# Assessing Climate Change Information Needs among Small Scale Yam Farmers in Umunneochi Local Government Area of Abia State, Nigeria

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**Abstract**

*This study evaluates the climate change information needs of small-scale yam farmers in Umunneochi Local Government Area of Abia State, Nigeria. It focuses on describing the socioeconomic characteristics of these farmers and identifying their specific information needs related to climate change. A two-stage sampling procedure was used to select 100 yam farmers. Data were gathered using a combination of interviews and structured questionnaires and analyzed with descriptive and Chi-Square analysis. Results obtained showed that farmers in the study area were mostly males with a mean age of 55 years. Majority were married and with a mean household size of 6. Most of the farmers indicated high need of information on Use of excess chemicals (66%) and bush burning (41%) as cause of climate change. While, the major effect of climate change as identified by the respondents were poor yield of crops (61%) and abrupt change in weather conditions (62%). Furthermore, information on mitigation strategies such as Irrigation (75%) and Use of improved varieties (68%) were highly needed by majority of the farmers. Chi-Square analysis analysis revealed no significant associations between farmers' information needs and factors such as sex ($p = 0.321$), age ($p = 0.383$), marital status ($p = 0.978$), educational qualification ($p = 0.460$), household size ($p = 0.994$), religion ($p = 0.346$), minor occupation ($p = 0.379$), major occupation ($p = 1.000$), organizational membership ($p = 0.632$), type of organization ($p = 0.824$), prior training ($p = 0.301$), and farm size ($p = 0.439$). These findings highlight the urgent need for inclusive and tailored climate education, as well as the dissemination of resources to enhance farmers' resilience and productivity. Addressing these needs is essential for improving agricultural sustainability in the context of climate variability.*

**Keywords: Climate Change, Yam, small- scale, Information needs**

## Introduction

Climate change is one of the most important physical factors, any variation in climatic condition will have significant results on crop productivity, specifically yam yield. Climate change is a subject that has attracted considerable attention in recent years due to its deleterious effects on ecosystems. Until the pattern of vulnerability to climate change also corresponds to the dominance of climate sensitive agricultural activities (Madu, 2016).

Given the importance of the agricultural sector to livelihoods and the economy in Nigeria, problems with crop yields and productivity can have an adverse effect on gross domestic product (Anabaraonye 2019; Solomon and Edet, 2018; Oguabor and Egwuchukwu, 2017; Ebele and Emodi, 2016).

Yam (*Dioscorea spp*.) is the common name for a monocotyledonous tuber-producing vine plant with several species (approximately 600) (Mondo *et al*., 2020). It is widely cultivated as a staple food in Africa, Asia, South America, the West Indies, and the Pacific Islands (Obidiegwu and Akpabio, 2017). Among the cultivated species, the white yam (Dioscorea rotundata) is popularly grown in West Africa, while the water yam (Dioscorea alata) has a global production outlook (Darkwa *et al*., 2020). It is noteworthy that West Africa plays a significant role in global yam production, contributing approximately 94% of the total output with Nigeria, Ghana, and Côte d'Ivoire emerging as the top three yam-producing countries, collectively accounting for a substantial portion of global production (Aighewi *et al*., 2022).

Yam is one of the principal tuber crops in the Nigeria economy, in terms of land under cultivation and in the volume and value of production (Ndubueze *et al*., 2020). It forms a basic staple food for 241 million of people in Nigeria where it is eaten boiled, roasted, fried and also can be processed into various forms of flour and starchy paste (Elijah *et al.*, 2020).

Nigeria ranks as the leading producer of white yams in the world, accounting for 66% (approximately 50.1 million tons) of annual global production (Food Agricultural Organization, FAO, 2021). However, recent reports signal a decline in yam production in Nigeria, raising concerns about food security and economic stability (Neina, 2021; Kalu *et al*., 2023). Yam yield has been relatively low in Nigeria compared to other West African countries; 9.55t/ha in Nigeria, 10.83t/ha in Cote'Ivoire, 10.94t/ha in Benin and 12.74t/ha in Ghana and currently, Nigeria and Côte d'Ivoire produce at average yields of 17.3 and 12.5%, respectively, of the estimated potential yam production (50t/ha), exhibiting the lowest yam productivity over the decade. (Bassey 2017; Owusu, et. al. 2022).

