Journal of Agricultural Extension
Vol. 28 (4) October 2024
ISSN(e): 24086851; ISSN(Print): 1119944X
Website: https://www.journal.aesonnigeria.org; https://www.ajol.info/index.php/jae
Email: editorinchief@aesonnigeria.org; agricultural.extension.nigeria@gmail.com

Factors Influencing Youth Participation in Pineapple Production in the Eastern Region, Ghana

https://dx.doi.org/10.4314/jae.v28i4.10

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Submitted: 10th June, 2024
First Request for Revision: 11th July, 2024
Revisions: 23rd July, 2024, 2nd August, 2024, 6th August, 2024, 12th August, 2024 & 22rd September, 2024
Accepted: 29th Sept, 2024
Published: . 20 October 2024
Cite as: Buabeng, R. A., Adom, E. and Mensah-Bonsu, A. (2024). Factors influencing youth participation in pineapple production in the Eastern Region, Ghana. Journal of Agricultural Extension Vol 28(4):91-109
Keywords: youth participation, pineapple production, youth employment.
Conflict of interest: The authors hereby declare that there is no conflict of interest
Acknowledgements: The authors wish to thank the respondents and enumerators involved in the data collection. The paper benefitted from the comments of participants of the Department seminar series. We are grateful to the anonymous reviewers for their helpful comments and suggestions.
Funding: This research received no specific grant from public, commercial, or not-for-profit funding agencies.
Authors' contributions:
BRA: Conceptualization, methodology, data curation, formal analysis, writing - original (35%)
AE: methodology, data curation, formal analysis, writing – original, writing – review and editing (30%)
MBA: Conceptualization, methodology, supervision, validation, writing – review and editing (35%)

Abstract
The study examined the perceptions of youth and the factors influencing their participation in farm production, using the case of pineapple production in the Eastern region of Ghana. One hundred and eight youths were selected using a multistage sampling procedure. Percentage and a logit regression model were used for the analysis. Generally, participants (81%) perceived that pineapple production is labour-intensive and therefore they need support and incentives to motivate youth participation. Age (0.034), sex - being a male (0.206) and access to farm inputs – fertiliser (0.176) had positive and significant (1% level) influences on youth participation in pineapple production. The presence of an alternative source of employment (-0.154) and tertiary education level relative to no education (-0.249) discouraged participation in pineapple (primary) production by the youth. Investing in mechanised services and promoting farm inputs (fertiliser) accessibility are important to encourage the youth to participate in farm production.

Introduction
Ghana's economy is based on three key sectors: agriculture, service and industry. Agriculture is a dominant sector of the Ghanaian economy providing employment, income and food for people, and raw materials for several industries. For example,

agriculture is the second largest employer (contributes about 38.3% to total employment), after the Services Sector (43.5%), according to MoFA (2022). It contributes significantly to foreign exchange earnings, food security, social development, and a reduction of youth unemployment (Nyamekye et al., 2021; Maïga et al., 2020). It serves as a source of livelihood for the rural population, including poor households in Ghana (Bolang et al., 2023).

One of Ghana's most pressing issues is the need for more productive employment opportunities for its workforce, particularly considering its future growth prospects as unemployment is a significant problem across Africa, with Ghana's rate being 13.9% in the second quarter of 2022 (GSS, 2022). The National Youth Authority recognizes the potential of the agricultural sector to foster innovation, creativity, and entrepreneurship among the youth (Ministry of Youth and Sports - MoYS & National Youth Authority - NYA, 2022). In addressing the level of unemployment among the youth, it has been recommended that individuals consider agriculture as a potential source of income and wealth, given the presence of thriving markets for both primary and secondary agricultural commodities in Ghana (Twumasi et al., 2019).

Pineapple is an important horticultural export (and cash) crop, it is Ghana's major fruit sector and tends to create employment opportunities (Akrong et al., 2022; Krumbiegel et al., 2020) and the major commercial production areas are located in the Southern sectors of the country where closeness to the ports enhances export trade (GIPC, 2023). Therefore, promoting labour-intensive crop production such as pineapples in Ghana can create the opportunity for involving the youth in agriculture. Unfortunately, despite the government's efforts to attract them, many youths remained hesitant to enter this sector (Awoyemi et al., 2023; Twumasi et al., 2019). It has been noted that when young people contemplate working in agriculture, they do not want to follow, necessarily, the parent's footsteps and are less interested in primary production, as they prefer roles in processing, input, sales, and services (USAID, 2020). Young men are interested in the agricultural value chains that generate more income, such as onions, yams, and fisheries (USAID, 2020).

