2022 Liberia Population and Housing Census

Thematic report on

Agriculture

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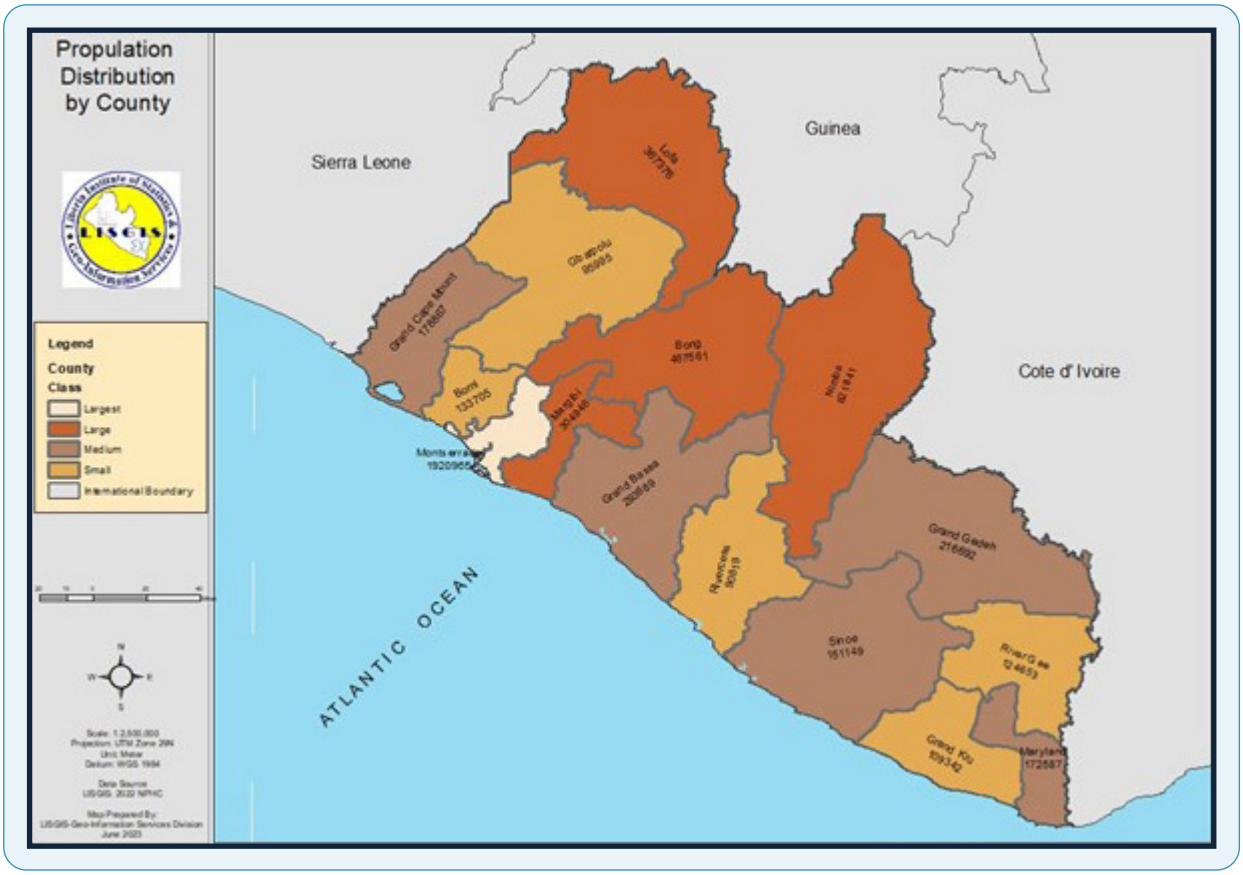
Administrative map of Liberia



Foreword

The 2022 National Population and Housing Census is the fifth and first digital census with the full deployment of ICT techniques and followed the UN Recommended Principles for the 2020 round of censuses. The basis for the conduct of the census is Article 39 of the 1986 Constitution of the Republic of Liberia. On October 10, 2022, the Government of Liberia initiated "an Act Authorizing the Executive Branch of Government to conduct the 2022 Liberia Population and Housing Census".

Hence, following the successful implementation of the 2022 Liberia Population and Housing Census, the Liberia Institute of Statistics & Geo-Information Services (LISGIS) produced 14 thematic reports. These reports summarized the country's demographic, social, and economic sectors. The publication of the thematic reports is consistent with the United Nations (UN) International Standards of releasing National Census results and thematic reports.

The 14 thematic reports form a primary source of socio-economic and demographic data at various levels and provide relevant information to foster national development, good governance, and resource distribution. The results presented in this thematic report will form a solid basis for the successes and challenges in the implementation of the Sustainable Development Goals (SDGs) as well as support the implementation of the development of the Africa Union Agenda 2063: The Africa We Want; Transforming Our World and other national and international programs.

I am pleased that the thematic reports helped to guide our national development plan. I would like to appreciate the support received from development partners and individuals during the entire process of writing the thematic report.

On behalf of the Census Commission and Board of Directors of LISGIS, I thank the Government of Liberia and our development partners for providing the required resources for conducting the census. Thanks also go to the national and international experts who worked very hard to complete these thematic reports.

Special appreciation for the success of the census goes to Hon. Samuel D. Tweah, Jr., former Chairman of the Census Commission, the Census Commission, the Steering Committee, the Census Secretariat, other national and international experts, census staff, and all respondents who provided the required information as well as all stakeholders for their commitment, motivation, and support to the National Population and Housing Census process.

I look forward to the continued support and guidance of development partners to engender sustainable development in our country.

Hon. Dehpue Y. Zuo
Deputy Minister for Economic Management
& Chairman of the Board
Ministry of Finance and Development Planning

Preface

The Liberia Institute of Statistics & Geo-Information Services (LISGIS) conducted the fifth and first fully digital census in November 2022. The 2022 National Population and Housing Census data was collected using Computer Assisted Personal Interviewing (CAPI) technology. Data were collected using tablets and later transmitted to LISGIS's server electronically.

The 14 thematic areas identified provide a comprehensive understanding of the population. These thematic areas are a) Population Distribution and Size b) Children, Adolescents, and Youth c) People with disabilities and older people d) Migration and Urbanization e) Labor force and Employment, f) Education, and Literacy g) Agricultural Population, h) Non-monetary poverty i) Housing conditions and facilities j) Mortality, k) Fertility, l) Marriages/Nuptiality, m) Gender Dimensions, and n) Population Projections. I would also like to thank the national and international experts for preparing the thematic reports.

Though the Government contributed immense resources to the 2022 National Census exercise, the requirements were enormous and beyond the capacity of the Government and LISGIS. It is with pleasure that we recognize and appreciate the support of the United Nations Population Fund (UNFPA), the Swedish Government, the World Bank, the United States Aid for International Development (USAID), the Irish Government, the Government of Ghana, Economic Community of West African States (ECOWAS) and the United Nations Children's Fund (UNICEF) and other partners whose timely and continuous interventions gave stimulus to the execution of the 2022 Liberia Population and Housing Census including the preparation of the reports.

Special gratitude goes to the general public for their cooperation and support. We are indebted to personnel and the management of LISGIS, national and international experts, supervisors, and enumerators for successfully conducting the 2022 National Population and Housing Census.

Richard F. Ngafuan
Director General
LISGIS

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Abbreviations and acronyms

FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
LISGIS	Liberia Institute of Statistics Geo-Information Studies
MoA	Ministry of Agriculture
MPEA	Ministry of Planning and Economic Affairs
SDGs	Sustainable Development Goals

Executive summary

This report analysed the agricultural household data collected from the 2022 Liberia Population and Housing Census. It examined the heads of agricultural households, the population in the agricultural households, arable crops and tree crops producing households, livestock and aquacultural households and the amenities and dwelling strictures of the agricultural households.

Agricultural households are like machinery that speeds up economic growth by supporting livelihoods. An agricultural household is one or more persons sharing a single residence on a farm or where the primary occupation of the household is the operation of the farm premises. It includes all members living together in an agricultural household, including those who work on the farm holding and those who do not.

The population and household heads in the agricultural sector were analysed. First, an agricultural household head is a reference person who is typically the head of the house. They are typically parents or guardians who control the affairs of an agricultural home by providing support (financial and technical) and production routines for running the farm. Under the agricultural household head, we examined gender, educational level, age and marriage pattern.

Under gender, we analysed the sex distribution of agricultural households by residence, where the size of rural and urban household heads was determined. Household structure significantly influences gender roles. Women's and men's roles in married households are typically gender-differentiated. Men are often regarded as the head of household in married households and are expected to be the primary breadwinners of the household. Therefore, even if the man is not as fully involved in the agricultural activity as the woman, he still becomes the head of the agricultural household. This limits the proportion of women to men in an agricultural household.

We further examined the proportion distribution of the population in agricultural households by sex, county and residence. The population in agricultural households includes all the persons living in the agricultural household. It is the driving force for increased productivity, the higher the population, the higher the production. Indicators examined in the population of agricultural households also included Age and Disability status. In examining educational status, the following indicators were considered: never attended preschool, primary, secondary, University and tertiary education. An educated agricultural household head is a skilled person and is therefore capable of acquiring more yield or productivity, in contrast to the uneducated. Education improves the decision-making skills of farmers; during farming, farmers apply a combination of conventional inputs that must be well managed since any misuse of them is very costly and has adverse effects on output and thus income.

The age of the household head is another vital demography variable that has an essential effect on livelihood transition. We examined the ages of agricultural household heads in the following order: 13-14 (children), 15-34 (youth and young adult), 35-64 (adulthood middle age), and 65+ (adulthood old age). Studies have shown that middle-aged farmers are more productive because of their experience. The experience of older farmers leads to a more efficient combination of input, which makes a unit of labour more effective (Tauer, 1984; Guo et al., 2015). The ages of all individuals in the agricultural households were examined via the age groups: 1-14 (children), > (youth and young adult), 35-64 (adulthood middle age), and 65+ (adulthood old age).

The indicators utilized to analyse household heads' religion include Christian, Muslim, Traditional African religions, other religions and no religion. Religion affects the size of agricultural households as it determines the type of marriage.

Lastly, we examined marital status using the following marriage patterns: never married, married monogamous, married polygamous, separated, divorced, widow/widower, consensual union. Marriage plays a vital role in determining the size of an agricultural household. Typically, families found in the polygamous marriage group will have larger agricultural household sizes than those in the married monogamous group.

A disability is any condition of the body or mind (impairment) that makes it more challenging to do certain activities and interact with others. In this report, we outline the following disabilities: difficulties in seeing, difficulties in hearing, difficulties in walking,

difficulties in remembering, difficulties with self-care, and difficulties in communicating, understanding or being understood. Meanwhile, most farmers who are 65 and above are likely to undergo one of these difficulties.

For crop production, we focused on arable crops. Arable crops referred to those that required high-quality soil and a favourable climate for production. Arable farmland is used to grow crops that provide food for people and animals. By classification, most of the food crops in Liberia require arable farmland for sustainable production. The list of arable crops cultivated in Liberia includes cereal (rice), root and tuber (cassava), Legumes (peanuts), Sugarcane, vegetables and the practice of backyard farming.

Another category of crop considered was tree crops. Tree crops have long been an integral part of Liberia's economy. It mainly includes some food and cash crops grown in Liberia. The primary tree cash crops are cocoa, coffee, oil palm, and rubber (1989-1996 and 1999-2003). Plantains and bananas are the food crops found in the tree crop category. The arable crops cultivated in Liberia are oil palm, cocoa, coffee, coconut, rubber, plantain and banana.

In addition, we analysed the livestock and aquaculture practices. Livestock is animals kept for production, such as cattle, sheep, pigs, goats, horses or poultry. In this report, we classified poultry as a separate section of livestock. Aquaculture, sometimes called aquafarming, is the breeding, raising, growing and harvesting aquatic organisms in fresh and salt water. In Liberia, the practice of aquaculture is primarily based on the harvesting of sea organisms or fishery. The demography of males and females producing livestock, poultry and aqua farming was examined.

The report highlights the amenities and dwelling structures of agricultural households. The amenities are desirable or practical features or facilities of a dwelling structure. This section of the report analyses the living standards or conditions of members in the agricultural household. It also explores the poverty levels of farm households. The availability of better amenities and dwelling structures is critical to thriving agriculture, as they improve social and mental health.

Chapter 1: Background characteristics

1.1 Introduction

Liberia is mainly an agricultural country. Although underutilized, the country is endowed with abundant natural resources such as arable land, evergreen forests, lakes and rivers, sunshine and high rainfall. First, the term arable crop referred to crops that required high-quality soil and a favourable climate for production. Arable farmland is utilized to grow crops that provide food for people and animals (Van Zanten, 2019). As the population grows, the demand for arable land will increase. Therefore, securing more arable land to supply the growing population with sufficient food is the key. By classification, most of the food crops in Liberia require arable farmland for sustainable production.

Prioritizing the production of food crops will immensely reduce hunger and poverty. Accounting for 36 per cent of the total GDP of Liberia, employing more than 70 per cent of the workforce, and constituting an average of 14 per cent of total export earnings, explains the significance of the agricultural sector. However, the disintegration of the agricultural sector is due to the failure and refusal of the Government to invest adequately in smallholder farmers and high-standard agricultural education.

Agriculture, including forestry, is the primary livelihood for more than 60 per cent of Liberia's population and accounted for 31 per cent of Liberia's 2021 Gross Domestic Product (GDP) (Liberia – Agricultural Sectors, 2022). It currently accounts for 36 per cent of the country's GDP and constitutes an average of 14 per cent of total export earnings. Agriculture provides income for many households in cassava, rubber, rice, oil palm, cocoa or sugarcane production. The development of Liberia's agricultural sector is crucial to her economic growth and food security. Investing in agriculture through smallholder farmers will lead to a drastic increase in production.

The establishment of the agricultural statistics system in Liberia dates back to 1971 when the Ministry of Planning and Economic Affairs (MPEA) conducted the first agricultural census with technical and financial support from the Food and Agriculture Organization (FAO) of the United Nations. The system was primarily designed to provide current statistics, which was planned to be an ongoing programme to facilitate agricultural development planning and policy decision-making. The system collapsed during the crisis of the civil war and was reclaimed to collect agricultural data and analysis through the Ministry of Agriculture (MoA) and Liberia Institute of Statistics & Geo-Information Services (LISGIS).

The essence of conducting the 2022 census is to count the country's entire population and housing stock and collect information on its geographic, demographic, socioeconomic and family characteristics. Knowing the number of agricultural households and the population of agricultural households creates opportunities for improvement. Liberia has conducted five censuses in 1962, 1974, 1984, 2008 and 2022, revealing a constantly growing population of 1.1 million, 1.5 million, 2.1 million, 3.5 million, and 5.3 million. The 2008 and 2022 censuses reported the number of agricultural households as 331,695 and 359,07, respectively. The first modern census in Liberia was in 1962, and the second one was in 1974. Following the United Nations Recommendations that censuses be taken every 10 years, the 1984 census was held as part of the 1980 Round of Censuses, but the results were not fully published. However, the 2008 census was held successfully after the civil war, and the results were published. It was the first census embedded with agriculture questions in Liberia's history, followed by the 2022 census.

The SDGs emphasized that agriculture has the potential to address demographic pressure, increase economic growth, reduce social inequality, etc. The Pro-Poor policy on agriculture aimed to improve smallholder farmers' farming abilities and living conditions. The agricultural system still utilizes traditional subsistence farming systems, mainly in the uplands and is characterized by labour intensity, shifting cultivation, low technologies and low productivity. Even so, including agriculture in the 2022 National Population and Housing Census is brilliant.

Data will be used for proper planning, policy-making and developmental proposals of the agricultural sector. The 2022 Population and Housing Census

enumeration was conducted in all 160 districts in the 15 counties of the Republic of Liberia. Specific questions about the agricultural households were asked, and credible data were acquired, such as households involved in agriculture and the various crops cultivated in Liberia. animal farming, and households' ownership amenities and types of dwelling structure.

Hence, this census focuses on agricultural households involved in the production of different types of crop and animal husbandry practices at the household level. It also focused on the poverty level of the agricultural household.

1.2 Objectives

Statistics have shown that most of the population in Liberia directly depends on agriculture as a livelihood. This sector contributes to about 25-35 per cent of Liberia's GDP. The need to eradicate poverty through sustaining food security on a national level is possible when the Government prioritizes the country's agricultural sector. With more than 400 million acres of arable land, Liberia has the potential to feed itself and other countries.

The overall objective of the report is to provide statistics on the agricultural sector for policymakers and planners to enable them to make informed policies and plans for development. Also, it aims to describe the agricultural structure and related characteristics by providing statistical data on operational land utilization.

More specifically, the objectives are to analyse the background characteristics of the agricultural households, to examine the data on food and cash crop farming in the country, to investigate livestock farming and aquaculture in Liberia, to analyse the poverty levels in agricultural households, to enhance agriculture data bank in the country; and to suggest policy recommendations for the agricultural sector.

1.3 Methodology

The census questionnaire had a module focused on agricultural data. Section 5 of the questionnaire had 13 questions (A01–A13) to collect information on agriculture. The overall question was, "Are you or any household member engaged in agricultural or livestock farming?" The types of farms asked about were rice, cassava, plantain, rubber, palm oil, coffee, cocoa, coconut, sugarcane, livestock, poultry, fishery and other crops. Only households with a member involved in any of the listed farming activities were probed.