The impact of climate on agriculture is dependent on variations in local climates. Climate variation is a reality that is seriously distressing the earth already, especially challenging agricultural productivity and thus, requires urgent attention (Oyenekwe *et al*., 2021; Anarah *et al.*, 2019; Elijah *et al.*, 2018).

Nigeria being the largest producer of yam in the world makes this study very imperative to deepen understanding on ways of improving productivity of yam in the face of deleterious effects of climate change to make it a crop that could become a foreign exchange spinner for the country. Despite these assertions, the Climate change information needs of small scale yam farmers in Umunneochi L.G.A of Abia State, Nigeria have not been critically examined.

It is on the basis of this and others that this study set out to describe the socioeconomic characteristics of small-scale yam farmers, and identify information needed by the small-scale yam farmers on climate change.

**Test of Hypothesis**

**$H_0$:** there is no significant relationship between the socio-economic characteristics of small-scale yam farmers of climate change issues and their information needs

**Methodology**

The study was conducted in Umu-Nneochi LGA of Abia State, Nigeria. Abia State is located geographically between coordinates 5.4327°N and 7.5248°E. It has a total area of 6,320 $km^2$(2,440

sq.mil) and population of 4,112,230 (South East Development Council, SEDC, 2017). It is divided into 17 local government areas of which Umu-Nneochi LGA is among.

Umu-Nneochi Local government has its capital at Nkwuagu, there are 12 autonomous communities which includes: Isuochi, Nneato, Umuchieze, Amuda, Mbala, Achara, Umuelem, Umuaku, Ezingodo-ukwu, Eziama-Agbo, Obinolu, Obiagu, Lokpaukwu, Lomara, and Lopkanta. Umu-Nneochi covers a total area of 142 sq.mil (368 square kilometers), the total population of 172,314 inhabitants.

Farming is a major source of livelihood for the dwellers of Umu-Nneochi LGA with crops such as black beans, cocoyam, cashew, and oil palm growth in the area. Igbo is the language commonly spoken in the Area (Manpower Nigeria, 2021). The scope of study involves all yam farmers in in the study area.

By classification of (Mgbenka and Mbah, 2016), farm holdings in Nigeria fall into three broad categories: small, medium and large scale. The small scale comprises farmers cultivating 0.10 to 5.99 hectares of land often in two or more separate parcels of land: medium-scale farmers cultivate 6.0 to 9.99 hectares and large-scale farmers cultivate 10 or more hectares of land. This study focused on small scale yam farmers (0.10 to 5.99 hectares) in the study area.

A Two –stage sampling procedure was used in the selection of the respondents. The first stage involved the random selection of five (5) towns. Isuochi, Nneato, Umuchieze, Amuda, and Mbala. The second stage involved the simple random sampling of twenty (20) small-scale yam farmers in each of the selected five (5) towns. which corresponds to a sampling size of one hundred and twenty (100) respondent. What is the sampling frame and where was it obtained?

The primary data used for the study were collected through the use of structured questionnaire, administered to the small-scale yam farmers, while secondary data were obtained by reviewing relevant literature from sources such as articles, reports, and previous related studies.

In order to assess the information needs of the respondents on climate change, they were asked to indicate. The independent socio-economic characteristics of the farmers were captured using a range of variables. The respondents were asked to state their age in years, while sex was recorded as male (1) or female (2). Information on marital status was obtained by allowing farmers to tick the option that best applied to them. Their educational background was also assessed. Family size was determined by the number of people living together under the same roof. The source of labour used on the farm was identified as family labour, hired labour, or mechanical labour. Farming experience was measured in years, while farm size devoted to yam cultivation was measured in both acres and hectares. In addition, farmers were asked to indicate their income earned per farming season in Nigerian Naira (₦).

**Dependent Variables**

The Climate change information needed by small-scale yam farmers on climate change issues on yam was measured by a Three-point Likert-type rating scale of *'not needed'* (coded 3), *'needed'* (coded 2) and *'highly needed'* (coded 1). A factor scores below the weighted mean (i.e., 2.0) is considered not serious while a score above 2.0 indicate otherwise. The weighted mean was obtained as follows: *(3 + 2 + 1) / 2 = 2.0*

**Analytical Procedure**

Descriptive statistics such as mean, percentages, frequency counts were employed in the analysis of the data while Chi square was used to test the hypothesis.