Studies in Africa, including Ghana have found the average age of farmers to be greater than 35 years indicating poor participation of youth in agriculture and agribusiness activities (Eduafo et al., 2024; Awoyemi et al., 2023). Studies in Nigeria found farmers to have average ages of 45 to above 50 years indicating low youth participation in agriculture in the country (Ayinde et al., 2024; Obisesan, 2021). Findings such as these have motivated a wave of research among authors, elsewhere, to provide an understanding of the factors that influence youth participation in agriculture and agribusiness activities (Onu et al., 2024; Akaninyene et al., 2022; Obisesan, 2021; Solangaarachchi, 2021; Dolma, 2020; Ng'atigwa et al., 2020; Magagula & Tsvakirai, 2019).

There is, however, a dearth of scientific literature on the perception and participation of the youth in agricultural production in Ghana, particularly in pineapple production. For example, a search in the Scopus database using the keywords "pineapple" and "Ghana" returned 81 documents; using the keywords "pineapple", "employment" and "Ghana" returned 6 documents; while no document was found matching the keywords "pineapple", "youth" and "Ghana", let alone to add the keyword

“perception”. Indeed, Ankrah (2022) recounts of recent studies on pineapple production in Ghana captured none relating to youth in pineapple production, neither was it a focus nor an issue addressed by his work. It is important to understand the perception of the youth in pineapple primary production and the factors that influence their participation in such income-generating cash crop production in southern Ghana to facilitate the formulation of the right policy actions and incentives to increase youth participation in primary production. Using the case of pineapple production, the study seeks to provide an understanding of the perceptions of the youth towards primary farm production and the factors influencing their participation towards primary farm production in Ghana.

The specific objectives were to: i) examine the perceptions of the youth in Akuapim South District, Eastern region, towards pineapple production; and ii) investigate the factors that influence the youth’s participation in pineapple production.

Methodology

Primary data was collected from the Akwapim South district in the Eastern region. Geographically the district lies between latitudes 5.5° N and 5.58°N and longitude 0.0°W. Its projected population is 76,922, including 30,884 youth (age 15 -35) and about 5.9% of the youth are estimated to be in agriculture (Ghana Statistical Services, 2023). The main economic activity in the district is agriculture. Pineapple is the major cash crop of the district with 37,426.10mt produced in 2022 (Akwapim South Municipal Assembly, 2024).

A multistage sampling procedure was used to select the respondents. First, the Akwapim South district, which forms part of one of the three concentrated areas for pineapple production in Ghana, was selected purposively for the study based on its status as a major growing area for pineapple (GIPC, 2023). Next, random sampling was employed to sample five out of the names of sixteen rural communities of the district placed in a small box. Finally, from a centrally located landmark (e.g. chief palace, church/mosque, information centre) in a selected community and either in a three or four direction (3D or 4D) depending on the community settling, houses were selected sequentially at intervals of 2. If a youth farmer was identified from a selected house and he/she is willing to respond to the interview, then he/she was included in the survey, ensuring that only farmers between the ages of 15 and 35 were included. According to the National Youth Authority ACT (2016), Act 939, a youth is anyone from the age of 15 to 35. The study sampled about 5% of the youth population in agriculture (i.e. 0.05 x 0.06 x 30884 = 93), which was markup to a sample size of 110 and distributed to the five communities based on the projected size of potential youth in farming with the assistance of agricultural extension agents or community leaders. However, 108 completed questionnaires were returned from the field. Data collection was carried out through personal interviews using a structured questionnaire.