The questionnaire asked about individual household involvement in agriculture in Liberia, ownership of farming land and agricultural practices in Liberia on a household basis. This section has a total of three technical questions: A00 to A02 (are you or any member of your family engaged in agriculture activities? How did you acquire the land on which you farm? Are you or any member of your household engaged in the cultivation of coffee?), and 18 general questions A00 to A17 with the repeat of A02 15 times (are you or any member of your family engaged in the cultivation/rearing of coffee, rice, cassava, plantain, rubber, palm oil, cocoa, coconut, sugarcane, vegetable, backyard garden, banana, peanut, livestock, poultry, fishery and aquaculture).

Data collected from the field were coded into a database that could respond with the keywords mentioned in the questionnaire. To analyse the census data, univariate and bivariate demi tables were used to collect data from the coded census database. Also, the direction of the analysis was limited to only questions from the questionnaire.

Meanwhile, the variables considered were sex, residence and county. The sex of the agricultural household was computed by finding the average male and female heads of household and the population in the agricultural household. The residences and counties were computed by calculating the per cent distribution of the total agricultural households. Statistical findings were established by proportion distribution and calculating row percentages.

1.4 Strengths and limitations of the data

A comparison between the 2008 and the 2022 agriculture NPHC census questionnaire showed little advancement (newly added indicator) in the 2022 questionnaire compared to the 2008 one.

However, there are still some limitations of the 2022 data. First, the total agricultural population was not identified. This information is essential even though this is not a direct agricultural census. We also observed that the questionnaire did not identify members of the households involved in agriculture.

To do a more in-depth analysis of the agriculture households, it would have been better to have a follow-up question: Who, in terms of sex and age,

was engaged in own account agriculture activities? It is not possible for every member residing in an agricultural household to be a part of the farming activity. This limitation was also mentioned in the 2008 census; for the sake of accurate data, I hope this will be prioritized in the next census.

The type of tools or equipment used in the agricultural households for agricultural activities was not asked about. Questions were not asked about post-harvest technology (How do you harvest your produce. Do you have a storage facility? If yes, what is it? How do you transport your produce to the market?), as there can be more challenges induced farmers during and after harvest that led to producing deterioration; this condition limits farmers market deliveries, increase losses, etc. Therefore, the country's agricultural sector will become more productive when post-harvest facilities are provided. Notwithstanding these limitations, the information in this report is substantial and reliable for policies and other uses.

1.5 Report structure

This report is organized into seven chapters. Chapter 1 gives the background information, which embodies the introductory statement, objectives of the report, methodology and data limitations. Chapter 2 describes the background characteristics of the population in agricultural households. Chapter 3 presents arable crop farming. The tree crops farming at the national level was examined in Chapter 4. Livestock and aquaculture agricultural households, which include agricultural households rearing livestock, poultry (type of livestock), and fish farming, were discussed in Chapter 5. Chapter 6 analyses poverty levels using households' ownership of assets. Finally, Chapter 7 discusses the policy implications of the findings and the way forward.

Chapter 2: Characteristics of agricultural households

2.1 Introduction

In this chapter, we analysed essential characteristics regarding the population of agricultural households in Liberia.

2.2 Heads of agricultural households

Studies have shown that approximately 55 per cent of rural Liberian households are food insecure (Pandey et al., 2023).

Table 2.1 shows the distribution of Agricultural Household Heads by Sex and County. The total size of the agricultural household heads was 359,075, constituting 30.2 per cent of the total national households.

The male-headed households were 250,076, which constituted 69.6 per cent of the total agricultural households. There were higher proportions of male-headed households (69.6 per cent) than female-headed ones (30.4 per cent).

By county, Lofa accounted for the most agricultural household heads (71.5 per cent), followed by Nimba (54.8 per cent). By sex, Grand Bassa and River Cess had the highest proportion of male-headed households (78.6 per cent and 78.5 per cent, respectively).

In addition, compared to the 2008 census report, the number of household heads in the 2022 data increased by 7.6 per cent (27,380) of the 2008 household size (331,695).

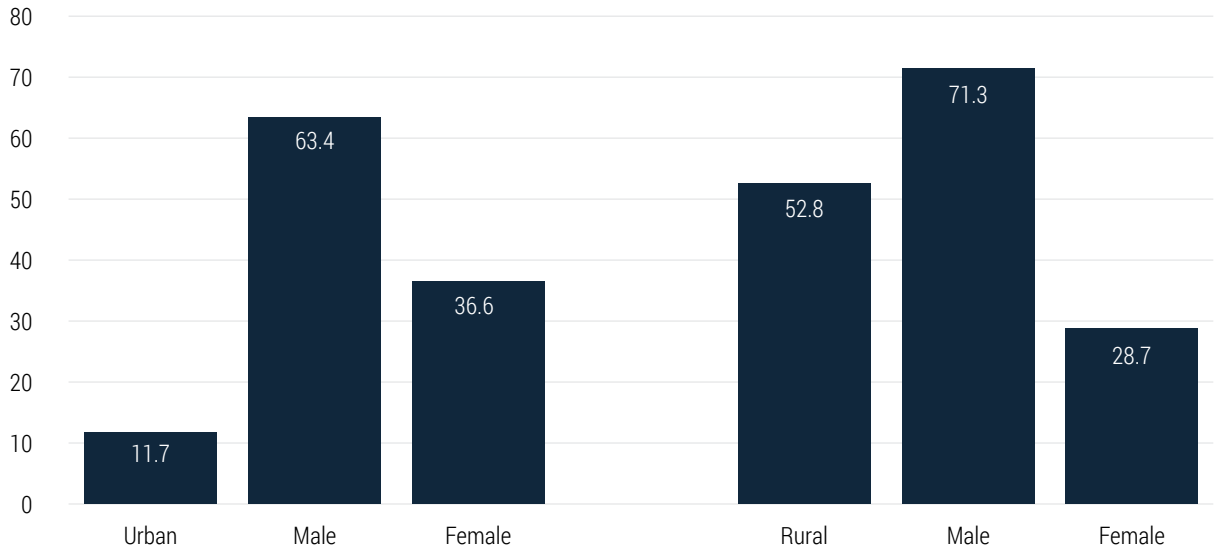
Table 2.1 Distribution of agricultural household heads by sex and county

Variables	Male Household Heads (%)	Female Household Heads (%)	Agricultural Households (n)	Agricultural Households (%)	Total National Households (n)
County					
Bomi	67.1	32.9	12,345	32.0	38,591
Bong	69.2	30.8	51,939	47.2	110,099
Gbarpolu	73.7	26.3	10,665	47.6	22,411
Grand Bassa	78.6	21.4	27,799	40.1	69,287
Grand Cape Mount	72.0	28.0	13,166	29.1	45,170
Grand Gedeh	74.1	25.9	19,400	44.4	43,663
Grand Kru	63.0	37.0	8,330	40.4	20,604
Lofa	61.2	38.8	53,807	71.5	75,260
Margibi	70.3	29.7	15,164	21.0	72,276
Maryland	68.4	31.6	9,891	26.6	37,214
Montserrado	67.8	32.2	37,438	8.3	449,910
Nimba	71.7	28.3	70,062	54.8	127,951

Variables	Male Household Heads (%)	Female Household Heads (%)	Agricultural Households (n)	Agricultural Households (%)	Total National Households (n)
River Cess	78.5	21.5	10,786	51.1	21,087
River Gee	65.1	34.9	9,617	40.2	23,906
Sinoe	73.2	26.8	8,666	29.0	29,843
Total	**69.6**	**30.4**	**359,075**	**30.2**	**1,187,272**

By residence, the rural agricultural household constituted 52.8 per cent while the urban households were 11.7 per cent of the national households. There was a higher proportion of female-headed households in the urban residences than the rural ones.

Figure 2.1 Distribution of the agricultural household heads by sex and residence



2.2.1 Educational levels of household heads

Table 2.2 shows the educational levels of Household Heads by Sex and County. The level of education acquired by the household head determines the sophistication of the cultivating method of crops or rearing of animals.

The educational levels of agricultural household heads were arranged into six categories. The attended school constituted the highest category (49.5 per cent) of the total agricultural households (359,075).

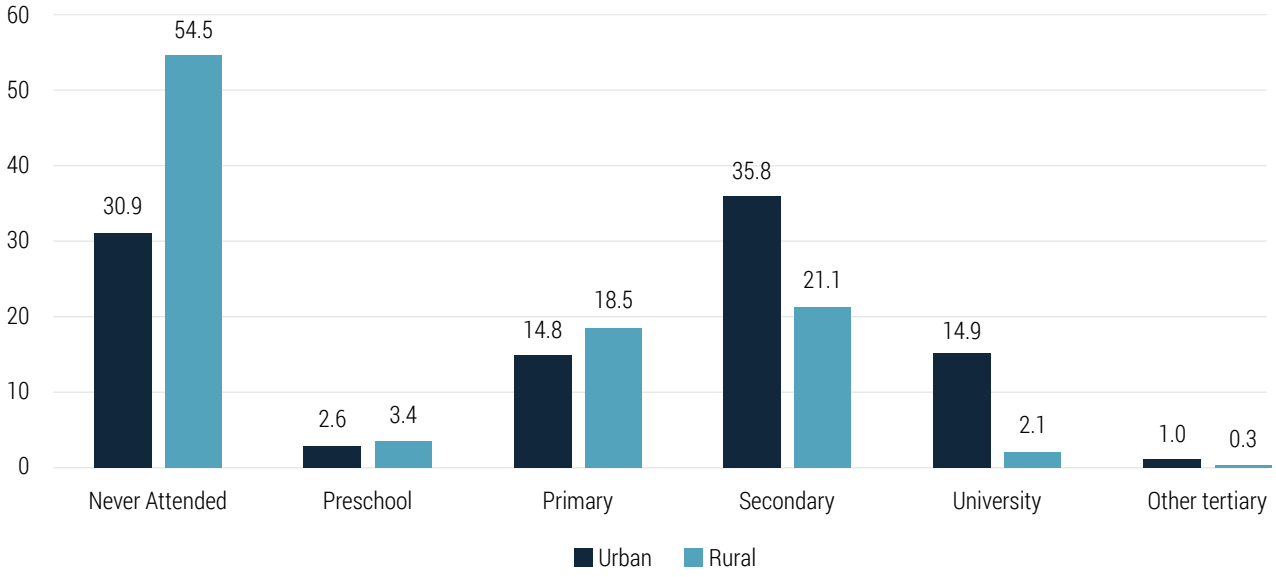
Table 2.2 Educational levels of agricultural household heads by sex and county

Variables	Educational Status						Total Households
	Never Attended	Preschool	Primary	Secondary	University	Other tertiary	
County							
Bomi	54.0	2.7	17.0	22.5	3.1	0.6	12,345
Bong	59.5	3.9	15.8	17.9	2.6	0.2	51,939
Gbarpolu	53.2	2.1	18.4	23.0	2.9	0.5	10,665

Variables	Educational Status						Total Households
	Never Attended	Preschool	Primary	Secondary	University	Other tertiary	
Grand Bassa	64.9	3.1	16.4	13.8	1.7	0.1	27,799
Grand Cape Mount	58.8	1.5	13.6	21.4	3.9	0.8	13,166
Grand Gedeh	41.9	2.7	18.4	32.6	3.9	0.3	19,400
Grand Kru	45.8	4.1	19.7	28.1	2.1	0.1	8,330
Lofa	60.0	1.8	13.0	21.5	3.2	0.4	53,807
Margibi	47.6	2.7	18.0	24.6	6.8	0.3	15,164
Maryland	46.1	3.5	21.0	25.2	3.8	0.4	9,891
Montserrado	27.5	2.5	14.5	34.4	19.8	1.4	37,438
Nimba	41.6	4.2	23.1	27.9	3.0	0.2	70,062
River Cess	47.7	5.8	24.9	19.9	1.6	0.2	10,786
River Gee	44.7	5.6	21.2	26.2	2.1	0.2	9,617
Sinoe	43.1	3.4	20.0	29.9	3.3	0.2	8,666
Total	**49.5**	**3.2**	**17.8**	**24.3**	**4.8**	**0.4**	**359,075**

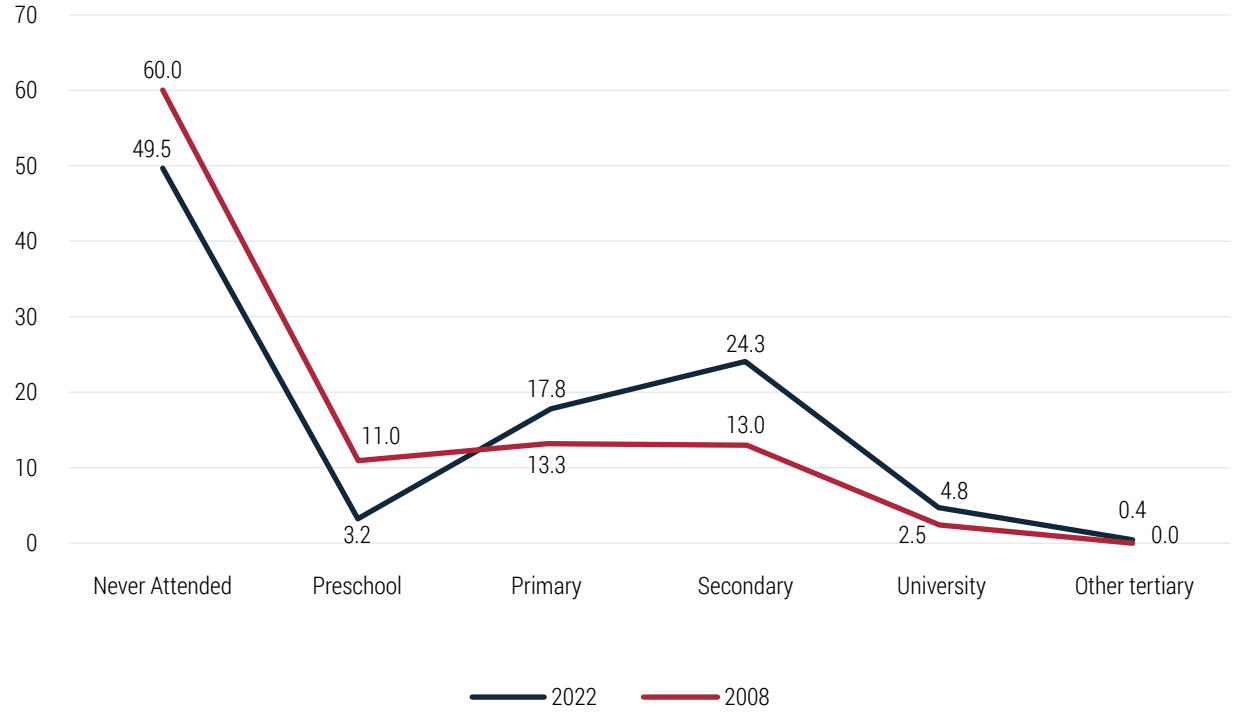
By residence, over half (54.5 per cent) of the rural agricultural household heads did not attend school, while 35.8 per cent of the urban residents attended secondary education (Figure 2.2).

Figure 2.2 Educational levels of agricultural household heads by sex and residence



Furthermore, past and current examinations of the educational levels of the agricultural household heads showed minor improvements. In 2008, 60.2 per cent of agricultural households never attended classroom. Meanwhile, in 2022, the number of uneducated household heads was reduced to 49.5 per cent. However, the comparison also indicated a decrease in preschool attendance. This change affected children residing in agricultural households.

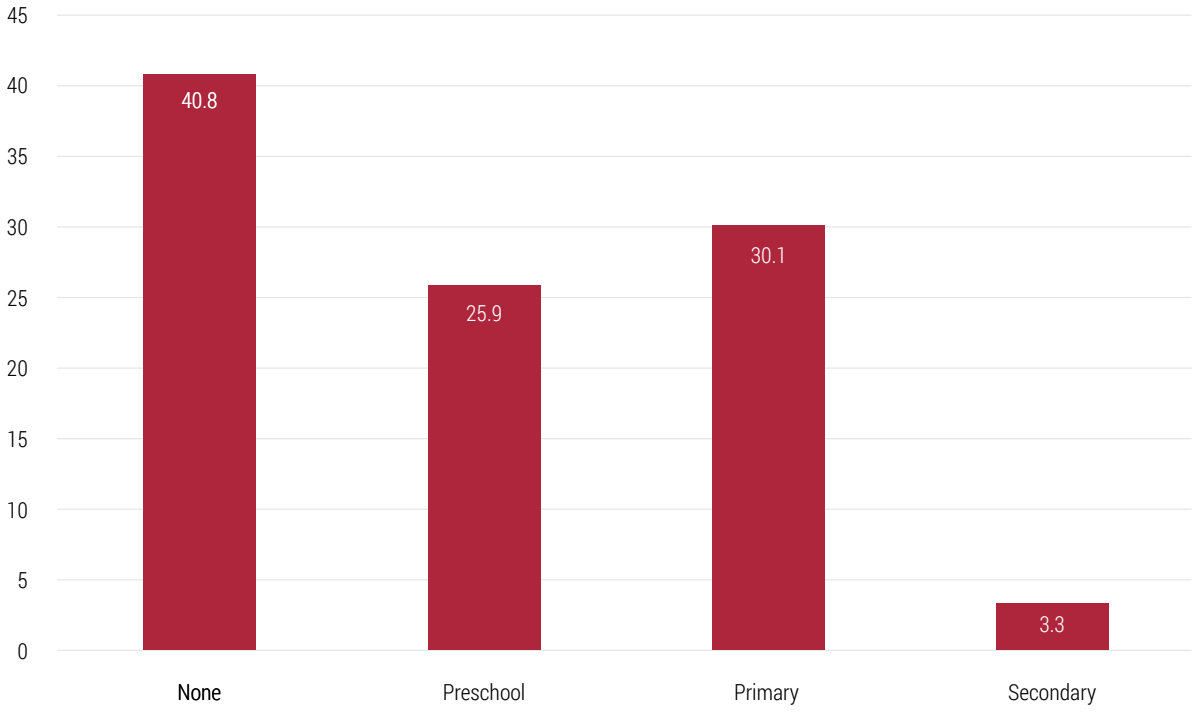
Figure 2.3 Educational level of agricultural household heads in 2008 and 2022



2.2.2 Educational level of ages 3-17 in the agricultural households

The age group 3-17 years are school-going children residing in agricultural households. Four in 10 (40.8) of these children are not attending school (Figure 2.4).