**Model Specification**

**Chi Square**

The formulae for Chi Square:

$$\chi_n^2 = \sum \frac{(o_i - E_i)^2}{E_i} \quad \text{----------} \text{(Eqn 1)}$$

Where *O* =is observed frequency of adaptation strategies of farmers
*E* = is expected frequency of adaptation strategies of farmers
and *n* is number of categories.

**Results and Discussion**

**Socioeconomic Characteristics of small-scale yam farmers**

Table 1: Distribution according to the socioeconomic characteristics of the respondents of this study.

| Variable | Frequency | Percentage (%) |
|---|---|---|
| **Sex** | | |
| Male | 61 | 61 |
| Female | 39 | 39 |
| **Age** | | |
| 25 – 35 years | 3 | 3 |
| 36 – 45 years | 16 | 16 |
| 46 – 55 years | 28 | 28 |
| 56 – 65 years | 33 | 33 |
| 66 – 75 years | 19 | 19 |
| 76 – 85 years | 1 | 1 |
| **Marital Status** | | |
| Married | 78 | 78 |
| Single | 8 | 8 |
| Widowed | 14 | 14 |
| Divorced | 0 | 0 |
| **Educational Qualification** | | |
| No Formal Education | 1 | 1 |
| Primary School | 24 | 24 |
| Secondary School | 31 | 31 |
| OND/NCE | 13 | 13 |
| HND/B.Sc | 13 | 13 |
| Higher Degrees | 18 | 18 |

| | | |
|---|---|---|
| **Household Size** | | |
| 1 – 2 | 10 | 10 |
| 3 – 4 | 25 | 25 |
| 5 – 6 | 41 | 41 |
| 7– 8 | 12 | 12 |
| 9 – 10 | 10 | 10 |
| 11 – 12 | 2 | 2 |
| **Religion of Respondents** | | |
| Christianity | 100 | 100 |
| African Traditional Religion | 0 | 0 |
| Other | 0 | 0 |
| Major Occupation of Respondents | | |
| Farming | 19 | 19 |
| Trading | 26 | 26 |
| Public/Civil Service | 21 | 21 |
| Artisan | 7 | 7 |
| Other | 27 | 27 |
| **Minor Occupation of Respondents** | | |
| Farming | 94 | 94 |
| Trading | 3 | 3 |
| Public/Civil Service | 2 | 2 |
| Artisan | 0 | 0 |
| Other | 1 | 1 |
| **Association to any Organization** | | |
| Yes | 81 | 81 |
| No | 19 | 19 |
| **Types of Organization of Respondents** | | |
| Men/Women Religious Group | 12 | 12 |
| Thrift (Isusu) Society | 21 | 21 |
| Cooperative Society | 36 | 36 |
| Social Club | 11 | 11 |
| Other | 20 | 20 |
| **Farm Size of Respondents** | | |
| 0.04 – 0.8ha | 45 | 45 |
| 0.81 – 1.59ha | 50 | 50 |
| 1.60 – 2.5ha | 5 | 5 |
| **Total** | **100** | **100** |

*Field Study, 2024*

The result in Table 1 shows that majority 61% of the yam farmers are males while 39% of the respondents are females. This indicates that more males than females were involved in yam production in the study area. The reason for this can be attributed to so many factors which include the fact that men are more energetic for yam farming work than the female counterpart. This is in line with the finding of Mbanaso (2024) and Daniel and Akintunde (2022) who both observed that men dominated the activities of yam production in Delta State and Southern Taraba State, Nigeria respectively.

As shown in Table 1 the modal age range is 56-65 years (33%) followed by 46-55 years (28%) with the mean age of 55 years. This is similar to the findings of Adejo *et al*. (2024) that majority (64.23%) of respondents in Nasarawa State are within their active productive age with a mean age of 56.86 years. Ariyo *et al.* (2020) opined that yam farming requires energy and hence yam farmers should be within their active age for active production. This implies that majority of the respondents were old enough to have noticed the changes in climate. However, aging populations are less able to source and synthesize information and even to engage in modern agricultural practices.