The five-point Likert-type rating scale of strongly agree (= 5), agree (= 4), neutral (= 3), disagree (= 2), and strongly disagree (= 1) was used to gather the youth rating on perception questions towards pineapple production. The benchmark mean response score for each perception question is 3.00, with a mean less than (greater than or equal to) 3.00 not regarded (is regarded) as a perceived factor, following recent studies like Onu et al. (2024) and Nmeregini et al. (2020). The limitation of the analysis was the small number of perception questions included. According to Ifeanyi-obi and

Asuquo (2023), Montoeli (2022), and Onyia et al. (2020), choice models such as probit and logit can be used to analyse respondents' choices. A youth's decision to participate in pineapple production or otherwise was treated as a binary choice. A binary logit was employed to examine the factors influencing youth participation in pineapple production. The responses were coded 1 for the decision to participate and 0 if otherwise. The likelihood that a respondent chooses to participate is defined as a function of variables which include the age of youth (in years), sex (male or female), educational level (no education, basic, secondary, tertiary), alternative source of employment (have other employment option or otherwise), land availability (yes or no), access to: credit facility (yes or no), fertiliser proxy for farm inputs (yes or no), and ready market (yes or no). Participation in pineapple production in this study refers to taking pineapple production as one's main source of income. Hypotheses were tested from the logit regression model with the null hypothesis (H_O) stated as follows:

H_0: Access to credit does not affect youth participation in pineapple production. The hypothesis was repeated for the other explanatory variables and validated using the probability value (P value). When the P value is less than or equal to 0.05, the null hypothesis is rejected in favour of the alternate hypothesis.

Results and Discussion

Concerning institutional factors, about 57.0% of the respondents have access to credit facilities, 19.4% noted the availability of land, 12.0% indicated access to a ready market for their produce, and 67.6% indicated access to farm inputs (fertilizer). The unavailability and or inadequacy of these factors could demotivate and have mitigating consequences on youth engagement in agriculture. Onu et al. (2024) found that the factors militating against the involvement of youth in potato production, among others, included poor motivation (100%), poor access to credit (100%), small farm size (81%) and inadequate government commitment to providing appropriate agricultural policies (75%). Attamah et al. (2023) found that the topmost constraints to youth involvement in rice production in Abia State, Nigeria were lack of capital or inadequate access to credit facilities for scaling up production and government poor support. Geza et al. (2021) identified access to a ready market as one of the constraints hindering youth entry into agriculture. Similarly, Nmeregini et al. (2020) have reported that the availability of land was one of the four foremost factors influencing the youths' participation in poultry production in Abia State, Nigeria.

Perception of Youth Participation in Pineapple Production

Each mean score is significantly higher than the benchmark mean measure of 3.00 when tested with the t-test for the difference in means at the 5% level. With a mean score of 4.67, the respondents strongly perceived that pineapple production was potentially a significant employer of labour, but required dedicated labour services and not simply an employment opportunity for the jobless ($\bar{x} = 3.49$) (Table 1).

Table 1: Perception of pineapple production

Variable	Mean	Std. dev.
Government support & incentives are good motivators for youth participation in pineapple production	4.29	1.38
Pineapple production is not meant for the jobless in society	3.49	1.71
Pineapple production is potentially a significant employer of labour	4.67	0.74
Pineapple production is labour-intensive	4.64	0.90
Grand mean	**4.27**	**0.55**

Source: Field survey data, June 2023

Also, the respondents strongly perceived that government support and incentives were good motivators for youth participation in pineapple production. Therefore support in this direction would be much anticipated enticing and sustaining young persons in agriculture. Chipfupa & Tagwi (2021) also found in rural South Africa that the youth perceived agriculture to be a significant employer of labour among the youth. In a similar study by Saptu et al. (2020) in Malaysia, government support was perceived to be a good motivator for youth participation in agriculture. The respondents also strongly perceived that pineapple production is labour-intensive ($\bar{x} = 4.64$), implying that the youth believed that the production of pineapple requires a lot of labour. Chipfupa & Tagwi (2021) have noted that the youth are discouraged from farming because they perceive it as laborious. The grand mean is high and favourable to the perception statements. Thus, youth in agriculture programmes developed in these directions would strongly be seen and supported by the youth as in the right direction.

Factors Influencing Youth Participation in Pineapple Production

The marginal effect of the age of the respondents on youth participation in pineapple production was positive and significant (Table 2), suggesting that older youth (those closer to 35 years) are more likely to participate in pineapple production. This may be attributed to the fact that pineapple production requires investment and older youths are more likely to have access to resources than those closer to 18 years. This aligns with Umeh et al. (2020) who reported that the higher the age, the higher the tendency to make an agripreneurship choice. Nmeregini et al. (2020) found that age positively influences the involvement of the youth in poultry production, significantly. They attributed it to the fact that increases in age among the youth could mean growth in maturity and responsibility. Hence, the ageing youth might take on more responsibilities, making them engage more in production activities.