Figure 2.4 Educational levels of ages 3-17 in the agricultural households



2.2.2 Age distribution by heads of agricultural households

The age of the agricultural household heads is a vital demography variable that is thought to have an essential effect on livelihood transition and agricultural experience. It is observed that middle-aged (40-60 years) farmers appear more productive because of their experiences. The experience of older farmers leads to a more efficient combination of input that makes a unit of labour more effective (Tauer, 1984).

From Table 2.3, the age group 35-64 accounted for the highest (63.5 per cent) number of agricultural household heads. In addition, the male heads of the mentioned age group constituted 71.4 per cent. In contrast, the age group 13-14 constituted 244 (0.1 per cent) household size, the lowest age group heading agricultural households. Individuals within this age group are children and will most often serve as heads of household under constraining conditions. The female-headed households constituted 48.0 per cent of the mentioned age group.

Table 2.3 Age distribution of agricultural household heads by sex

Age	Sex		Total Agricultural Households (%)	Total Agricultural Households (n)
	Male Heads (%)	Female Heads (%)		
13-14 Years	52.0	48.0	0.1	244
15-34 Years	66.2	33.8	27.3	98,205
35-64 Years	71.4	28.6	63.5	228,002
65+	68.4	31.6	10.1	36,429
Total	**69.6**	**30.4**	**100.00**	**359,075**

2.2.3 Marriage patterns of agricultural household heads

Table 2.4 shows the marital status distribution of the Heads of Agricultural Households by County. Out of the total number of agricultural household (359,075), the practice of monogamous marriage constituted 63.9 per cent (229,480), which was the highest proportion of the marital categories. The next category was never married, which constituted 19.3 per cent (69,218), followed by widow/widower, which constituted 5.5 per cent (19,821); polygamous marriage, which constituted 4.3 per cent (15,441); consensual union, which constituted 3.1 per cent (11,034); separation, constituted 2.9 per cent (10,254); and divorced, constated 1.1 per cent (3,827) which was the lowest category.

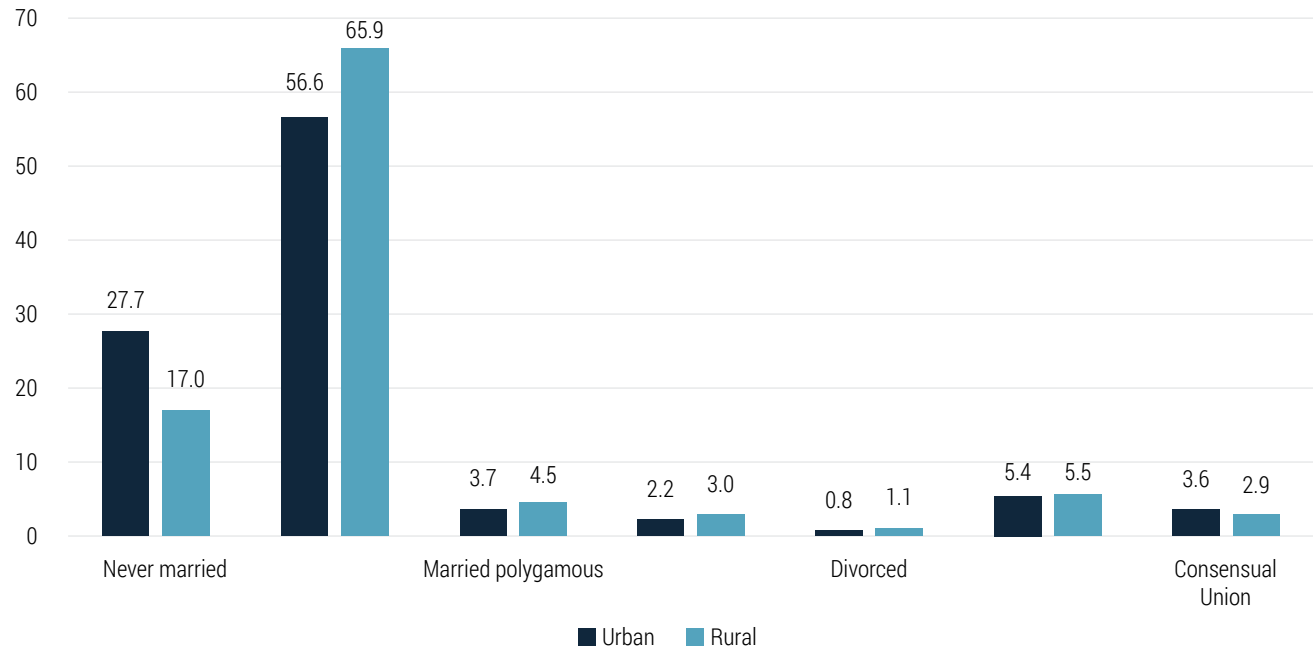
Table 2.4 Distribution of marital status of the heads of agricultural households by county

Variables	Marital Status (%)							Total Agricultural Households (n)
	Never married	Married monogamous	Married polygamous	Separated	Divorced	Widow/ widower	Consensual Union	
Counties								
Bomi	20.0	63.9	3.9	3.4	1.5	6.2	0.9	12,345
Bong	24.1	58.9	2.5	2.2	1.1	6.1	5.1	51,939
Gbarpolu	17.5	70.6	3.1	1.9	1.3	4.2	25.1	10,665
Grand Bassa	15.7	69.2	5.0	3.4	1.6	4.7	0.4	27,799

Variables	Marital Status (%)							Total Agricultural Households (n)
	Never married	Married monogamous	Married polygamous	Separated	Divorced	Widow/ widower	Consensual Union	
Grand Cape Mount	13.7	69.4	6.9	2.3	1.8	5.3	0.7	13,166
Grand Gedeh	16.7	69.6	4.0	3.2	0.5	4.5	1.5	19,400
Grand Kru	12.2	69.7	6.8	3.3	0.3	5.2	2.6	8,330
Lofa	16.7	62.0	6.3	4.1	1.5	7.0	2.3	53,807
Margibi	28.2	59.1	2.5	2.7	1.2	5.2	1.1	15,164
Maryland	15.6	66.9	6.3	2.6	0.2	6.1	2.2	9,891
Montserrado	30.3	55.7	3.4	1.8	1.1	5.5	2.2	37,438
Nimba	18.1	63.3	3.7	2.7	0.6	5.1	6.5	70,062
River Cess	10.5	76.7	3.0	3.1	2.1	4.1	0.5	10,786
River Gee	9.6	72.6	5.8	2.9	0.3	6.2	2.6	9,617
Sinoe	12.6	74.0	6.0	3.4	0.2	3.5	0.4	8,666
Total	**19.3**	**63.9**	**4.3**	**2.9**	**1.1**	**5.5**	**3.1**	**359,075**

By residence, more than half (65.9%) of the rural household heads practiced monogamous marriage, while 27.7 per cent of the urban households were not married (Figure 2.5).

Figure 2.5 Marriage status of the head of agricultural households by residence



2.2.4 Religious affiliation of agricultural household heads

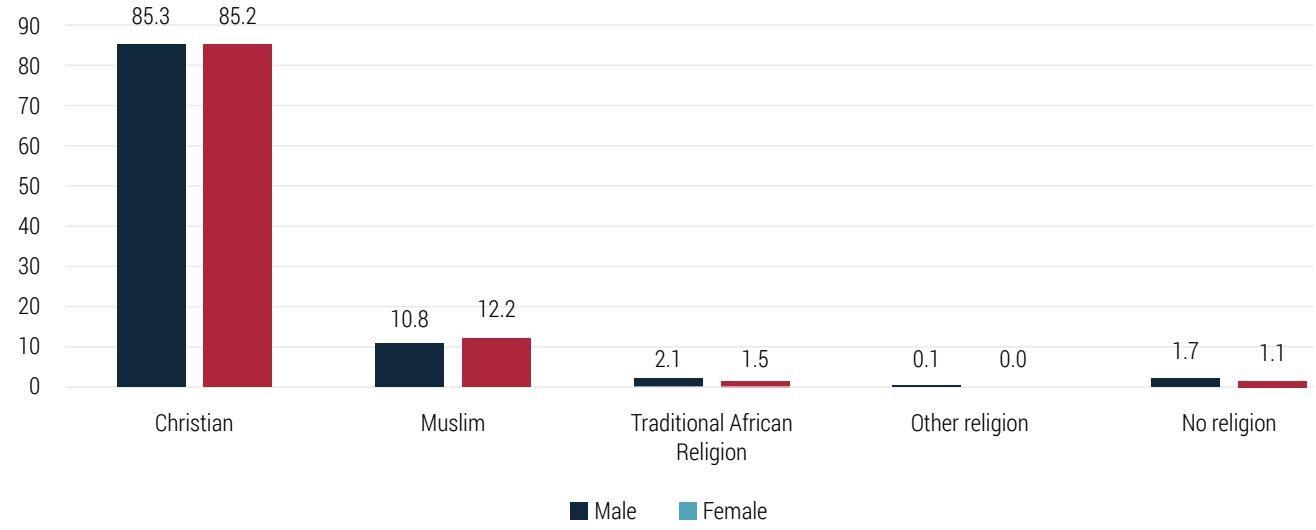
The agricultural household heads dominantly occupied two religious' groups: Christians (85 per cent) and Muslims (11 per cent). The Traditional African religion, other religions and no religion categories are also practiced by a handful of people (each < 2 per cent). By county, 97.7 per cent of agricultural household heads in Grand Bassa are Christians, while almost half (45.4 per cent) of the agricultural household heads in Bomi are Muslims.

Table 2.5 Distribution of household heads by religious affiliation and residence

Variables	Religious Affiliation (%)					Total Agricultural Households (n)
	Christian	Muslim	Traditional African Religion	Other religion	No religion	
County						
Bomi	54.1	45.4	0.1	0.0	0.4	12,345
Bong	96.2	1.7	1.0	0.0	1.1	51,939
Gbarpolu	79.2	20	0.6	0.0	0.2	10,665
Grand Bassa	97.7	0.6	1.1	0.0	0.6	27,799
Grand Gedeh	90.9	4.4	2.9	0.3	1.5	19,400
Grand Kru	94.7	0.7	3.0	0.1	1.6	8,330
Lofa	65.4	28.6	4.1	0.1	2.0	53,807
Margibi	95.7	3.1	0.4	0.1	0.7	15,164
Maryland	96.5	0.4	1.9	0.0	1.2	9,891
Montserrado	90.0	9.2	0.2	0.1	0.4	37,438
Nimba	92.2	0.6	3.3	0.1	3.7	70,062
River Cess	98.5	0.9	0.2	0.0	0.5	10,786
River Gee	95.8	2.2	1.5	0.0	0.5	9,617
Sinoe	96.6	1.2	1.3	0.0	0.9	8,666
Total	**85.3**	**11.2**	**1.9**	**0.1**	**1.5**	**359,075**

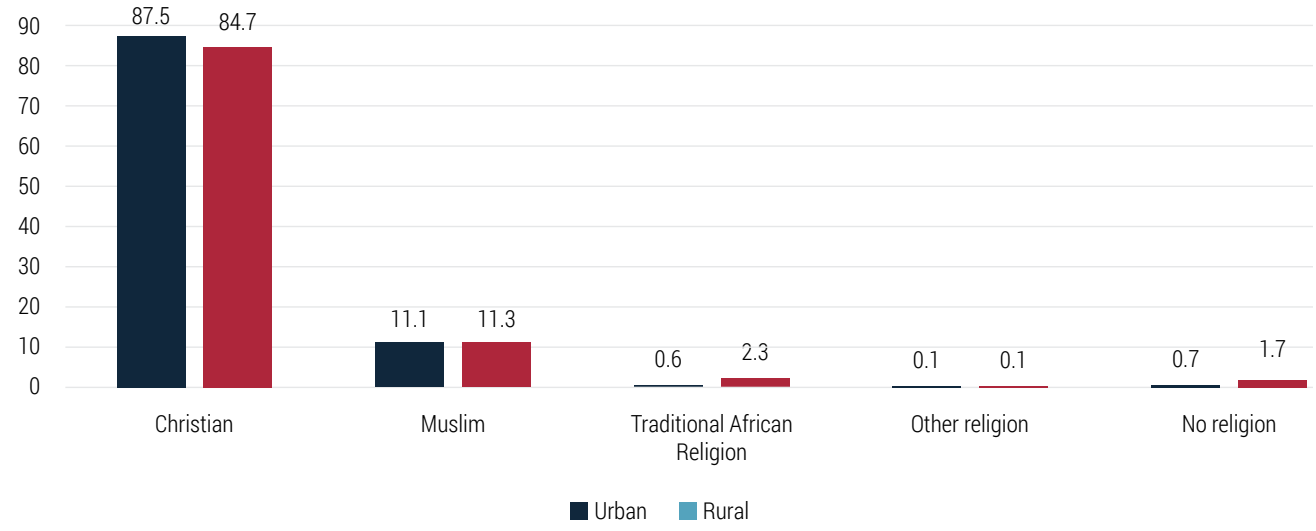
By sex distribution, 85.3 per cent (213,222) of the total male households are Christian, while 12.2 per cent (13,252) of the female households are Muslim (Figure 2.6).

Figure 2.6 Distribution of religious affiliation of agricultural household heads by sex



Also, the Christian religion dominated in the urban than the urban residence by 2.8 per cent, while the Muslin religion dominated in the rural than the urban residence by 0.2 per cent (Figure 2.7).

Figure 2.7 Distribution of religious affiliation of household heads by residence



2.3 Population in agricultural households

Table 2.6 shows the population distribution in agricultural households by sex and county. According to the data collected, the total population found in all the agricultural households was 1,789,736, which constituted 34.1 per cent of the total population of Liberia.

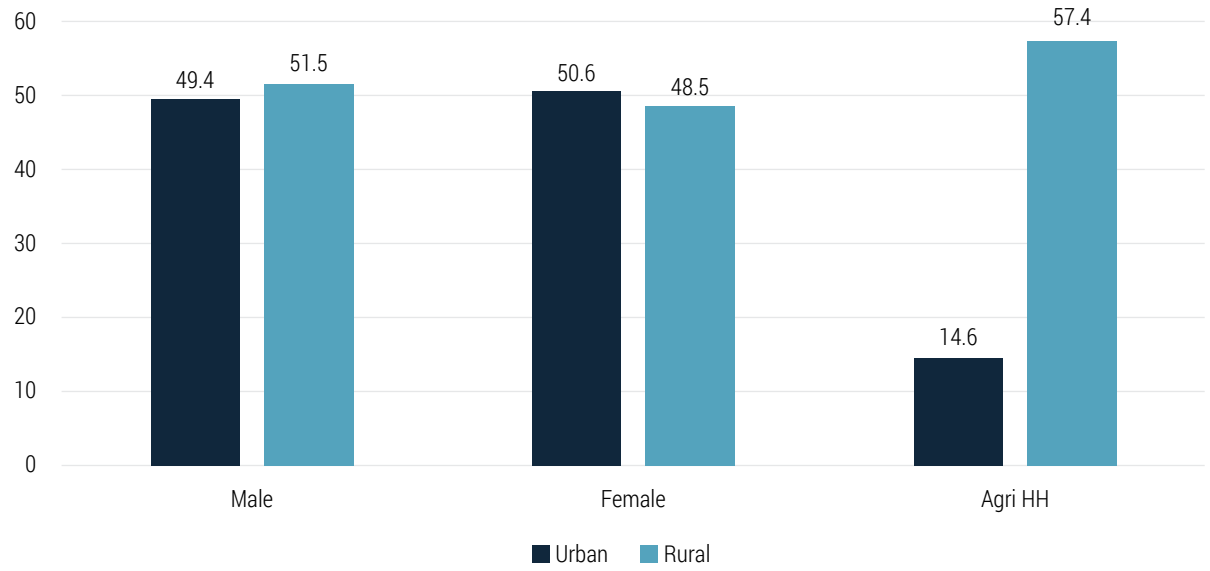
By sex and county, Montserrado constituted the lowest proportion of the male population in agriculture households at 49.2 per cent (94,705), while all the other counties constituted between 50 per cent and 53.5 per cent. The proportions of the population of female households by county indicate that Montserrado constituted the highest proportion of 51 per cent (97,815), followed by Lofa at 50.3 per cent (138,517); all the other counties constituted between 46.5 per cent to 50.3 per cent.