The results from the table shows that majority (78%) respondents are married while 8% are single and 14% divorced. This indicates that more of the respondents are family people who need a job or business to cater for the family. This is why yam farming is now important to the people as they engage in the business in order to fend for their families, this corroborates the findings of Kimaro and Toribio's (2018) who opined that more married people engage in farming activities due to their high sense of responsibility to provide for the needs of their families. Yam farming is also easier for married people to engage in than single or widowed people as the married people tends to receive labour assistance from their spouse and children as the case may be.

The result in Table 1 shows that 1% of the yam farmers are without any formal education, 24% of the respondents have primary school, 31% of the respondents have secondary school. Furthermore, 13% of the respondents have OND/NCE qualification, 13% of the respondents have HND/B.Sc., 18% of the respondents have Higher degree qualification. This means that majority of farmers sampled are literate though with different educational levels. This supports the findings of Kimaro, and Toribio, (2018) who also reported that 54.1% of farmers had one form of formal education. The education level of the respondents greatly suggests how the respondents can access and utilize information made available to the as it relates to yam farming as Adejo *et al*., (2024) puts it, farmers that are more literate and will be more receptive to adopting mitigation strategies against climate change as well as understanding various innovations to mitigate these changes. Since the respondents are educated, they will be better prepared to overcome shocks associated with the deleterious effects of climate change on yam production.

Table 1 shows that the mean household size was 6 persons. This implies that there is an adequate supply of family labour for farm operations in the study area as most respondents have relatively large families. This result is in line with the findings of Toluwalse and Sekunde (2017) that indicated the relatively large family size in their study.

Table 1, shows that majority (50%) of the respondents cultivated 0.81 – 1.59 ha of land, while 45% have 0.1 – 0.8ha of land, and 5% of the respondents have above 1.6ha of land. The result shows that

majority of the respondents were small scale farmers. This agrees with Mbanaso (2024) study that majority of farmers are small scale yam farmers with an average hectare of 1.3ha.

Table 1 shows that all the respondents of the study are Christians, there was no Muslim or African Traditional Religion. This finding does not suggest that yam farming only belongs to Christians and that Muslim and other people in African Traditional Religion do not engage in yam farming. It only shows that the area selected and used for this study is Christianity dominated area.

Table 1 shows that majority (26%) of the respondents have trading as their major occupation, 21% of the respondents are in the public/Civil Service and 19% of the respondents engage in farming as their major occupation and 7% of the respondents are Artisan, while 27% of the respondents belong to other forms of occupation.

Table 1 shows that 94% of the respondents indicated that they engage in farming as a minor occupation, while the remaining 3% of the respondents have trading and 2% are in the public/Civil Service as their minor occupation.

Table 1 reveals that 81% of the respondents belong to an organization, while 19% of the respondents do not belong to any organization. Ekong (2003)old literature, update stated rural dwellers belong to organization that would help in satisfying their innate need for belonging and affiliation and in solving their problems through collective efforts. The implication is that climate change information can be disseminated to the farmers a multiplier effect.

Table 1, shows the respective organization that the respondents belong to. According to the report, 12% of the respondents belong to Men/women religious group. 21% of the respondents belong to thrift (Isusu) society, 36% of the respondents belong to Cooperative society, 11% of the respondents belong to social club, while 20% of the respondents belong to other form of organization.

**Climate change Information needs of small scale yam farmer's**

Table 2 show the types of climate change information needed by the farmers.

**Table 2**. Climate information needs of small-scale yam farmers in the study area.

| S/N | Causes of climate change | Response | Frequency | Percentage (%) |
|---|---|---|---|---|
| 1 | Bush burning | Highly needed | 41 | 41 |
| | | Needed | 48 | 48 |
| | | Not needed | 11 | 11 |
| | | Total | 100 | 100 |
| 2 | Use of auto mobiles like tractors, vehicles | Highly needed | 24 | 24 |
| | | Needed | 28 | 28 |
| | | Not needed | 48 | 48 |
| | | Total | 100 | 100 |
| 3 | Use of excess chemicals in farming like pesticide | Highly needed | 66 | 66 |
| | | Needed | 22 | 22 |