Table 2: Factors that influence youth participation in pineapple farming

Variables	Odds ratio		Marginal effect
	Coefficients	p>z	Coefficients
Age	1.401*	0.0000	0.034*
Sex	7.523*	0.0120	0.206*
Education[1]			
Basic education	0.057	0.0700	-0.367
Secondary education	0.957	0.9640	-0.004
Tertiary education	0.128*	0.0480	-0.249*
Access to credit	2.733	0.1300	0.102
Access to farm input (fertiliser)	5.604*	0.0170	0.176*
Availability of land	1.813	0.4240	0.061
Ready market	6.765	0.0930	0.195
Alternative employment	0.221*	0.0500	-0.154*
Constant	0.00003*	0.0000	
Number of observations = 108			
Diagnostics statistics:			
LR chi2(10) = 48.60	Prob > chi2 = 0.000		
Log-likelihood = -35.111	Pseudo R2 = 0.4076		

Source: Estimated from field survey data, June 2023
[1]The comparative level of education is no education (i.e. the omitted education level)
*P≤ 0.05

The effect of sex was positive and significant, which means that there is a higher chance for a male youth to participate in pineapple production than a female youth. This may be observed because the responses to the perception questions indicate that pineapple production is labour-intensive and laborious, hence, males are more likely to venture into the production than females. Ng'atigwa et al. (2020) also found that men were more likely to enter into horticulture agribusiness in Tanzania, and attributed it to the fact that activities involved in horticulture are laborious. Similarly, Umeh et al. (2020) found male youth were more likely to make more agripreneurial choices than female youth. Contrary to this finding, Solangaarachchi (2021) found that male youth were unlikely to participate in the agriculture sector in Sri Lanka.

Access to input (fertiliser) was significant with a positive coefficient indicating that the availability of inputs (fertiliser) for production can motivate youth participation in pineapple production. The effect of tertiary education level is negative and significant. The result suggested young men with a tertiary (high) level of education relative to those with no education are not likely to participate in pineapple farming. The effects of the other levels of education, basic (low) level of education and secondary (intermediate) level of education compared with no education, are insignificant, which could in terms of the relativity as indifferent between uneducated and those with basic or secondary education. The implication is that youth initiatives and programmes to entice them into primary production, like pineapple production could focus on those with pre-tertiary education, without closing the door on those interested but have tertiary education, though Onu et al. (2024) reported a positive relationship between the years of education of the respondents and the level of involvement in sweet potato production in Nigeria. Umeh et al. (2020) also reported that the coefficient of educational qualification of the youth agripreneurs was positive and significant. Finally,

alternative employment was significant at 5% with a negative coefficient, which means youth who find alternative jobs are unlikely to be in pineapple farming. This finding is relevant for offloading any excess labour in agriculture in other sectors of the community economies.

The model diagnostic statistics suggest a good-fitted model, with a significant LR Chi-squared of 48.60 and a relatively high pseudo-R-squared of 0.408 for a limited dependent variable. The 5% level of significance was used for the discussion.

Conclusions and Recommendations

Age, sex and access to farm inputs (fertiliser) have positive and significant influences on youth participation in pineapple production while the presence of alternative sources of employment and tertiary education discourage participation in pineapple production by the youth. The youth perceived pineapple production to be labour-intensive and laborious, therefore it is recommended that private and public institutions championing pineapple production should liaise with mechanization service providers to make appropriate mechanization services available and accessible to the youth to enhance their production activities. Stakeholder collaboration within the pineapple subsector of the agriculture industry should work to encourage the availability of farm inputs (such as fertilizer) to motivate youth participation in pineapple value chain activities. Initiatives and programmes to entice the youth into primary production, like pineapple production, could target those with pre-tertiary education, though, without closing the door on interest from those with tertiary education.