Table 2.6 Distribution of population in agricultural households by sex and county

Variables	Population in Agricultural Households (%)		Population in Agricultural Households (n)	Population in Agricultural Households (%)	Total Population of Liberia (n)
	Male	Female			
County					
Bomi	52.5	47.5	46,478	34.8	133,705
Bong	50.7	49.3	236,819	50.6	467,561
Gbarpolu	52.8	47.2	52,268	54.4	95,995
Grand Bassa	51.8	48.2	123,421	42.0	293,689
Grand Cape Mount	53.5	46.5	59,061	33.0	178,867
Grand Gedeh	53.2	46.8	109,710	50.6	216,692
Grand Kru	51.5	48.5	50,937	46.6	109,342
Lofa	49.7	50.3	275,376	75.0	367,376
Margibi	50.8	49.2	68,696	22.5	304,946
Maryland	52.0	48.0	52,032	30.1	172,587
Montserrado	49.2	50.8	192,520	10.0	1920,965
Nimba	50.9	49.1	365,289	58.7	621,841
River Cess	52.7	47.3	50,817	56.0	90,819
River Gee	52.0	48.0	55,228	44.3	124,653
Sinoe	51.9	48.1	51,084	33.8	151,149
Total	**51.0**	**49.0**	**1,789,736**	**34.1**	**5,250,187**

Of the total agricultural population, 57.4 per cent were captured in rural residence (Table 2.6). Furthermore, out of the male population (913,626), 51.5 per cent were captured in urban homes. Meanwhile, 50.6 per cent of the total female population (876,110) is captured in urban residences (see Figure 2.8).

Figure 2.8 Distribution of population in agricultural households by sex and residence



2.3.1 Age distribution of population in agricultural households

Table 2.7 shows the population distribution in agricultural households by sex, residence and age. Age groups were organized into four (4) categories, between 0 to 65+. Some of these individuals are not involved in agricultural activities but reside in the agricultural household.

The category of age group 15-34 years constituted the largest population size in the agricultural household, 652,448 (31.4 per cent); it is 0.1 per cent above the age group 0-14 years comprised of children and are not actively involved in agricultural activity. The age group with the lowest population size is 65-plus, constituting 3.2 per cent (56,431), which is expected to contain a considerable number of the disabled population due to old age.

Table 2.7 Distribution of population in agricultural households by sex, residence and age

Age groups (years)	Sex		Total Population in Agricultural Households (%)	Total Population in Agricultural Households (n)
	Male	Female		
0 – 14	51.2	48.8	36.5	652,448
15 – 34	50.0	50.0	36.6	655,026
35 – 64	52.2	47.8	23.8	425,831
65+	52.4	47.6	3.2	56,431
Total	**51.0**	**49.0**	**100.0**	**1,789,736**

2.3.2 Agricultural population with disability status

Table 2.8 shows the distribution of persons with disability by sex, residence and county. About 9,005 individuals who suffered from at least one form of disability were captured, constituting 0.5 per cent of the total population found in agricultural households. Meanwhile, of the total disabled population, 61.8 per cent (5,562) are male.

By county, Gbarpolu accounted for the highest number of males (67.1 per cent), while River Gee accounted for the highest proportion of females (44.0 per cent) that suffered at least one disability.

Table 2.8 Distribution of persons with disability by sex, residence and county

Variables	Disable Population in Agricultural Households (%)		Disable population in Agricultural Households (n)	Disable population in Agricultural Households (%)	Total Population in Agricultural Households (%)
	Male	Female			
County					
Bomi	58.7	41.3	305	0.7	46,478
Bong	61.7	38.3	1159	0.5	236,819
Gbarpolu	67.1	32.9	331	0.6	52,268
Grand Bassa	68.0	32.0	596	0.5	123,421
Grand Cape Mount	61.4	38.6	347	0.6	59,061
Grand Gedeh	59.5	40.5	624	0.6	109,710
Grand Kru	58.2	41.8	220	0.4	50,937
Lofa	58.1	41.9	1181	0.4	275,376
Margibi	62.0	38.0	434	0.6	68,696
Maryland	62.0	38.0	440	0.8	52,032
Montserrado	58.6	41.4	1087	0.6	192,520
Nimba	65.5	34.5	1471	0.4	365,289
River Cess	67.9	32.1	249	0.5	50,817
River Gee	56.0	44.0	293	0.5	55,228
Sinoe	62.3	37.7	268	0.5	51,084
Total	**61.8**	**38.2**	**9005**	**0.5**	**1,789,736**

However, there is a higher proportion of females captured with disability in the urban residence (43.4 per cent). At the same time, there was a higher proportion of males captured with disability in the rural residence (63.4 per cent).

Figure 2.9 Distribution of persons with disability by sex and residence

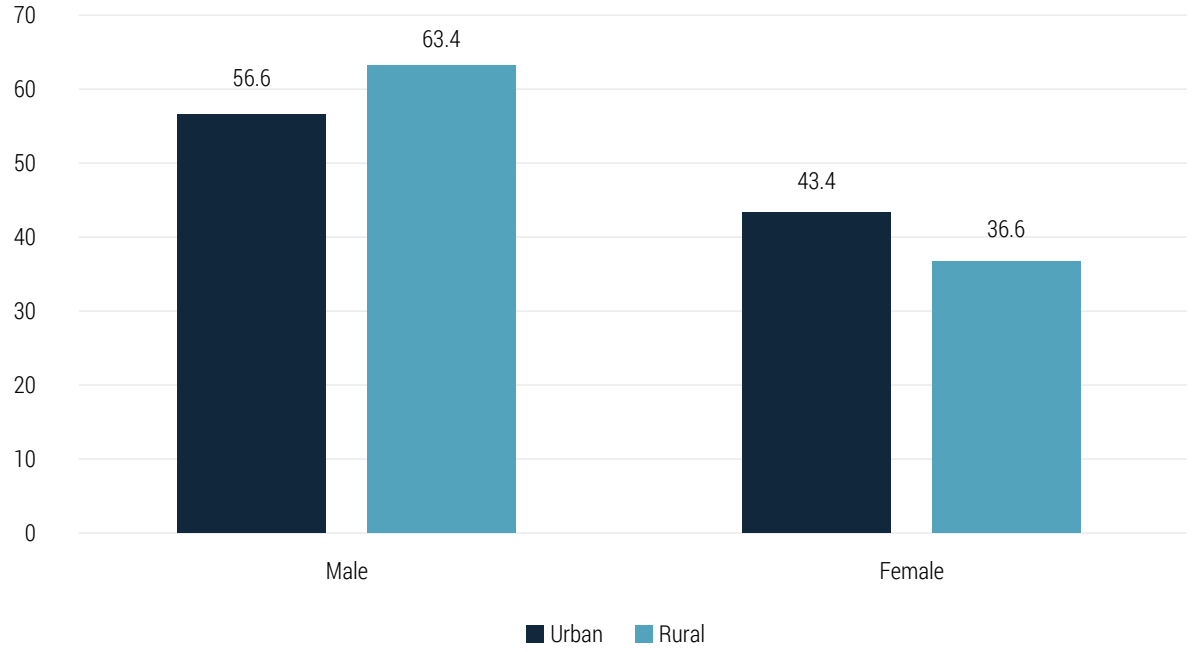
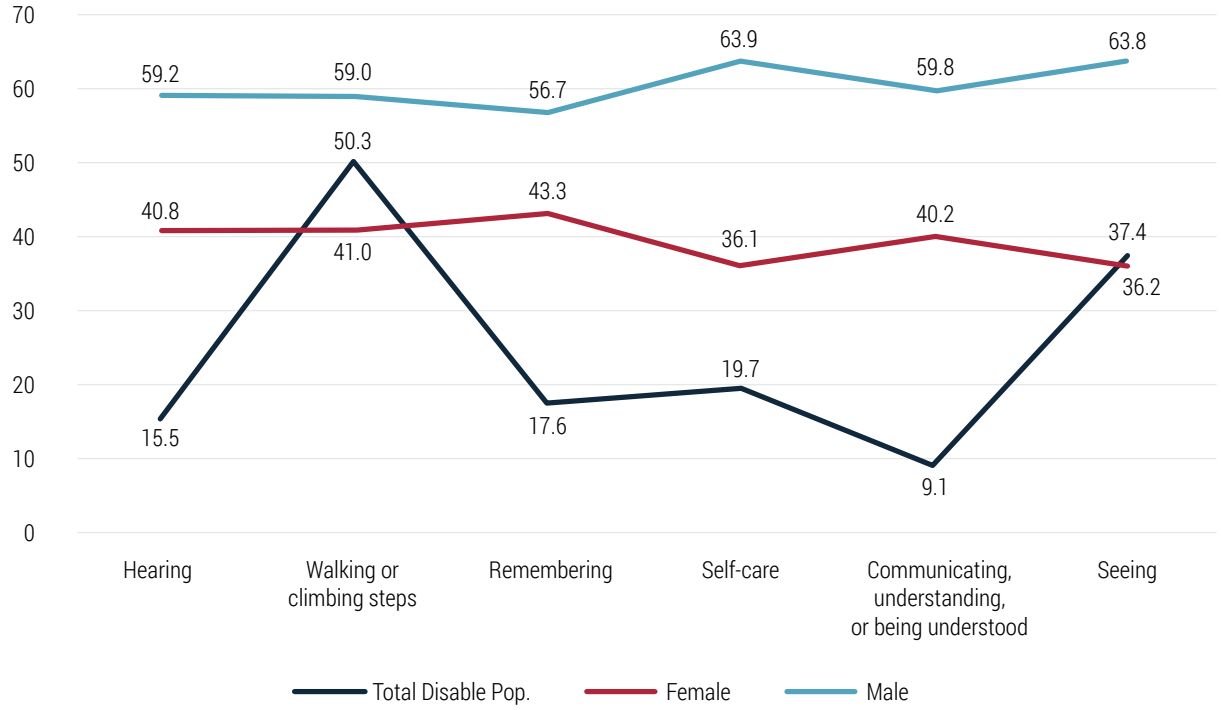


Figure 2.10 shows the type of disability in agricultural households. Difficulty in walking or climbing steps constituted the highest disability category (50.3 per cent), with a higher male proportion of 59.0 per cent.

Figure 2.10 Per cent distribution of type of disability in agricultural households



2.4 Summary and conclusion

The number of agricultural household heads is equivalent to the total agricultural household, which is 359,075. Meanwhile, male-headed households constituted 69.6 per cent. Analysis has shown that half (49.5 per cent) of the heads of agricultural households did not acquire formal education. This can affect productivity, as agriculture is a science and requires critical decisions. In examining the ages of the agricultural household heads, the age group 35-64 was identified as the highest (63.5), while the opposite is 13-14 (0.1 per cent). It is also reported that more than half (63.4 per cent) of the agricultural household heads practiced monogamous marriage.

By religious affiliation, the Christian religion constituted the highest percentage (85.3 per cent) of agricultural household heads the population in the agricultural household, while the Muslim religion was 11.2 per cent, followed by the Traditional African religion at 1.9 per cent.

Within the agricultural household, the total population captured was 1,789,736, of which 76.6 per cent were caught in the rural household. It was also identified that 51.0 per cent of the population in the agricultural household were male. The highest age group found in agriculture households is children (0-14), constituting 36.5 per cent, while the smallest population is the age group 65-plus (3.2 per cent).

A total of 9,005 individuals who suffered from at least one form of disability were captured in all the agricultural households; 61.8 per cent were reported as male. Of the various disability categories analysed in the report, difficulty walking or climbing steps constituted the highest percentage of 50.3 per cent.

Chapter 3: Arable crop cultivation

3.1 Introduction

First, the term arable crop referred to crops that required high-quality soil and a favourable climate for production. Arable farmland grows crops that provide food for people and animals (Anderson, 2023; Africa Development Bank, 2022). As the population continues to grow, the demand for arable land will increase. Therefore, securing more arable land to supply the growing population with sufficient food is the key.

From all analyses, the agricultural sector in Liberia remains the most viable and sustainable source of national income. It is a significant contributor to employment and foreign exchange earnings. Before the civil conflict, it employed approximately 75 per cent of the labour force (International Monetary Fund 2000); by 2021, it employed at least 70 per cent as the highest employer next to the Government (Liberia Annual Country Report 2022). In this chapter, we discuss rice (cereal crop), cassava (tuber crop), and plantain (botanical fruit crop) cultivated only for subsistence purposes.

3.2 Agricultural households producing rice

For decades, the increasing demand for rice has remained constant, and it may remain the same in the future as it is the most edible diet in the country. The total number of agricultural households cultivating rice is 264,318, constituting 73.6 per cent of Liberia's total agricultural households (359,075).

By county, Lofa constituted the highest number of rice-producing households at 94.0 per cent, while Montserrado accounted for the lowest, comprising 27.6 per cent (Table 3.1). However, Montserrado being the county with the most inferior rice-producing households is not a surprise since it is the most urbanized residence in Liberia.

The rural households involved in rice cultivation are 225,252, constituting 85.2 per cent of the total rural agricultural households.

By sex, the number of male households producing rice was 185,709, the majority of which were rural residences (71.5 per cent), while females occupied 78,609, the majority of which were urban residences (37.0 per cent).

In 2022, with the 33.8 per cent (1,773,579) increase in national population and 7.6 per cent increase (27,380) in agricultural households, it was surprising to realize that the rice households reduced by -9.1 per cent compared with the 2008 rice household data.

Table 3.1 Per cent distribution of rice-producing households by sex and residence

Variables	2022 Rice Households (%)		2022 Rice Households (n)	2008 Rice Households (%)	2022 Rice Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Residence						
Urban	63.0	37.0	39,066	62.8	51.3	76,224
Rural	71.5	28.5	225,252	86.9	79.6	282,851
County						
Bomi	67.3	32.7	7,097	74.6	57.5	12,345
Bong	70.2	29.8	41,840	89.0	80.6	51,939
Gbarpolu	74.2	25.8	9,582	94.7	89.8	10,665
Grand Bassa	80.9	19.1	18,808	74.4	67.7	27,799
Grand Cape Mount	73.2	26.8	9,345	80.1	71.0	13,166

Variables	2022 Rice Households (%)		2022 Rice Households (n)	2008 Rice Households (%)	2022 Rice Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Grand Gedeh	73.9	26.1	17,335	96.4	89.4	19,400
Grand Kru	63.2	36.8	7,303	95.6	87.7	8,330
Lofa	61.5	38.5	50,564	95.4	94.0	53,807
Margibi	71.8	28.2	7,064	54.7	46.6	15,164
Maryland	71.8	28.2	4,879	71.7	49.3	9,891
Montserrado	69.4	30.6	10,331	36.4	27.6	37,438
Nimba	72.3	27.7	56,288	92.6	80.3	70,062
Rivercess	79.5	20.5	9,011	92.4	83.5	10,786
River Gee	65.2	34.8	8,052	96.7	83.7	9,617
Sinoe	73.9	26.1	6,819	90.8	78.7	8,666
Total	**70.3**	**29.7**	**264,318**	**82.7**	**73.6**	**359,075**

3.3. Agricultural households producing cassava

Cassava is a wildly consumable crop next to rice in Liberia. It is a major manufacturing product that produces a variety of diets like Fufu, Garie, GB, etc. As indicated in Table 3.2, rural residents have more cassava households than urban residents. However, this is different for females.

The agricultural households engaged in the cultivation of cassava were 251,776, which constituted 70.1 per cent of the total agricultural households (359,075). The rural residences occupied 205,846 households, which constituted 81.8 per cent. More female households cultivate cassava in urban residences than in rural ones (Table 3.2).

By county, Grand Kru amounted to the highest percentage (92.5 per cent) of cassava-producing households, followed by Sinoe (90.1 per cent). Also, by sex and county, Grand Bassa constituted the highest percentage of male-headed households (79.2 per cent), while Grand Kru constituted the highest percentage of female-headed households producing cassava.

Cassava also experienced a -9.5 per cent decrease in the number of households compared to 2008 cassava household data.