| | | | | |
|---|---|---|---|---|
| | | Not needed | 12 | 12 |
| | | Total | 100 | 100 |
| | **Effect** | | | |
| 4 | Increase erosion | Highly needed | 32 | 32 |
| | | Needed | 61 | 61 |
| | | Not needed | 7 | 7 |
| | | Total | 100 | 100 |
| 5 | Increased flooding | Highly needed | 29 | 29 |
| | | Needed | 63 | 63 |
| | | Not needed | 8 | 8 |
| | | Total | 100 | 100 |
| 6 | Harsh weather condition | Highly needed | 57 | 57 |
| | | Needed | 36 | 36 |
| | | Not needed | 7 | 7 |
| | | Total | 100 | 100 |
| 7 | Machinery and equipment design | Highly needed | 32 | 32 |
| | | Needed | 57 | 57 |
| | | Not needed | 11 | 11 |
| | | Total | 100 | 100 |
| 8 | Poor yield of crops | Highly needed | 61 | 61 |
| | | Needed | 32 | 32 |
| | | Not needed | 7 | 7 |
| | | Total | 100 | 100 |
| 9 | Abrupt change in weather conditions | Highly needed | 62 | 62 |
| | | Needed | 33 | 33 |
| | | Not needed | 5 | 5 |
| | | Total | 100 | 100 |
| 10 | Reduction in soil nutrients | Highly needed | 47 | 47 |
| | | Needed | 47 | 47 |
| | | Not needed | 6 | 6 |
| | | Total | 100 | 100 |
| 11 | Increased pests and diseases | Highly needed | 53 | 53 |
| | | Needed | 40 | 40 |
| | | Not needed | 7 | 7 |
| | | Total | 100 | 100 |
| **Mitigation and Adaptation Strategies** | | | | |
| 12 | Irrigation | Highly needed | 75 | 75 |
| | | Needed | 22 | 22 |
| | | Not needed | 3 | 3 |
| | | Total | 100 | 100 |
| 13 | Change in timing of farm operations | Highly needed | 33 | 33 |
| | | Needed | 45 | 45 |
| | | Not needed | 22 | 22 |

| | | | | |
|---|---|---|---|---|
| | | Total | 100 | 100 |
| 14 | Herbicide use | Highly needed | 56 | 56 |
| | | Needed | 30 | 30 |
| | | Not needed | 14 | 14 |
| | | Total | 100 | 100 |
| 15 | Use of weed tolerant varieties | Highly needed | 68 | 68 |
| | | Needed | 28 | 28 |
| | | Not needed | 4 | 4 |
| | | Total | 100 | 100 |
| 16 | Use of improved/resistant crop and animal varieties | Highly needed | 79 | 79 |
| | | Needed | 16 | 16 |
| | | Not needed | 5 | 5 |
| | | Total | 100 | 100 |
| 17 | Incorporation of residue into the soil instead of burning | Highly needed | 42 | 42 |
| | | Needed | 32 | 32 |
| | | Not needed | 26 | 26 |
| | | Total | 100 | 100 |

*Field Study, 2024*

As a cause of climate change, 41% of respondents indicated that bush burning is highly needed information, 48% stated it is needed information, while 11% said it is not needed. Regarding the use of automobiles like tractors and vehicles, 24% rated it as highly needed, 28% as needed, and 48% as not needed. Similarly, the use of excess chemicals in farming, such as pesticides, was considered highly needed by 66% of respondents, needed by 22%, and not needed by 12%. This implies that, based on the causes of climate change, there is a significant awareness among farmers regarding certain practices contributing to climate change. This is in collaboration with the findings of Jibrin *et al*. (2024) who reported that a good number of farmers have adequate information on the reasons for climate change.

The high percentage of respondents identifying bush burning and the use of excess chemicals in farming (such as pesticides) as highly needed information indicates a recognition of their role in exacerbating environmental issues. Similarly, Ogunjimi and Ikkefusi (2021) reported that majority of respondents showed a good knowledge on the causes of climate change such as use of excess chemicals such as pesticide (81.3%), and bushing burning (72.0%). Nonetheless, the need for more information about these causes reflects a desire for better understanding and practices that can reduce environmental degradation. However, the relatively lower emphasis on the use of automobiles, like tractors and vehicles, as a key cause of climate change (with 48% of respondents indicating it is not needed information) suggests that its impact is not fully recognized compared to other factors due to limited mechanization among small-scale famers, as suggested by Aighewi *et al*. (2022). This highlights the need for increased awareness and education on the full range of human activities contributing to climate change.