References

Akaninyene, O., Essien, A., & Ejeje, A. (2022). Determinants of youths participation in agribusiness in Akwa Ibom State, Nigeria. *International Journal of Pure Agricultural Advances*, *6*(1), 1–8. https://doi.org/10.55284/ijpaa.v6i1.652

Akrong, R., Akorsu, A. D., Jha, P., & Agyenim, J. B. (2022). Assessing the trade and welfare effects of certification schemes: The case of GlobalGAP in Ghana's mango sector. *Scientific African*, *18*, e01425. https://doi.org/10.1016/j.sciaf.2022.e01425

Akwapim South Municipal Assembly. (2024). *Composite budget for 2024-2027 programme-based budget estimates for 2024*. http://aksma.gov.gh/documents/2024 PBB Narrative Akuapim South Mun. Assembly.pdf

Ankrah, D. A. (2022). Ghana's pineapple innovation history: An account from stakeholders in Nsawam Adoagyiri Municipal Assembly. *African Journal of Science, Technology, Innovation and Development*, *14*(7), 1916–1932. https://doi.org/10.1080/20421338.2021.1988414

Attamah, C. O., Aguh, C. F., & Agwu, E. A. (2023). Youths' involvement in rice production in Bende Local Government Area of Abia State, Nigeria. *Journal of Agricultural Extension*, *27*(1), 75–85. https://doi.org/dx.doi.org/10.4314/jae.v27i1.7

Awoyemi, A. E., Issahaku, G., & Awuni, J. A. (2023). Drivers of household food security: Evidence from the Ghana living standards survey. *Journal of Agriculture and Food Research*, *13*(October 2022), 100636. https://doi.org/10.1016/j.jafr.2023.100636

Ayinde, O. E., Oyedeji, O. A., Miranda, M. J., Olarewaju, A. O., & Ayinde, K. (2024). How resilient are farmers in Africa to climate shocks? A case study of Nigerian farmers. *Journal of Environmental Management*, *355*(February), 120471. https://doi.org/10.1016/j.jenvman.2024.120471

Bolang, D. P., Sanyare, F. N., & Gyader, G. N. (2023). Achieving greater participation in agricultural production: A study of government workers in the Upper west region of Ghana. *Heliyon*, *9*(11). https://doi.org/10.1016/j.heliyon.2023.e21821

Chipfupa, U., & Tagwi, A. (2021). Youth's participation in agriculture: A fallacy or achievable

possibility? Evidence from rural South Africa. *South African Journal of Economic and Management Sciences*, *24*(1), 1–12. https://doi.org/10.4102/sajems.v24i1.4004
Dolma, C. (2020). *Factors affecting youth Participation in agribusiness (Published masters thesis). Royal University of Bhutan. Thimphu, Bhutan.* [Royal University of Bhutan]. https://ifad.metisassoc.com/index.php/download/factors-affecting-youth-participation-in-agribusiness/
Eduafo, I., Osei, C. K., Bakang, J. E. A., & Tham-Agyekum, E. K. (2024). Could social media be a game-changer in improving agricultural extension delivery in Ghana? *Heliyon*, *10*(12). https://doi.org/10.1016/j.heliyon.2024.e33293
Ifeanyi-obi, C. C., & Asuquo, J. E. (2023). Constraints to conducting agricultural research uptake activities among researchers in Rivers State, Nigeria. *Journal of Agricultural Extension*, *27*(3), 14–25.
Geza, W., Ngidi, M., Ojo, T., Adetoro, A. A., Slotow, R., & Mabhaudhi, T. (2021). Youth participation in agriculture: A scoping review. *Sustainability (Switzerland)*, *13*(16), 1–15. https://doi.org/10.3390/su13169120
Ghana Investment Promotion Centre (GIPC). (2023). *Fresh pineapples for domestic and international markets*. https://www.gipc.gov.gh/agric-test-post-1/
Ghana Statistical Services (GSS). (2022). *Ghana annual household income and expenditure survey*. https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/AHIES executive summary 1 (3_24PM).pdf
Ghana Statistical Services. (2023). *Fact sheet on Districts: Akwapim South District*. https://statsghana.gov.gh/gsspublications.php?category=MTEwODQzOTY1NS44MTM=/webstats/p6r83s0n1q
Krumbiegel, K., Maertens, M., & Wollni, M. (2020). Can employment empower women? Female workers in the pineapple sector in Ghana. *Journal of Rural Studies*, *80*(May), 76–90. https://doi.org/10.1016/j.jrurstud.2020.05.012
Magagula, B., & Tsvakirai, C. Z. (2019). Youth perceptions of agriculture: influence of cognitive processes on participation in agripreneurship. In *Development in Practice*. Taylor & Francis. https://doi.org/10.1080/09614524.2019.1670138
Maïga, W. H. E., Porgo, M., Zahonogo, P., Amegnaglo, C. J., Coulibaly, D. A., Flynn, J., Seogo, W., Traoré, S., Kelly, J. A., & Chimwaza, G. (2020). A systematic review of employment outcomes from youth skills training programmes in agriculture in low- and middle-income countries. *Nature Food*, *1*(10), 605–619. https://doi.org/10.1038/s43016-020-00172-x
Ministry of Food and Agriculture (MoFA). (2022). *Facts and figures: Agriculture in Ghana, 2021. Statistics Research and Information Directorate (SRID)* (Issue September 2022).
Ministry of Youth and Sports (MoYS), & National Youth Authority (NYA). (2022). *National Youth Policy (2022-2032)*. /https://www.nya.gov.gh/nya_documents/NYP_22.pdf
Montoeli, R. A. (2022). Factors influencing farmers' participation in fish production in Lesotho. *Journal of Agricultural Extension*, *26*(2), 34–43. https://doi.org/10.4314/jae.v26i2.4
National Youth Authority Act, Pub. L. No. 939, 939 (2016). https://faolex.fao.org/docs/pdf/gha215337.pdf
Ng'atigwa, A. A., Hepelwa, A., Yami, M., & Manyong, V. (2020). Assessment of factors influencing youth involvement in horticulture agribusiness in Tanzania: A case study of Njombe region. *Agriculture (Switzerland)*, *10*(7), 1–17. https://doi.org/10.3390/agriculture10070287
Nmeregini, D. C., Onuekwusi, G. C., Ekweanya, N. M., & Elezue, C. S. (2020). Factors influencing involvement of youth in poultry production in Abia State, Nigeria. *Journal of Agricultural Extension*, *24*(4), 161–170. https://doi.org/doi.org/10.4314/jae.v24i4.16.
Nyamekye, A. P., Tian, Z., & Cheng, F. (2021). Analysis on the contribution of agricultural sector on the economic development of Ghana. *Open Journal of Business and Management*, *09*(03), 1297–1311. https://doi.org/10.4236/ojbm.2021.93070
Obisesan, A. A. (2021). What drives youth participation and labor demand in agriculture? Evidence from rural Nigeria. *Revista Espinhaço*, *10*(1).