Table 3.2 Distribution of cassava-producing households by sex and county

Variables	2022 Cassava Households (%)		2022 Cassava Households (n)	2022 Cassava Households (%)	2022 Cassava Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Residence						
Urban	63.7	36.3	45,930	62.8	60.3	76,224
Rural	72.4	27.6	205,846	81.3	72.8	282,851
County						
Bomi	67.1	32.9	10,335	88.2	83.7	12,345
Bong	69.6	30.4	35,239	72.9	67.8	51,939
Gbarpolu	73.7	26.3	7,597	76.9	71.2	10,665

Variables	2022 Cassava Households (%)		2022 Cassava Households (n)	2022 Cassava Households (%)	2022 Cassava Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Grand Bassa	79.2	20.8	23,682	89.4	85.2	27,799
Grand Cape Mount	72.5	27.5	10,509	90.8	79.8	13,166
Grand Gedeh	74.5	25.5	14,519	65.0	74.8	19,400
Grand Kru	62.6	37.4	7,703	96.9	92.5	8,330
Lofa	63.2	36.8	24,479	50.0	45.5	53,807
Margibi	69.9	30.1	11,640	84.0	76.8	15,164
Maryland	66.7	33.3	7,761	86.8	78.5	9,891
Montserrado	69.2	30.8	21,220	81.3	56.7	37,438
Nimba	72.1	27.9	52,570	88.8	75.0	70,062
Rivercess	78.5	21.5	9,652	94.8	89.5	10,786
River Gee	64.3	35.7	7,062	72.1	73.4	9,617
Sinoe	72.9	27.1	7,808	90.7	90.1	8,666
Total	**70.8**	**29.2**	**251,776**	**79.6**	**70.1**	**359,075**

3.4 Agricultural households producing peanut

The peanut, also known as groundnut, goober, pindar or monkey nut, is a legume crop grown mainly for its edible seeds. It is widely grown in tropical and subtropical regions, making Liberia a suitable geographical locality for its cultivation (Chukwu, 2018). According to the Liberian peanut industry outlook 2022-2026, the production of peanuts in Liberia is forecast to hit 6,930 metric tons by 2026, representing a 0.9 per cent increase year-on-year since 1969. In 2021, Liberia ranked seventieth in terms of supply.

As indicated in Table 3.3, peanuts constituted 13.1 per cent (46,874) of the total agricultural household. As usual, most agricultural households cultivating peanuts are captured in the rural residences 81.4 per cent (38,166).

By sex and county, Grand Bassa accounted for the highest number of male-headed households, 1,235 (79.8 per cent), while Lofa accounted for the highest number of female-headed households, 9,526 (41.4 per cent), producing peanuts.

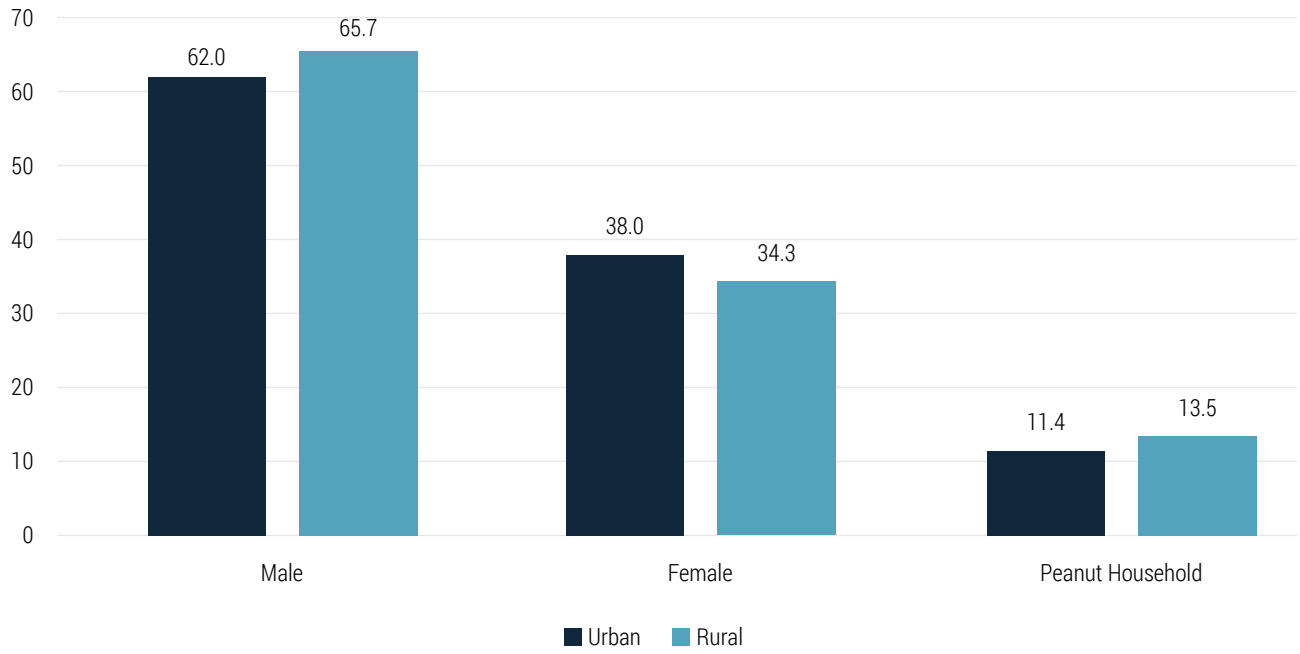
Table 3.3 Distribution of peanut-producing households by sex and county

Variables	Peanut Households (%)		Peanut Households (n)	Peanut Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads			
County					
Bomi	71.4	28.6	517	4.2	12,345
Bong	68.8	31.2	4,000	7.7	51,939
Gbarpolu	74.0	26.0	3,449	32.3	10,665
Grand Bassa	79.8	20.2	1,547	5.6	27,799
Grand Cape Mount	71.6	28.4	1,995	15.2	13,166

Variables	Peanut Households (%)		Peanut Households (n)	Peanut Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads			
Grand Gedeh	74.3	25.7	957	4.9	19,400
Grand Kru	66.6	33.4	290	3.5	8,330
Lofa	58.6	41.4	22,996	42.7	53,807
Margibi	68.5	31.5	1,094	7.2	15,164
Maryland	60.4	39.6	222	2.2	9,891
Montserrado	67.2	32.8	3,160	8.4	37,438
Nimba	71.5	28.5	5,434	7.8	70,062
River Cess	77.9	22.1	438	4.1	10,786
River Gee	62.9	37.1	267	2.8	9,617
Sinoe	72.8	27.2	508	5.9	8,666
Total	**65.1**	**34.9**	**46,874**	**13.1**	**359,075**

By proportion distribution, the rural residents cultivating peanuts constituted 13.5% of the rural agricultural households (Figure 3.1).

Figure 3.1 Proportion distribution of peanut-producing households by sex and residence



3.5 Agricultural households producing vegetables

The consumption of vegetables has lots of health benefits. It reduces the risk of heart disease and stroke, prevents some types of cancer, lowers the risk of eye and digestive problems, and has a positive effect on blood sugar, which increases appetite (Slavin et al. 2012; Pem et al. 2015); therefore, consumption is prioritized by many Liberians.

Of the total agricultural households (359,075), 42.4 per cent were captured producing vegetables. Meanwhile, of the overall vegetable-producing

households (152,126), 77.6 per cent are rural households (Table 3.4).

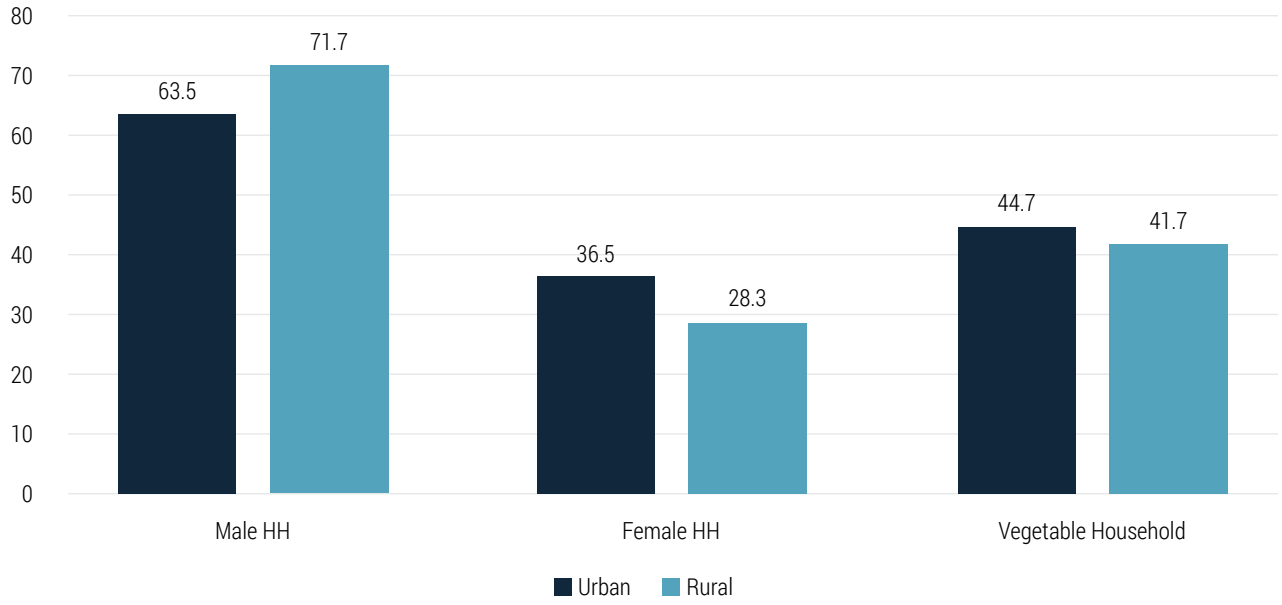
Distribution by sex and county indicate that Grand Bassa accounted for the highest proportion of male-headed vegetable households (80.1 per cent), while Lofa accounts for the highest female head vegetable household (37.9 per cent).

Table 3.4 Distribution of vegetable-producing households by sex and county

Variables	Vegetable Households (%)		Vegetable Households (n)	Vegetable Agricultural Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads			
County					
Bomi	66.7	33.3	5,345	43.3	12,345
Bong	69.2	30.8	21,554	41.5	51,939
Gbarpolu	74.3	25.7	4,429	41.5	10,665
Grand Bassa	80.1	19.9	9,842	35.4	27,799
Grand Cape Mount	73.3	26.7	5,197	39.5	13,166
Grand Gedeh	75.3	24.7	9,353	48.2	19,400
Grand Kru	63.9	36.1	3,477	41.7	8,330
Lofa	62.1	37.9	25,676	47.7	53,807
Margibi	70.0	30.0	6,602	43.5	15,164
Maryland	68.4	31.6	3,956	40.0	9,891
Montserrado	68.9	31.1	16,913	45.2	37,438
Nimba	72.2	27.8	26,048	37.2	70,062
River Cess	78.4	21.6	3,862	35.8	10,786
River Gee	64.4	35.6	5,773	60.0	9,617
Sinoe	74.7	25.3	4,099	47.3	8,666
Total	**69.8**	**30.2**	**152,126**	**42.4**	**359,075**

The urban residences cultivating peanuts by proportion distribution constituted 44.7 per cent of the total urban agricultural households (Figure 3.2).

Figure 3.2 Distribution of vegetable-producing households by sex, residence and county



3.6 Agricultural households producing sugarcane

From 1972 to 2021, sugarcane production increased from 55,000 tons to 275,987.56, growing at an average annual rate of 3.65 per cent (Liberia Sugarcane production quantity 2023). As an essential cash crop in Liberia, Sugarcane is cultivated for income generation. Notwithstanding, in this report, we analysed sugarcane production by agricultural households.

Sugarcane accounted for the actual household size of 63,319 and constituted 17.6 per cent of the total agricultural household (359,075) (Table 3.5).

By residence and sex, the rural areas accounted for the larger household size of 50,409, in which the male-headed households constituted 73.5 per cent - while the urban residence accounted for the household size of 12,910, in which the male-headed households also formed 65.0 per cent. Meanwhile, it was also observed that there was a higher percentage of female-headed households producing sugarcane in urban residences than in rural areas. In addition, there was a 7.7 per cent increase in the size of sugarcane-producing households (32,868) compared with 2008.

Table 3.5 Distribution of sugarcane-producing households by sex and residence and county

Variables	2022 Sugarcane Households (%)		Sugarcane Households (n)	2008 Sugarcane Households (%)	2022 Sugarcane Households (%)	Total Agricultural Households (n)
	Male	Female				
Residence						
Urban	65.0	35.0	12,910	9.7	16.9	76,224
Rural	73.5	26.5	50,409	10.0	17.8	282,851
County						
Bomi	71.3	28.7	1,321	3.3	10.7	12,345
Bong	68.9	31.1	9,431	10.9	18.2	51,939
Gbarpolu	77.3	22.7	1,087	4.6	10.2	10,665

Variables	2022 Sugarcane Households (%)		Sugarcane Households (n)	2008 Sugarcane Households (%)	2022 Sugarcane Households (%)	Total Agricultural Households (n)
	Male	Female				
Grand Bassa	79.5	20.5	5,286	9.5	19.0	27,799
Grand Cape Mount	72.4	27.6	1,156	2.6	8.8	13,166
Grand Gedeh	74.5	25.5	789	0.9	4.1	19,400
Grand Kru	72.5	27.5	1,513	11.1	18.2	8,330
Lofa	67.3	32.7	8,761	4.8	16.3	53,807
Margibi	69.8	30.2	2,607	10.7	17.2	15,164
Maryland	70.8	29.2	3,515	17.7	35.5	9,891
Montserrado	68.8	31.2	7,271	13.6	19.4	37,438
Nimba	74.3	25.7	18,470	17.8	26.4	70,062
River Cess	77.6	22.4	589	5.1	5.5	10,786
River Gee	59.3	40.7	519	5.2	5.4	9,617
Sinoe	75.0	25.0	1,004	5.6	11.6	8,666
Total	**71.8**	**28.2**	**63,319**	**9.9**	**17.6**	**359,075**

3.7 Backyard farming producing household

Backyard farming is a garden that supplies an agricultural household with fresh greens and vegetables daily. Backyard farming is essential in an agricultural household because it conveniently provides fresh fruits and vegetables and reduces daily expenditure.

In Table 3.6, the size of agricultural households captured in cultivating backyard gardens was 163,753, which constituted 45.6 per cent.

Notwithstanding, Grand Bassa and River Cess constituted 77.1 per cent of male-headed households, while Lofa constituted 39.2 per cent of the female households engaged in backyard farming cultivation.

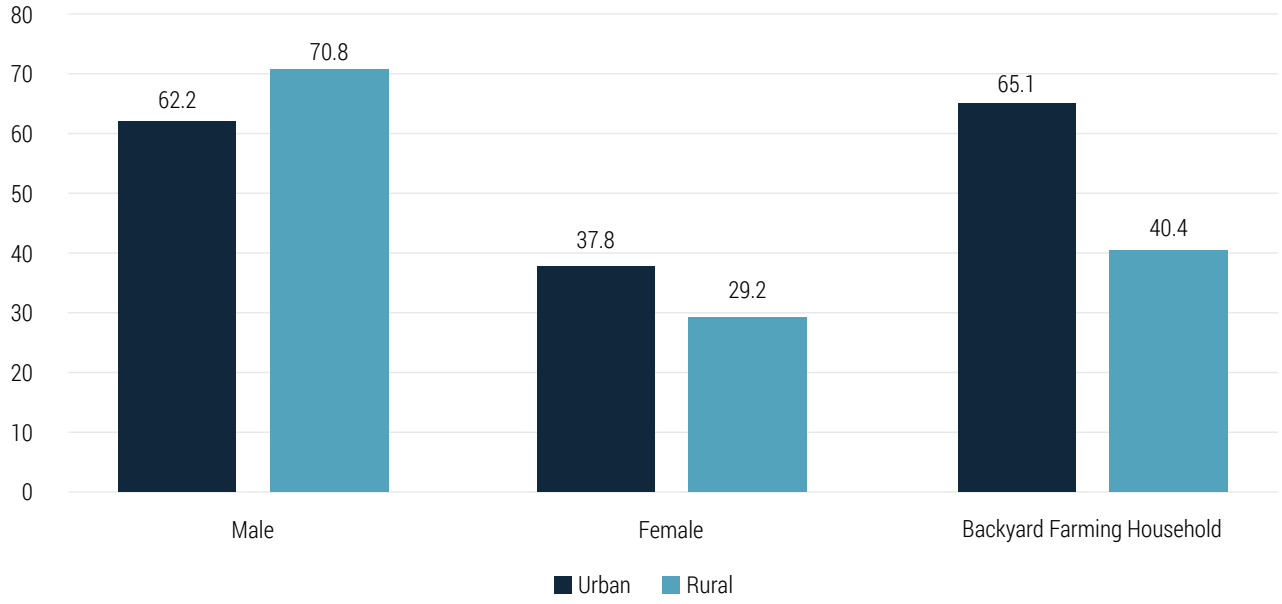
Table 3.6 Distribution of backyard farming by sex and county

Variables	Backyard Farming Households (%)		Backyard Farming Households (n)	Backyard Farming Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads			
County					
Bomi	66.1	33.9	6,290	51.0	12,345
Bong	67.2	32.8	21,564	41.5	51,939
Gbarpolu	73.3	26.7	4,062	38.1	10,665
Grand Bassa	77.1	22.9	14,194	51.1	27,799
Grand Cape Mount	70.3	29.7	6,580	50.0	13,166
Grand Gedeh	74.6	25.4	8,666	44.7	19,400
Grand Kru	63.4	36.6	3,217	38.6	8,330
Lofa	60.8	39.2	26,506	49.3	53,807

Variables	Backyard Farming Households (%)		Backyard Farming Households (n)	Backyard Farming Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads			
Margibi	70.0	30.0	9,807	64.7	15,164
Maryland	67.1	32.9	3,177	32.1	9,891
Montserrado	66.5	33.5	26,131	69.8	37,438
Nimba	69.9	30.1	21,783	31.1	70,062
River Cess	77.1	22.9	3,783	35.1	10,786
River Gee	61.4	38.6	3,954	41.1	9,617
Sinoe	74.0	26.0	4,039	46.6	8,666
Total	**68.2**	**31.8**	**163,753**	**45.6**	**359,075**

Of the total households engaged in backyard farming (163,753), 65.1 per cent are rural household farmers. Also, the proportion by sex and residence indicated that 70.8 per cent of backyard garden farmers are males residing in rural residences, while 37.8 per cent are females residing in urban residences.