On the effects of climate change, increased erosion was identified as highly needed information by 32% of respondents, needed by 61%, and not needed by 7%. Increased flooding was deemed highly needed by 29%, needed by 63%, and not needed by 8%. Harsh weather conditions were identified as

highly needed by 57% of respondents, needed by 36%, and not needed by 7%. Information about machinery and equipment design was rated as highly needed and needed by 32% and 57% of respondents respectively, while 11% indicated it was not needed. Poor crop yield was considered highly needed by 61%, needed by 32%, and not needed by 7%. Abrupt changes in weather conditions were seen as highly needed by 62%, needed by 33%, and not needed by 5%. Reduction in soil nutrients was equally considered highly needed and needed by 47% of respondents, with 6% stating it was not needed. Additionally, an increase in pests and diseases was rated as highly needed by 53%, needed by 40%, and not needed by 7%. This implies that, based on the effects of climate change, farmers have a strong awareness of the potential consequences climate change can have on their farming practices. This is consistent with the findings of Akagha *et al*. (2021) who revealed that is in study on farmer's perception of climate change on yam yield, that yam farmers are aware of the impact of climate change.

The high percentage of respondents who consider information on issues like poor crop yield (61%), harsh weather conditions (57%), abrupt weather changes (62%), and increased pests and diseases (53%) as highly needed indicates that these effects are seen as immediate and critical threats to their livelihoods. The significant concern for crop yield, in particular, underscores the vulnerability of agriculture to climate shifts and the need for adaptive strategies. the recognition of the effects of erosion (32%) and flooding (29%) as highly needed information reflects an understanding of the direct environmental impacts, while the lower percentages regarding machinery and equipment design (32% each for highly needed and needed) suggest that farmers may see the technological adjustments needed for climate change as less urgent compared to more immediate environmental threats. The balanced concern for soil nutrients, with 47% of respondents viewing the reduction in soil nutrients as highly needed information, further highlights the importance of soil health in sustaining agricultural productivity in the face of changing climatic conditions.

Adaptation strategies, irrigation was identified as highly needed by 75% of respondents, needed by 22%, and not needed by 3%. Changing the timing of farm operations was considered highly needed by 33%, needed by 45%, and not needed by 22%. Herbicide use was rated as highly needed by 56% of respondents, needed by 30%, and not needed by 14%. The use of weed-tolerant varieties was highly needed by 68%, needed by 28%, and not needed by 4%. Improved and resistant crop and animal varieties were considered highly needed by 79% of respondents, needed by 16%, and not needed by 5%. Lastly, the incorporation of residue into the soil instead of burning was identified as highly needed by 42%, needed by 32%, and not needed by 26%. This implies that, based on the adaptation strategies, farmers recognize the importance of several proactive measures to combat the effects of climate change, particularly those that directly enhance water use efficiency and crop resilience.

The overwhelming demand for irrigation information (75% identifying it as highly needed) highlights its critical role in ensuring crop survival and productivity in changing weather conditions, especially in regions facing irregular rainfall. However, Ogunjimi and Ikefusi (2021) highlighted that harvesting of rain water for use during the dry period and purchase of agricultural insurance had low level of adoption (1.8) which might be as a result of inadequate technical knowledge of rain harvest and storage by yam farmer and usefulness of insurance in mitigating against climate change.

The relatively high need for information on weed-tolerant varieties (68% highly needed) and improved/resistant crop and animal varieties (79% highly needed) indicates that farmers are keen to adopt genetic solutions to enhance resilience and mitigate risks posed by changing climate conditions, such as drought or pest infestations. These responses reflect a proactive approach to managing long-term productivity. The demand for herbicide use (56% highly needed) suggests that

farmers see it as a vital tool for managing weeds that may become more aggressive due to climate shifts, although the 14% indicating it is not needed may reflect concerns about the environmental impact or the long-term sustainability of such practices. The relatively mixed response to changing the timing of farm operations (33% highly needed, 45% needed, and 22% not needed) suggests that while it is viewed as an important strategy, farmers may not yet fully recognize its potential or may be uncertain about how to effectively implement such changes without disrupting established farming schedules. Finally, the incorporation of residue into the soil instead of burning, with 42% seeing it as highly needed and 26% deeming it not needed, indicates that while some farmers are aware of the benefits of this sustainable practice (such as improving soil fertility and reducing carbon emissions), others may be hesitant due to the traditional practice of burning residue or concerns about its immediate utility. Indicating farmer's reliance on traditional planting calendars, even amidst changing weather patterns.