https://doi.org/https://doi.org/10.5281/zenodo.50
Onu, E. S., Ukoha, J. I., Njoku, C. L., Obasi, I. O., & Onwuka, G. I. (2024). Youth involvement in sweet potato production in Abia State, Nigeria. *Journal of Agricultural Extension*, *28*(2), 55–65. https://journal.aesonnigeria.org/index.php/jae/article/view/4002
Onyia, C. C., Achike, A. I., & Onah, O. G. (2020). Contributions of non-wood forest products to household livelihood and poverty reduction among farmers in Enugu State, Nigeria. *Journal of Agricultural Extension*, *24*(1), 157–174.
Saptu, M. N. F. W., Ambad, S. N. A., & Sumin, V. (2020). Perceived government support as an antecedent of attitude and perceived behavioural control (PBC) Effect on agricultural entrepreneurship (agropreneurship) intention among the youth in Sabah. *Journal of Entrepreneurship and Business*, *8*(2), 95–105. https://doi.org/10.17687/jeb.v8i2.859
Solangaarachchi, N. (2021). Factors affecting youth participation in agriculture in Galenbidunuwewa divisional secretariat division, Anuradhapura, Sri Lanka. *Journal of Rajarata Economic Review*, *1*(1), 110–118.
Twumasi, M. A., Yuansheng, J., & Monica, O. A. (2019). Determinants of agriculture participation among tertiary institution youths in Ghana. *Journal of Agricultural Extension and Rural Development*, *11*(3), 56–66. https://doi.org/10.5897/jaerd2018.1011
Umeh, N. G., Nwibo, S. U., Nwofoke, C., Igboji, C., Ezeh, A. N., & Mbam, N. B. (2020). Socio-economic determinants of agripreneurship choice among youths in Ebonyi State, Nigeria. *Journal of Agricultural Extension*, *24*(1), 24 – 33. https://dx.doi.org/10.4314/jae.v24i1.3.
USAID. (2020). *Ghana women's empowerment to food security and youth assessment feed the future advancing women's empowerment activity. Accra: USAID/Ghana*.