Figure 3.3 Distribution of backyard farming by sex and residence



3.8 Summary and conclusion

In this chapter, we realized that the size of households cultivating arable crops increased based on the demand for individual crops. Of the total agricultural household (359,075), rice, being the most consumable crop, constituted 73.6 per cent, followed by cassava (70.1 per cent), the second most consumable crop; Backyard farming, 45.6 per cent; Vegetables, 42.4 per cent; Sugarcane, 17.6 per cent; and peanut 13.1 per cent.

These arable crops are also recognized as food and cash crops in Liberia. Aside from backyard garden cultivation, there was a consistently higher proportion of rural households in all crops than urban households. Furthermore, all the crops showed a higher proportion of rural male-headed households than urban, while the opposite is true for female-headed households.

Chapter 4: Tree crop production

4.1 Introduction

Using the 2022 census data, we examined major fruit tree crops grown in Liberia. Tree crops have long been an integral part of Liberia's economy. It is primarily inclusive of some food and cash crops grown in Liberia; meanwhile, the primary tree cash crops grown in this sector are cocoa, coffee, oil, palm, and rubber (1989-1996 and 1999-2003), plantain and banana being the food crops that are found in the tree crop category. However, tree crops discussed in this chapter are oil palm, cocoa, coffee, coconut, rubber, plantain and banana.

4.2 Agricultural households cultivating palm oil

Oil Palm is an important tree crop in Liberia, covering over 1 million hectares. The oil palm has tremendous economic value. Table 4.1 indicates that oil palms constituted 19.0 per cent of all agricultural households (Table 4.1). Oil palm companies have employed more than 220,000 people in Liberia. It is a tropical crop, and it is suitable for highland and lowland farms.

Compared to the various counties, Lofa constituted the highest proportion of agricultural households cultivating oil palm (42 per cent), followed by Cape Mount at 26.5 per cent.

River Cess County constituted the highest percentage of male-headed households, 87.2 per cent, while Lofa County comprised the highest number of female-headed households producing oil palm.

In addition, there was a 19 per cent accumulation of the 2022 total number of households producing oil palm compared to the 2008 data (11.1 per cent), with a consistent increase in sex and residence.

Table 4.1 Oil palm producing households by sex and county

Variables	2022 Oil Palm Households (%)		Oil Palm Households (n)	2008 Oil Palm Households (%)	2022 Oil Palm Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Residence						
Urban	68.3	31.7	13,391	8.8	17.6	76,224
Rural	74.9	25.1	54,935	11.6	19.4	282,851
County						
Bomi	75.2	24.8	959	7.9	7.8	12,345
Bong	77.5	22.5	8,023	8.5	15.4	51,939
Gbarpolu	80.9	19.1	1,648	12.4	15.5	10,665
Grand Bassa	82.8	17.2	3,411	8.9	12.3	27,799
Cape Mount	74.0	26.0	3,487	18.2	26.5	13,166
Grand Gedeh	75.3	24.7	863	2.3	4.4	19,400
Grand Kru	70.9	29.1	412	13.7	4.9	8,330
Lofa	67.9	32.1	22,589	13.1	42.0	53,807
Margibi	71.5	28.5	1,398	14.0	9.2	15,164
Maryland	77.5	22.5	525	4.8	5.3	9,891

Variables	2022 Oil Palm Households (%)		Oil Palm Households (n)	2008 Oil Palm Households (%)	2022 Oil Palm Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Montserrado	71.8	28.2	4,571	10.8	12.2	37,438
Nimba	75.9	24.1	17,923	14.3	25.6	70,062
Rivercess	87.2	12.8	1,417	14.0	13.1	10,786
River Gee	71.7	28.3	551	7.0	5.7	9,617
Sinoe	75.6	24.4	549	7.2	6.3	8,666
Total	**73.6**	**26.4**	**68,326**	**11.1**	**19.0**	**359,075**

4.3 Cocoa-producing households

Cocoa has been cultivated in Liberia since the early 1900s and has been the second most important commercial crop after rubber. Its exports have contributed to Liberia's foreign exchange, and it is cultivated mainly by smallholder farmers. However, this report analysed cocoa cultivation in a subsistence agricultural household.

The agricultural households involved in cocoa production were 92,999, constituting 25.9 per cent of the total agricultural household (Table 4.2). Like other crops, the proportion of sex distribution is also dominated by male-headed households (75.7 per cent).

By county, Lofa accounts for the highest proportion of agricultural households producing cocoa (51.8 per cent); 2022, cocoa-producing households accumulated a 14.9 per cent increase compared to the 2008 cocoa-producing household. This report showed that the 2022 household size is almost triple the 2008 household size.

Table 4.2 Cocoa-producing households by sex, residence and county

Variables	2022 Cocoa Households (%)		Cocoa Households (n)	2008 Cocoa Households (%)	2022 Cocoa Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Residence						
Urban	69.8	30.2	15,770	8.2	20.7	76,224
Rural	75.7	24.3	77,239	11.6	27.3	282,851
County						
Bomi	82.0	18.0	551	1.6	4.5	12,345
Bong	77.9	22.1	7,771	5.6	15.0	51,939
Gbarpolu	82.1	17.9	2,615	5.2	24.5	10,665
Grand Bassa	84.0	16.0	3,791	4.6	13.6	27,799
Cape Mount	76.8	23.2	3,083	4.2	23.4	13,166
Grand Gedeh	80.4	19.6	8,256	9.0	42.6	19,400
Grand Kru	69.6	30.4	415	3.9	5.0	8,330
Lofa	66.9	33.1	27,537	28.5	51.2	53,807
Margibi	75.3	24.7	1,309	4.6	8.6	15,164

Variables	2022 Cocoa Households (%)		Cocoa Households (n)	2008 Cocoa Households (%)	2022 Cocoa Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Maryland	81.6	18.4	1,470	3.3	14.9	9,891
Montserrado	72.8	27.2	4,393	4.1	11.7	37,438
Nimba	76.9	23.1	25,108	19.7	35.8	70,062
Rivercess	86.6	13.4	1,925	5.7	17.8	10,786
River Gee	74.9	25.1	4,342	18.5	45.1	9,617
Sinoe	77.4	22.6	443	6.6	5.1	8,666
Total	**74.7**	**25.3**	**93,009**	**11.0**	**25.9**	**359,075**

4.4 Agricultural households cultivating coffee

The first plantation of Liberia coffee was established in Liberia, in 1864, but reports of its cultivation go back to 1796 (David, 2022). Coffee is currently included among the export crops and is exported in a small percentage compared to rubber and other crops. The total number of agricultural households producing coffee is 48,048, which constitutes 13.4 of the total agricultural households in Liberia (Table 4.3).

By county, Grand Bassa and River Cess contribute the highest proportion of male-headed households (81.1 per cent and 81.6 per cent respectively). At the same time, Grand Kru and Lofa accounted for the highest number of female-headed households (34.6 per cent and 34 per cent, respectively).

A comparison between the 2008 and 2022 sizes of coffee-producing households showed a huge decrease. As illustrated in Table 4.3 below, the 2022 household size decreased by -4.9 compared to 2008.

Table 4.3 Coffee-producing households by sex, residence and county

Variables	2022 Coffee Households (%)		Coffee Households (n)	2008 Coffee Households (%)	2022 Coffee Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Residence						
Urban	69.3	30.7	2,837	7.3	3.7	76,224
Rural	77.3	22.7	7,902	8.1	2.8	282,851
County						
Bomi	77.4	22.6	137	1.3	1.1	12,345
Bong	78.0	22.0	1,580	2.4	3.0	51,939
Gbarpolu	75.6	24.4	135	3.9	1.3	10,665
Grand Bassa	83.3	16.7	965	1.1	3.5	27,799
Grand Cape Mount	71.7	28.3	637	4.1	4.8	13,166
Grand Gedeh	77.8	22.2	153	1.9	0.8	19,400
Grand Kru	69.3	30.7	101	0.8	1.2	8,330
Lofa	68.1	31.9	1,434	36.9	2.7	53,807
Margibi	76.9	23.1	480	3.0	3.2	15,164

Variables	2022 Coffee Households (%)		Coffee Households (n)	2008 Coffee Households (%)	2022 Coffee Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Maryland	84.6	15.4	149	0.7	1.5	9,891
Montserrado	69.9	30.1	1,426	3.2	3.8	37,438
Nimba	75.9	24.1	3,212	9.8	4.6	70,062
Rivercess	85.8	14.2	176	1.5	1.6	10,786
River Gee	76.5	23.5	81	2.1	0.8	9,617
Sinoe	79.5	20.5	73	1.0	0.8	8,666
Total	**75.1**	**24.9**	**10,739**	**7.9**	**3.0**	**359,075**

4.5 Coconut-growing households

Liberia has a unique history of coconut production. It is among the primary agricultural products in Liberia. Across Liberia, there are natural growing coconuts on the beaches and other places. However, in this report, we analysed the production of coconut by agricultural households.

Coconut production in Liberia has increased from 6,200 tons in 1972 to 8,429 tons in 2021, growing at an average annual rate of 0.89 per cent. The actual household size involved in the cultivation of coconut constituted about 4.8 per cent of the total agricultural household (Table 4.4).

Coconut is dominantly cultivated by the male-headed households (73.5 per cent). Like other crops, most households are from rural residences (12,770, 73.4 per cent).

By sex and county, River Cess and Grand Bassa possessed the highest number of male-headed households (82.1 and 81.3 per cent, respectively). At the same time, Lofa and Maryland had the highest number of female-headed households (34.6 per cent and 34.4%, respectively) cultivating coconut.

Table 4.4 Distribution of coconut-producing households by sex, residence and county

Variables	2022 Coconut Households (%)		2022 Coconut Households (n)	2008 Coconut Households (%)	2022 Coconut Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Residence						
Urban	67.3	32.7	4,623	4.3	6.1	76,224
Rural	75.8	24.2	12,771	3.1	4.5	282,851
County						
Bomi	77.2	22.8	303	1.5	2.5	12,345
Bong	73.2	26.8	1,422	1.6	2.7	51,939
Gbarpolu	78.4	21.6	417	3.0	3.9	10,665
Grand Bassa	81.3	18.7	2,360	1.3	8.5	27,799
Grand Cape Mount	72.1	27.9	1,327	5.0	10.1	13,166
Grand Gedeh	76.8	23.2	509	1.5	2.6	19,400
Grand Kru	74.9	25.1	462	5.2	5.6	8,330

Variables	2022 Coconut Households (%)		2022 Coconut Households (n)	2008 Coconut Households (%)	2022 Coconut Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Lofa	65.4	34.6	2,446	2.8	4.6	53,807
Margibi	71.8	28.2	703	4.2	4.6	15,164
Maryland	65.6	34.4	282	2.1	2.9	9,891
Montserrado	69.3	30.7	2,932	6.1	7.8	37,438
Nimba	74.8	25.2	2,135	2.6	3.1	70,062
River Cess	82.1	17.9	1,242	4.9	11.5	10,786
River Gee	71.3	28.7	349	10.6	3.6	9,617
Sinoe	77.4	22.6	505	6.3	5.8	8,666
Total	**73.5**	**26.5**	**17,394**	**3.3**	**4.8**	**359,075**

4.6 Plantain-producing households

In 2012, FAO Liberia reported that the annual plantain production was 37.2 million tonnes. Plantain, a popular tropical crop, is widely consumed and considered Liberia's third major staple food after rice and cassava.

As indicated in Table 4.5, the total size of agricultural households cultivating plantain is 134,349, constituting 34.7 per cent of the total agricultural households. The proportion by residence reported that the rural settings amounted to 111,507 household members, of whom 75.0 per cent were male-headed households.

In addition, distribution by the county showed that River Cess amounted to 51.5 per cent of plantain production households.

Table 4.5 Distribution of plantain-producing households by sex, residence and county

Variables	2022 Plantain Households (%)		Plantain Households (n)	2008 Plantain Households (%)	2022 Plantain Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Residence						
Urban	66.4	33.6	22,842	25.0	30.0	76,224
Rural	75.0	25.0	111,507	32.9	39.4	282,851
County						
Bomi	73.4	26.6	2,173	16.9	17.6	12,345
Bong	74.0	26.0	14,788	23.0	28.5	51,939
Gbarpolu	77.6	22.4	4,689	35.2	44.0	10,665
Grand Bassa	82.1	17.9	10,891	23.7	39.2	27,799
Grand Cape Mount	72.7	27.3	3,214	19.7	24.4	13,166
Grand Gedeh	77.6	22.4	9,389	32.7	48.4	19,400
Grand Kru	62.6	37.4	2,987	41.0	35.9	8,330
Lofa	67.2	32.8	20,634	28.6	38.3	53,807

Variables	2022 Plantain Households (%)		Plantain Households (n)	2008 Plantain Households (%)	2022 Plantain Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads				
Margibi	72.6	27.4	3,823	28.1	25.2	15,164
Maryland	71.7	28.3	2,558	38.4	25.9	9,891
Montserrado	70.4	29.6	10,111	25.8	27.0	37,438
Nimba	74.5	25.5	34,578	45.4	49.4	70,062
Rivercess	81.3	18.7	5,558	41.0	51.5	10,786
River Gee	67.8	32.2	4,804	43.3	50.0	9,617
Sinoe	74.1	25.9	4,152	40.9	47.9	8,666
Total	**73.5**	**26.5**	**134,349**	**31.5**	**37.4**	**359,075**

4.7 Banana-producing households

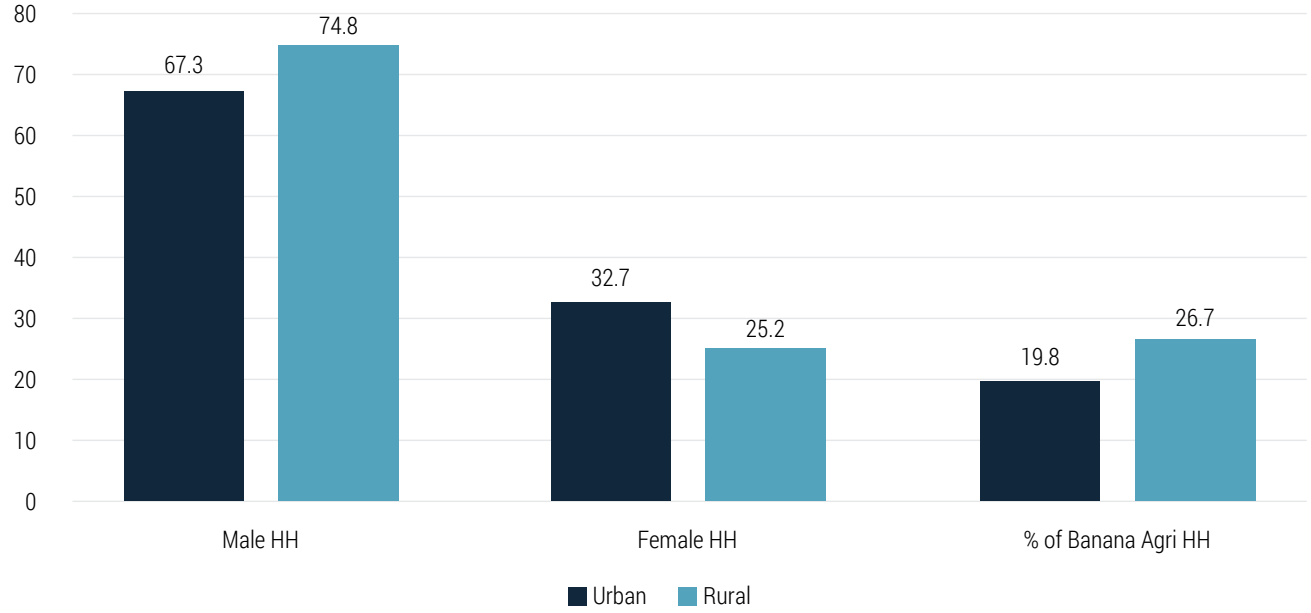
Of the total agricultural household (359,075), bananas accounted for 25.2 per cent (Table 4.6). In addition, proportion distribution by sex and county indicated that Grand Bassa constituted the highest proportion of male-headed households involved in banana production (81.2 per cent). In comparison, Grand Kru constituted the highest proportion of female-headed households (33.5 per cent) (Table 4.6).