According to Ozor *et al*. (2010), the ability of people to respond effectively to climate challenges is determined by the quality of information available to them and how easily they can access it.

**Socio-economic characteristics of small scale yam farmers of climate change and their information needs**

**Table 3: Chi Square Results of the relationship between the socioeconomic characteristics of small-scale yam farmers in the study area**

| Socio Economic Variable | $X^2$ | df | p-value | Decision |
|---|---|---|---|---|
| Sex | 3.496[a] | 3 | .321 | Not Significant |
| Age | 105.642[a] | 102 | .383 | Not Significant |
| Marital Status | 1.175[a] | 6 | .978 | Not Significant |
| Educational Qualification | 14.878[a] | 15 | .460 | Not Significant |
| Household size | 12.031[a] | 27 | .994 | Not Significant |
| Religion | 18.675[a] | 21 | .346 | Not Significant |
| Minor Occupation | 12.868[a] | 12 | .379 | Not Significant |
| Major Occupation | .266[a] | 9 | 1.000 | Not Significant |
| Member of any organization | 1.722[a] | 3 | .632 | Not Significant |
| Type of organization | 7.479[a] | 12 | .824 | Not Significant |
| Training | 3.654[a] | 3 | .301 | Not Significant |
| Farm size | .600[a] | 1 | .439 | Not Significant |

*Source: Field Study, 2024*

Table 3 shows the result of the relationship between the socioeconomic characteristics of small scale yam farmers of climate change issues and their information needs. The Chi-Square analysis results, which assess the relationship between the socio-economic characteristics of small-scale yam farmers and their information needs concerning climate change issues, suggest that these socio-economic factors do not significantly influence the farmers' demand for climate change-related information. This is in collaboration with the findings of Eguaoje *et al*. (2023) that the socio-economic characteristics of the farmers have no significant influence on the climate change

information needs of the farmers. This is also supported by Umar (2016) in his work on apple growers.
The p-value for sex is 0.321, which is greater than the standard significance level of 0.05, indicating that sex (whether the farmer is male or female) does not significantly affect their information needs on climate change issues. This result suggests that both male and female farmers in this group may face similar challenges or have similar information needs regarding climate change.
However, Adejo *et al*. (2024) revealed that females are more susceptible to climate change than males in both Benue and Nasarawa states attributing this to the fact the women face more cultural norms or barriers and responsibilities that could predispose them to these hazards, and thus, would have high need for climate information.
With a p-value of 0.383, age also does not show a statistically significant relationship with the farmers' information needs. This suggests that climate change awareness and information needs are not significantly influenced by age. Whether the farmers are younger or older, their need for information on climate change may be similar, implying that older farmers with more experience are just as likely to require up-to-date climate change information as younger farmers, who may have more access to newer sources of information.

The p-value for marital status is very high (0.978), further confirming that marital status does not significantly influence the climate change information needs of farmers. Whether a farmer is married or not appears to have little bearing on their engagement with climate change issues. It suggests that marital status does not impact how likely a farmer is to seek or need climate change-related information.

With a p-value of 0.460, educational qualification is also not a significant determinant of information needs on climate change. This finding is somewhat surprising, as one might expect that farmers with higher educational levels would be more informed about climate change or more likely to seek related information as Elijah *et al* (2020) noted in his study of Yam farmers adaptation strategies towards climate change disaster in Cross River state, Nigeria that education creates awareness among farmers on climate change which necessitates farmers to adopt climate change adaption strategies. However, the results indicate that regardless of whether a farmer has a formal education or not, their need for climate change information remains similar. This could suggest that other factors, such as access to resources or local extension services, may be more influential than formal education. Household size, with a p-value of 0.994, is another socio-economic characteristic that does not show a significant relationship with the farmers' information needs regarding climate change. Farmers from larger or smaller households do not differ in their demand for information on climate change. This suggests that family size, which might affect resource allocation or labor availability, does not necessarily influence a farmer's perception of or need for climate change information. The p-value for religion (0.346) suggests that religious affiliation does not significantly impact a farmer's information needs about climate change. Regardless of their religious beliefs, farmers in this study have similar concerns and needs regarding climate change, implying that climate change information is viewed as a universal concern, independent of religious background. With a p-value of 0.379, minor occupation (any secondary job or income source aside from farming) is not significantly related to the information needs regarding climate change. Whether farmers engage in other occupations outside of farming does not appear to affect their demand for climate-related information, suggesting that farming remains the primary concern in terms of climate change adaptation, regardless of other income-generating activities. Similarly, the major occupation of the farmers, with a p-value of 1.000, is not significantly associated with their need for information about climate change. This indicates that regardless of whether the farmers rely solely on farming as their primary occupation or have a

