their Intensity of Use in Gibi District: The Case of Post-Conflict Liberia

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The majority of rice farmers were male and the degree of rice commercialization among rice farmers was low. In fact, only 15% of the farmers reported having sold a portion of their yield. The difference was significantly higher in the accessors group.

Table 1: Summary statistics of socio-economic characteristics of smallholder rice farmers in Gibi District, Liberia

Table 2: Summary statistics of socio-economic characteristics of smallholder rice farmers in Gibi District, Liberia

SUCCESSFUL COMMERCIALIZATIONLed by growing demand in global rice markets, smallholder farmers in Liberia are currently increasing their rice production to meet a significant portion of the local demand. As a result, they can earn significant income from their rice production, which can improve their livelihoods. This is supported by the results of this study, which showed that the majority of rice farmers are male and have higher income due to rice commercialization. The study also indicated that rice farmers who are aware of extension services are more likely to access them, and those who have higher monthly farm income are more likely to use extension services. These findings highlight the importance of extension services in increasing rice production and improving farmers’ livelihoods.

However, the study also revealed that rice farmers face several challenges to accessing and utilizing extension services, such as limited access to information and technologies, and low availability of extension staff. To address these challenges, there is a need for improved extension service delivery mechanisms, such as the use of mobile phones and social media, to reach more farmers. Moreover, extension services should be tailored to meet the specific needs and circumstances of smallholder rice farmers, who may have limited access to resources and face constraints in adopting new technologies.

The study also emphasized the importance of education and awareness raising among rice farmers to increase their adoption of new technologies and practices. This can be achieved through effective extension service delivery mechanisms, which should be designed to meet the needs and preferences of rice farmers. Extension services should also be supported by policies and institutional frameworks that facilitate their delivery and utilization.

In conclusion, this study provides valuable insights into the factors influencing access and utilization of extension services by smallholder rice farmers in Liberia. It highlights the importance of extension services in increasing rice production and improving farmers’ livelihoods, while also identifying the challenges that farmers face in accessing and utilizing these services. These findings can be used to develop targeted interventions to improve extension service delivery mechanisms and support rice farmers in achieving their production and income goals.

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