Table 4.6 Distribution of banana-producing households by sex and county

Variables	Banana Household (%)		Banana Agricultural Households (n)	Banana Agricultural Households (%)	Total Agricultural Households (n)
	Male Heads	Female Heads			
County					
Bomi	72.0	28.0	1,499	12.1	12,345
Bong	74.2	25.8	9,309	17.9	51,939
Gbarpolu	77.3	22.7	3,303	31.0	10,665
Grand Bassa	81.2	18.8	6,930	24.9	27,799
Grand Cape Mount	74.3	25.7	2,802	21.3	13,166
Grand Gedeh	78.9	21.1	6,747	34.8	19,400
Grand Kru	66.5	33.5	1,835	22.0	8,330
Lofa	67.3	32.7	18,837	35.0	53,807
Margibi	74.6	25.4	2,645	17.4	15,164
Maryland	72.1	27.9	1,643	16.6	9,891
Montserrado	71.2	28.8	6,662	17.8	37,438
Nimba	75.5	24.5	18,882	27.0	70,062
River Cess	80.4	19.6	2,722	25.2	10,786
River Gee	68.8	31.2	3,916	40.7	9,617
Sinoe	74.8	25.2	2,789	32.2	8,666
Total	**73.6**	**26.4**	**90,521**	**25.2**	**359,075**

The total number of rural households that produced bananas is 75,418; male-headed households constituted 74.8 per cent. It was also indicated that the total number of urban households cultivating bananas is 15,103, of which 67.3 per cent are male-headed households (Figure 4.6).

Figure 4.1 Distribution of banana-producing households by sex and residence



4.8 Rubber-producing households

Rubber is a crop that grows in a tropical country with an annual rainfall of 200-4,500 mm and under the temperature of 25-34ºC (Chandrakala et al. 2019). This growth requirement or characteristic makes Liberia a suitable country for rubber production. From the 1920s to the present, rubber has been one of Liberia's leading export agricultural commodities and has contributed immensely to its GDP. Even though some rubber concession companies exist, this report focuses only on non-concession plantations.

The size of rubber households was 78,830, constituting 22 per cent of the total agricultural households. The proportion of rubber cultivated in rural residences is higher than in urban ones (Table 4.7). The urban household size was 12,166, which constituted 15.4 per cent of the total households cultivating rubber, while the rural household was 66,664, which constituted 84.5 per cent.

Males constitute about 69.1 per cent of the urban residents and 79.1 per cent of the rural residents. It is, therefore, observed that more female-headed households cultivated rubber in urban residences than in rural ones.

By counties, Nimba constituted the highest percentage (41 per cent) of the total agricultural households engaged in rubber culture, followed by Bong (32.6 per cent).

River Cess constituted 87.2 per cent of the male-headed households, the highest number, followed by Grand Bassa at 84.6 per cent. At the same time, the highest female-headed house is Lofa (32 per cent), followed by Montserrado (26.7 per cent).

The comparative analysis between the 2008 and 2022 data indicated that the 2022 rubber household increased by 7.1 per cent, with a constant increase in sex and residence.

Table 4.7 Rubber-producing households by sex, residence and county

Variables	2022 Rubber Households (%)		2022 Rubber Households (n)	2008 Rubber Households (%)	2022 Rubber Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Residence						
Urban	69.1	30.9	12,166	9.8	16.0	76,224
Rural	79.1	20.9	66,664	15.9	23.6	282,851
County						
Bomi	74.1	25.9	1,209	8.8	9.8	12.345
Bong	78.2	21.8	16,918	15.7	32.6	51.939
Gbarpolu	80.8	19.2	1,073	4.5	12.4	8.666
Grand Bassa	84.6	15.4	8,067	20.9	75.6	10.665
Grand Cape Mount	74.6	25.4	1,917	7.6	6.9	27.799
Grand Gedeh	80.3	19.7	743	2.0	5.6	13.166
Grand Kru	75.8	24.2	1,149	10.6	5.9	19.400
Lofa	68.0	32.0	2,483	2.3	29.8	8.330
Margibi	78.4	21.6	3,915	18.5	7.3	53.807
Maryland	81.9	18.1	2,233	27.7	14.7	15.164
Montserrado	73.3	26.7	5,788	10.7	58.5	9.891
Nimba	75.8	24.2	29,354	27.5	78.4	37.438
River Cess	87.2	12.8	2,425	21.8	3.5	70.062
River Gee	78.1	21.9	1,025	7.9	10.7	9.617
Sinoe	82.3	17.7	531	4.7	4.9	10.786
Total	**77.6**	**22.4**	**78,830**	**14.9**	**22.0**	**359,075**

4.9 Summary and conclusions

Crops classified as cash crops (oil palm, cocoa, coffee, coconut, rubber) and food crops (plantain and banana) in Liberia are categorized in this chapter as tree crops. Plantain is Liberia's most cultivated tree crop- of the total agricultural household 359,075; it accounted for 134,349, which constituted 37.4 per cent of the entire agricultural households. This was followed by cocoa 25.9 per cent (93,009), which exceeded rubber by 0.7 per cent. Oil palm also constituted 19 per cent of the total agricultural household, sugarcane 17.6 per cent, coffee 13.4 per cent, and coconut 4.8 per cent.

River Cess was recognized as the highest tree crop-producing county, accounting for plantain (51.5 per cent), rubber (22 per cent), and coconut household (11.2 per cent). Followed by Lofa County, which also accounted for cocoa (51.2 per cent) and Oil Palm (42.0 per cent), River Gee's highest banana household (40.7 per cent), and Grand Cape Mount's highest coffee household (4.8 per cent). It was observed that the female-headed household constituted a higher percentage of households in the urban residence than the rural residence; this is true for all the agricultural households producing tree crops. The majority of the agricultural households producing cash crops are from rural residences, and it accounted for a higher proportion of male-headed households.

Chapter 5: Livestock and aquaculture

5.1 Introduction

Livestock are animals that are kept for production or lifestyle, such as cattle, sheep, pigs, goats, horses or poultry. In this report, we classified poultry as a separate section of livestock. Poultry is the second most common type of livestock in the world (after cattle), with over 20 billion chickens. Chicken is a domesticated bird kept by humans for their eggs, meat or feathers.

Meat and poultry contain protein and other nutrients (iodine, iron, zinc, and vitamin B12), which are essential for growth and development. Therefore, prioritizing the production of livestock in the agricultural household is crucial. Even though there are no recent records of meat consumption in Liberia, according to MoA 2014, the meat consumption was 11.0 kg per person and per year, on average, is covered by 2.6 kg from live animals, 4.0 kg of imported/meat/per year, and 4.4 kg of wild meat.

Aquaculture, sometimes called aquafarming, is the breeding, raising, growing and harvesting aquatic organisms in fresh and salt water. In Liberia, the practice of aquaculture is based mainly on the harvesting of sea organisms or fishery. It is practiced with the objectives of contributing to food security in terms of increased food production, improved household access to food, and enhanced utilization of farmland for food production. Therefore, agricultural households need to advance and improve on the techniques of aquaculture practices.

5.2 Agricultural households rearing livestock

Table 5.1 shows the Agricultural Household Rearing Livestock by Sex, Residence and County. The agricultural households rearing livestock constituted 3.5 per cent of the total Agricultural households (359,055). The 2022 household size (3.5 per cent) decreased compared to the 2008 data (7.5 per cent).

By residence distribution, rural areas constituted a higher proportion (77.6 per cent) of the agricultural households rearing livestock than urban ones 2,480 (22.4 per cent). Male-headed households in rural residences constituted a higher prevalence (79.4 per cent) of the total agricultural household rearing livestock than the urban ones (70.6 per cent).

Further computation by county indicated that Nimba had the highest proportion (6.8 per cent) of livestock farming. Meanwhile, River Cess and Grand Bassa constituted the highest percentages of male-headed households (87.0 per cent and 84.9 per cent, respectively), while Lofa and Montserrado constituted the highest number of female-headed households (31.1 and 28.5 per cent, respectively).

Table 5.1 Agricultural household rearing livestock by sex, residence and county

Variables	2022 Livestock Households (%)		2022 Livestock Households (n)	2008 Livestock Households (%)	2022 Livestock Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Residence						
Urban	70.6	29.4	2,480	8.5	3.3	76,224
Rural	79.4	20.6	10,242	7.3	3.6	282,851
County						
Bomi	74.6	25.4	252	3.0	2.0	12,345
Bong	79.6	20.4	2,403	5.4	4.6	51,939
Gbarpolu	82.9	17.1	293	4.8	2.7	10,665

Variables	2022 Livestock Households (%)		2022 Livestock Households (n)	2008 Livestock Households (%)	2022 Livestock Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Grand Bassa	84.9	15.1	896	5.4	3.2	27,799
Grand Cape Mount	75.5	24.5	372	3.6	2.8	13,166
Grand Gedeh	80.9	19.1	199	2.4	1.0	19,400
Grand Kru	75.4	24.6	138	2.5	1.7	8,330
Lofa	68.9	31.1	791	7.0	1.5	53,807
Margibi	77.9	22.1	592	20.1	3.9	15,164
Maryland	82.4	17.6	295	4.8	3.0	9,891
Montserrado	71.5	28.5	1,242	9.5	3.3	37,438
Nimba	77.3	22.7	4,790	10.3	6.8	70,062
Rivercess	87.0	13.0	223	4.3	2.1	10,786
River Gee	81.0	19.0	153	14.9	1.6	9,617
Sinoe	83.1	16.9	83	7.2	1.0	8,666
Total	**77.7**	**22.3**	**12,722**	**7.5**	**3.5**	**359,075**

5.2.1 Poultry rearing

Table 5.2 shows poultry rearing in Liberia by sex, residence and county. The number of households raising poultry was 6,606, constituting 1.8 per cent of the total agricultural households (359,055). In addition, the 2022 data showed that the poultry household size decreased compared with the 2008 household data.

The male-headed households accounted for 75.8 per cent of the total poultry production households (6,606). By residence, the urban households involved in poultry production constituted 2.3 per cent, while rural households were 1.7 per cent (4,821). By county, Nimba constituted the highest (2.9 per cent) proportion of household size producing poultry.

Table 5.2 Agricultural household rearing poultry by sex, residence and county

Variables	2022 Poultry Households (%)		2022 Poultry Households (n)	2008 Poultry Households (%)	2022 Poultry Households (%)	Total Agricultural Households
	Male Head	Female Head				
Residence						
Urban	67.7	32.3	1,785	6.2	2.3	76,224
Rural	78.9	21.1	4,821	5.3	1.7	282,851
County						
Bomi	72.1	27.9	172	1.7	1.4	12,345
Bong	77.2	22.8	1,067	2.4	2.1	51,939
Gbarpolu	77.6	22.4	174	7.4	1.6	10,665
Grand Bassa	82.8	17.2	534	2.7	1.9	27,799

Variables	2022 Poultry Households (%)		2022 Poultry Households (n)	2008 Poultry Households (%)	2022 Poultry Households (%)	Total Agricultural Households
	Male Head	Female Head				
Grand Cape Mount	76.8	23.2	375	6.1	2.8	13,166
Grand Gedeh	76.2	23.8	130	2.4	0.7	19,400
Grand Kru	75.7	24.3	70	2.9	0.8	8,330
Lofa	63.0	37.0	497	7.3	0.9	53,807
Margibi	80.2	19.8	257	19.6	1.7	15,164
Maryland	87.9	12.1	132	3.1	1.3	9,891
Montserrado	68.0	32.0	931	6.6	2.5	37,438
Nimba	77.8	22.2	2,020	4.5	2.9	70,062
Rivercess	90.6	9.4	138	6.7	1.3	10,786
River Gee	76.5	23.5	51	14.4	0.5	9,617
Sinoe	70.7	29.3	58	2.5	0.7	8,666
Total	**75.8**	**24.2**	**6,606**	**5.5**	**1.8**	**359,075**

5.3 Engagement in aquaculture

Table 5.3 shows that fishery production occupied 4.1 per cent (14,649) of the total agricultural households (359,055). By residence, rural households occupied 12,484, which constituted 4.4 per cent, while urban households occupied 2,165, which constituted 2.8 per cent of the total rural and urban households engaged in the fishery.

By sex, of the total households engaged in the fishery (14,649), 78.1 per cent are male-headed households.

Household distribution by county indicated that Nimba accounted for the highest number of fish-producing households (5,076), constituting 7.2 per cent, followed by Grand Bassa (1,814) at 6.5 per cent.

In addition, data showed an increase in fishery households in 2022 compared to 2008. Also, there is still a constant increase in the size of rural and urban residences and the number of male and female-headed households.

Table 5.3 Agricultural household engaged in fish farming by sex, residence and county

Variables	2022 Fishery Households (%)		2022 Fishery Households (n)	2008 Fishery Households (%)	2022 Fishery Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Residence						
Urban	69.8	30.2	2,165	3.6	2.8	76,224
Rural	79.6	20.4	12,484	2.4	4.4	282,851
County						
Bomi	71.1	28.9	315	2.0	2.6	12,345
Bong	77.5	22.5	2,662	0.8	5.1	51,939
Gbarpolu	81.9	18.1	215	1.4	2.0	10,665

Variables	2022 Fishery Households (%)		2022 Fishery Households (n)	2008 Fishery Households (%)	2022 Fishery Households (%)	Total Agricultural Households (n)
	Male Head	Female Head				
Grand Bassa	84.9	15.1	1,814	3.0	6.5	27,799
Cape Mount	75.0	25.0	560	5.2	4.3	13,166
Grand Gedeh	78.7	21.3	216	1.1	1.1	19,400
Grand Kru	74.8	25.2	230	5.0	2.8	8,330
Lofa	66.8	33.2	759	2.3	1.4	53,807
Margibi	82.5	17.5	633	5.3	4.2	15,164
Maryland	87.8	12.2	238	3.2	2.4	9,891
Montserrado	73.4	26.6	1,160	3.6	3.1	37,438
Nimba	77.3	22.7	5,076	1.9	7.2	70,062
Rivercess	88.3	11.7	565	3.0	5.2	10,786
River Gee	78.6	21.4	126	7.4	1.3	9,617
Sinoe	86.3	13.8	80	2.7	0.9	8,666
Total	**78.1**	**21.9**	**14,649**	**2.6**	**4.1**	**359,075**

5.4 Summary and conclusions

Fishery accounted for the highest household size of 14,649, constituting 4.1 per cent of the total agricultural households. Followed by livestock with a household size of 12,722, which constituted 3.5 per cent, and poultry 1.8 per cent (6,606). Nimba County ranked the highest-producing households for animal husbandry (livestock, fishery and poultry).

Chapter 6: Households' ownership of amenities and types of dwelling structures

6.1 Introduction

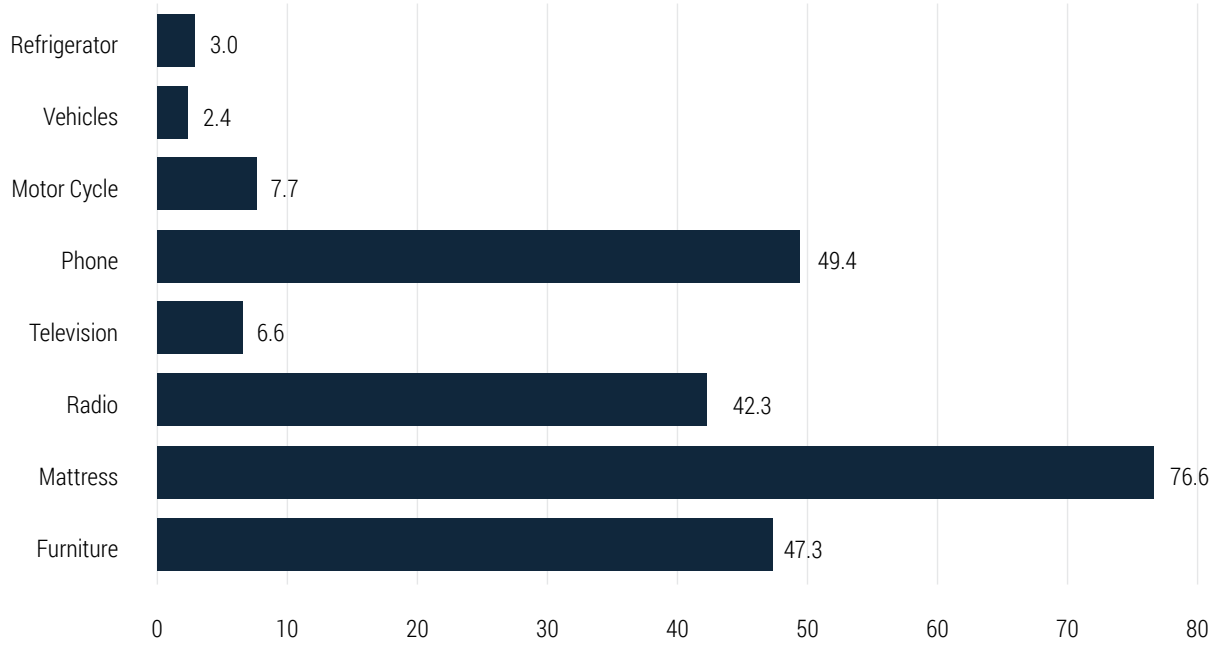
The 2022 National Housing and Population Census collected information on households' ownership of amenities and dwelling structures. This chapter analysed ownership of amenities and the dwelling structure of agricultural households. Amenities are desirable or useful features or facilities of a dwelling structure. A dwelling structure is a discrete shape intended for people to live in. In this report, amenities were structured into essential and non-essential categories, while dwelling structures were placed into categories of permanent, semi-permanent and temporary. The availability of better amenities and dwelling structures is critical to successful agriculture, as they improve social and mental health.