combination of farming and other activities, their interest or need for information on climate change remains unchanged.

The p-value for whether a farmer is a member of any organization (0.632) shows no significant relationship with their climate change information needs. This suggests that being part of a farmer organization or cooperative does not significantly influence how much information a farmer needs or seeks about climate change. It could imply that even those who belong to organizations are not necessarily more inclined to obtain or require climate change information than those who do not participate in such groups. The type of organization, whether it's agricultural, community-based, or any other group, also does not significantly affect the farmers' climate change information needs (p-value = 0.824). This suggests that the nature or focus of the organization a farmer is involved with does not necessarily increase or decrease their demand for information on climate change. The p-value for training (0.301) indicates that previous training or exposure to agricultural practices or climate change-related topics does not significantly affect the information needs of the farmers. It seems that even those with prior training on farming or climate change issues are equally likely to need further information. Finally, the farm size, with a p-value of 0.439, does not show a significant relationship with the information needs regarding climate change. Whether a farmer operates on a small or large farm, their need for climate change information is not substantially different, suggesting that all farmers, regardless of farm scale, face similar challenges or informational gaps when it comes to climate change.

The findings of the Chi-Square analysis indicate that socio-economic characteristics such as gender, age, marital status, education, farm size, and membership in organizations do not significantly affect small-scale yam farmers' information needs regarding climate change. This suggests that climate change information needs are widespread across various socio-economic groups within the farming community, implying that outreach and educational programs on climate change should be designed to be universally accessible and not tailored based on these specific socio-economic characteristics. The lack of significant differences based on socio-economic variables highlights that climate change is not seen as a problem specific to certain groups but rather as a universal challenge impacting all farmers equally.

**Conclusion**

The study examined the socioeconomic characteristics of small-scale yam farmers and their information needs related to climate change. Overall, the farmers were largely male and married, with many falling within the older age bracket, and most had some level of formal education, particularly at the secondary school level. Household sizes were generally moderate, indicating the availability of family labour for farming activities. Yam production in the area was mainly carried out on a small scale, and while farming remained important, it was often combined with other occupations such as trading and civil service.

The farmers showed a good understanding of climate change, including its causes, effects, and possible adaptation measures, and expressed a strong need for information on irrigation, improved crop varieties, and sustainable farming practices. They were also aware of the negative effects of climate change on soil quality, crop yields, and weather patterns. Statistical analysis indicated that farmers' information needs were not influenced by their socioeconomic characteristics, implying that climate change concerns cut across all categories of farmers.

**Recommendations**

Based on the findings, the following recommendations were made:

1. Climate change outreach programs should adopt a broad and inclusive approach, ensuring accessibility for all farmers regardless of their socioeconomic characteristics.

2. Farmers should be provided with training on irrigation systems, use of climate-resilient crop varieties, and sustainable land management practices.
3. Policymakers should enhance access to credit and subsidies for small-scale farmers to adopt climate-resilient technologies.
4. Strengthen farmer organizations and cooperatives as platforms for knowledge exchange and distribution of climate change information.
5. Encourage the adoption of soil conservation practices, such as incorporating crop residues into the soil, to improve fertility and mitigate carbon emissions.
6. Research institutions should develop locally-adapted, climate-resilient crop varieties and farming technologies to address specific challenges faced by yam farmers.
7. Conduct awareness programs focusing on less-recognized contributors to climate change, such as the environmental impacts of machinery use.
8. Establish a system to monitor the effectiveness of climate adaptation strategies and refine them based on feedback from farmers.

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