6.2 Ownership of amenities

Items like mattresses, furniture, radios and cell phones are classified as essential because of their importance, while televisions, motorcycles, refrigerators and vehicles are classified as non-essential.

Figure 6.1 shows that the total number of households that owned mattresses was 76.6 per cent, reported as the highest essential amenity owned. The total percentage of households captured to have motorcycles is 7.7 per cent, also reported the highest non-essential amenity owned in the agricultural household.

Figure 6.1 Percentage distribution of households in the agricultural sector by type of essential and non-essential amenities owned

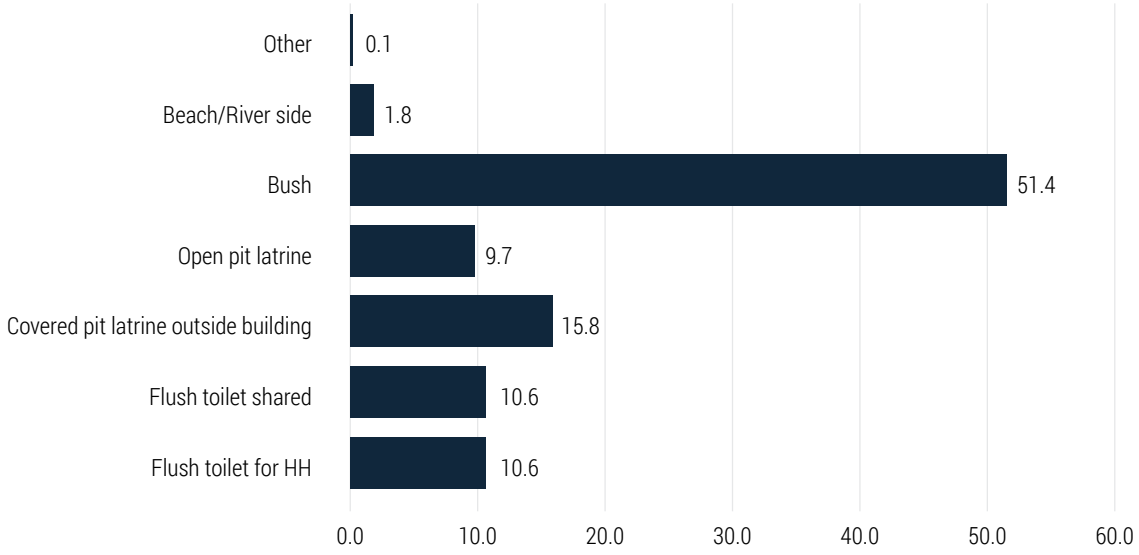


6.2.1 Other amenities in agriculture household

In this section, we examined the agricultural households by types of human waste deposited and distribution of agricultural households by mean source of drinking water.

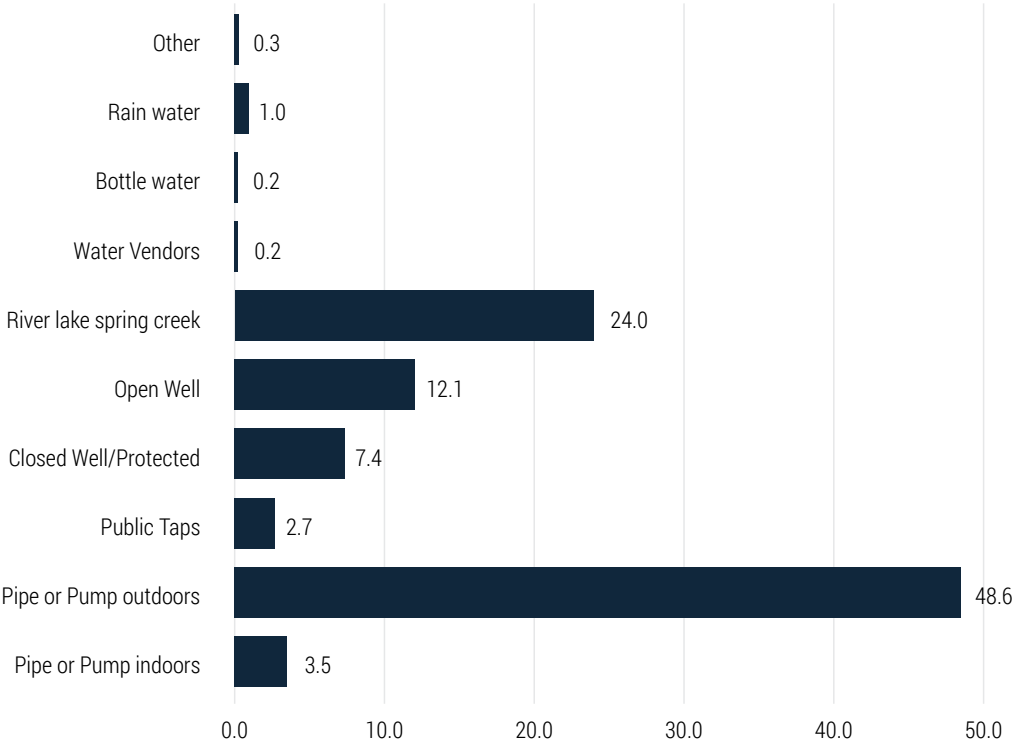
As illustrated in Figure 6.2, the mean type of human disposal is done via the bush. Of the total agricultural households (357,057), 51.4 per cent utilized the bush as a toilet facility. The sum of 15.8 per cent utilized covered pit latrines outside the agricultural household types of human waste facilities are below 11 per cent.

Figure 6.2 Per cent distribution of agricultural household heads by types of human waste deposited



Almost half (48.6 per cent) of the total size of agricultural households (359,075) captured were found obtaining drinking water through a pipe or pump outdoors, followed by river lake spring creek (24.0 per cent). (Figure 6.3).

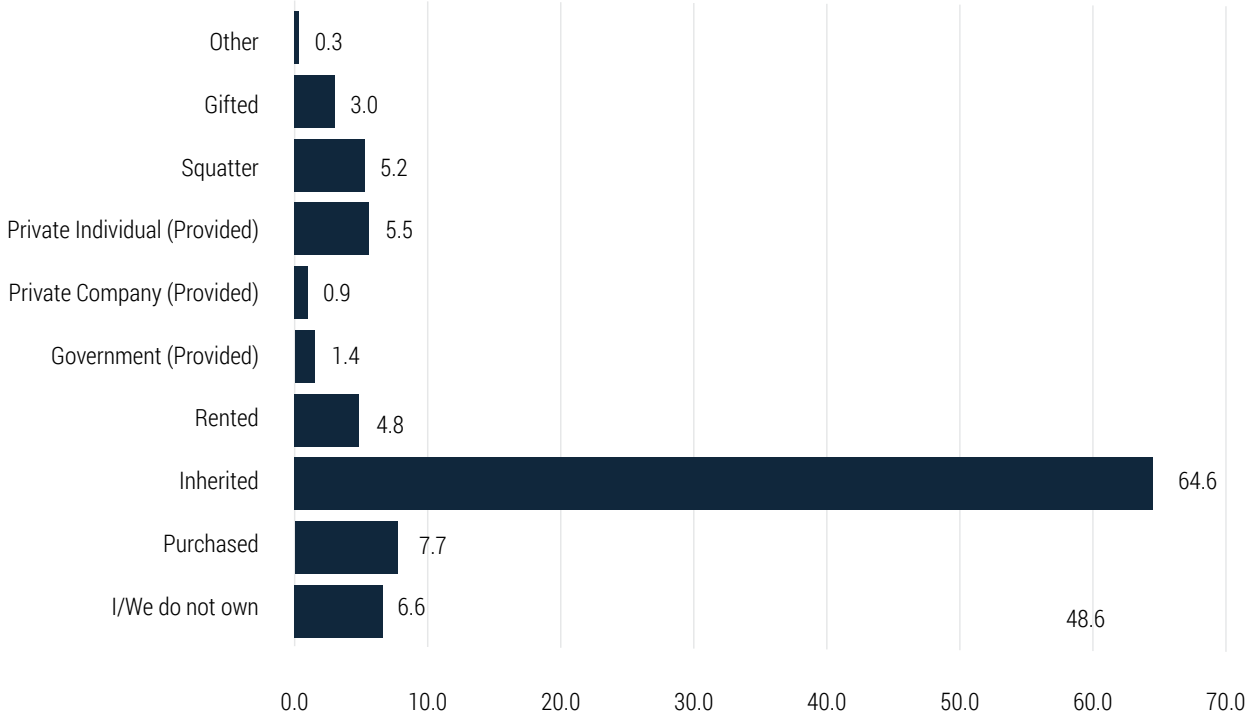
Figure 6.3 Distribution of agricultural household head by mean source of drinking water



6.3 Farming land ownership

The ownership of agricultural land is a perennial matter of interest to all concerned with the farm sector of the agricultural household of Liberia. Figure 6.4 shows that 64.6 per cent of the total agricultural households (359,075) utilized inherited farming land.

Figure 6.4 Per cent distribution of farming land ownership status

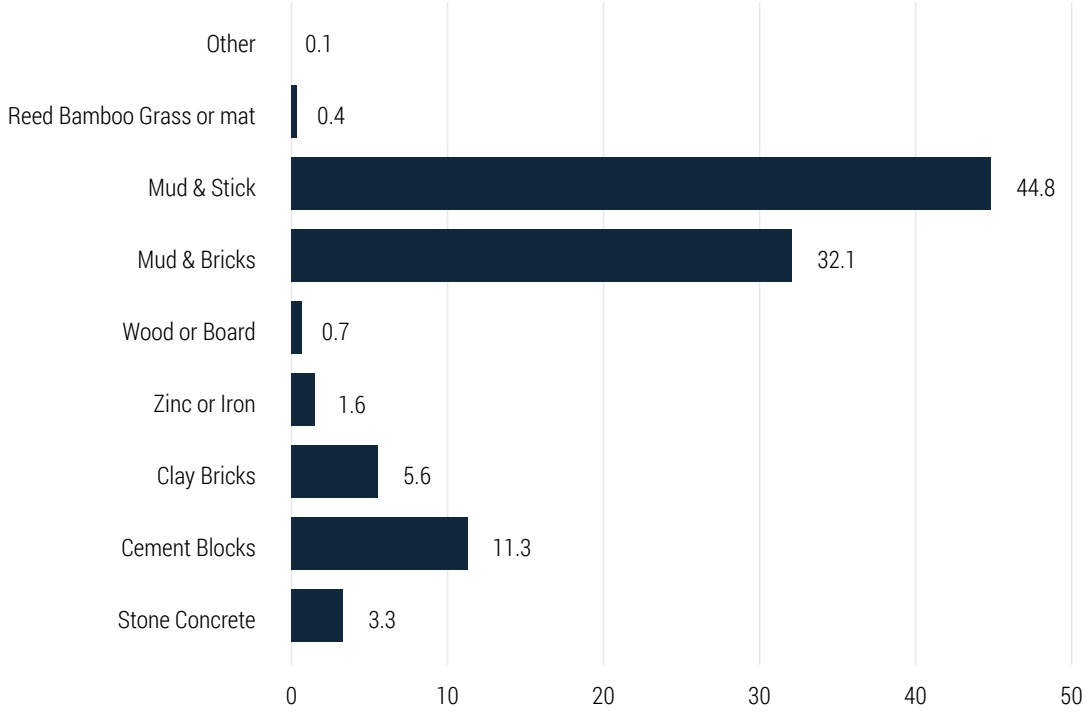


6.4 Ownership of dwelling structure

The categories of dwelling structures considered in the report are permanent, temporary and semi-permanent. By classification, permanent dwelling structures include stones, cement blocks or clay bricks; roofs with concrete, tiles, asbestos, or zinc and floors made of cement and titles.

Semi-permanent dwelling structures include the combination of permanent and temporary materials. Lastly, temporary dwelling structures include walls made of zinc, wood, sticks, mud, bamboo, mat or grass; roofs made of tarpaulin, thatch, and bamboo and floors made of wood and mud.

Figure 6.5 Per cent distribution of ownership of dwelling structure



6.5 Summary and conclusion

Mattresses are an essential amenity owned by 76.6 per cent of agricultural households; meanwhile, the balance 23.4 per cent of agricultural households do not sleep on mattresses.

It was also observed that the mean facility used for human waste was the bush, utilized by 51.4 per cent of the total agricultural household. While a little below half (48.6 per cent) of the total size of agricultural households (359,075) captured were found obtaining drinking water through pipes or pumps outdoors.

Meanwhile, it was also observed that 64.6 per cent of farmland utilized by the agricultural household was inherited. Figure 6.5 illustrates that almost half of the dwelling structures in the agricultural household are temporary structures made of mud and sticks (44.8 per cent).

Chapter 7: Summary, conclusion and recommendations

7.1 Introduction

This section of the report presents a summary of key findings, conclusions, and recommendations of the agricultural section of the Liberia Population Housing Census (LPHC).

7.2 Summary

The male-headed households occupied about two thirds of the agricultural households. Half of the heads of agricultural households did not acquire formal education. The age group 35-64 amounted to one third of the head of agricultural households. Two thirds of the heads of agricultural households practiced monogamous marriage, while more than two thirds practiced the Christian religion. The population found in the agricultural household is one third of the country's population. The number of males is a little over the number of females, while the age group 1-12 is one third of the population found in the agricultural household.

Crop farming in Liberia varied. More than two thirds of the agricultural households cultivated rice and cassava, however, the household number of rice and cassava reduced as compared to the 2008 report. The agricultural household cultivating sugarcane, vegetables and backyard gardens constituted a little over one third of the agricultural household. The sugarcane households increased as compared to 2008. Also, households cultivating peanuts occupied less than one third of the agricultural household. Except for plantain households constituting one third of the total agricultural household, all the other tree crops occupied less than one third of the agricultural household. Also, the 2022 household number of oil palm and cocoa increased compared to the 2008 report. The size of rubber households constituted less than half of the total number of agricultural households. 2022, the household size of rubber also reduced.

Animal rearing was very low. The agricultural household was involved in rearing livestock (including poultry), and aquacultural farming was at a deficient per cent of the total agricultural household. However, except for poultry, the entire livestock household reduced compared with the 2008 report.

Ownership of Amenities and Dwelling Structures was about half. At least half of the agricultural households possessed one essential amenity, while less than one third of the agricultural households owned non-essential amenities. This shows that most of the rural farmers are poor.

7.3 Conclusions

The agricultural economy is mostly subsistence and less monetized. We observed that one third (30.2 per cent) of the total households in Liberian are agricultural households, most of which are rural residents. Also, there were more males than females found in the agricultural households. At the same time, about 0.5 per cent of the total population found in agricultural households suffered at least one form of disability.

About half (49.5 per cent) of the agricultural household heads did not acquire formal education. At the same time, 40.8 per cent of children (ages 3-17) residing in agricultural households did not attend school. Also, the total heads of agricultural households practiced monogamous marriage is 63.9 per cent. About 85.3 per cent of the whole agricultural household heads are Christian, while 11.2 per cent are Muslim. Also, the age group 35-64 is the highest age group of agricultural household heads, while the age group 1-12 is the highest age group of the population found in the agricultural household.

Most agricultural households are engaged in arable crop farming, compared to tree crops and aquiculture farming. Fishery occupied the highest proportion (4 per cent) of the total agricultural households involved in animal husbandry. Knowledge of the health benefits acquired from consuming meat and chicken means that the size of various households needs to increase. The entire agricultural household lacks basic essential and non-essential amenities.

7.4 Recommendations and policy implications

Policy formulation, planning, and monitoring and evaluating the performance of agricultural activities are formidable tasks and thus require current and accurate statistical information relevant to agricultural production. Decisions should be appropriately shaped by statistical data. Some significant issues were reported.

Given the strong correlation between agricultural productivity and poverty reduction, Liberia needs to make concerted efforts to focus on food security and poverty alleviation interventions at the community and household levels.

The production of rice and cassava, which are the staple diets in Liberia, needs to be prioritized to have a hunger-free nation. Also, with the increase in population, the increment in meat and chicken production in the country should be promoted.

To achieve high-quality agricultural activities, the Government must improve the production standards of agricultural households. Household heads living with a disability require special attention. More often, farmers within the age range of 65 and above will undergo some form of disability. Therefore, operating machinery, working with livestock or working with chemicals can be challenging.

Good performance in the agricultural sector depends highly on the quality of the population in agriculture in terms of education, access to resources and the availability of the labour force. There are needs to be met as follows:

1. Encourage and promote the establishment of community and village-level schools in the rural agricultural areas to facilitate continuous learning. Education is required to bridge the knowledge and skill gaps in the sector.

2. Decentralize development to provide better living for over half of the population in the rural agricultural communities.

3. Design and implement a programme to empower the appropriate authority to train lead farmers in improved technology towards adopting mechanized farming.

4. Design and implement a unique programme for women's empowerment and involvement in the agricultural sector.

5. Serious attention needs to be given to agricultural households with a disability, especially disabled household heads.

6. The Government should provide equipment for the agricultural households involved in producing Meat and chicken, as they contribute to our nutritional diet.

7. The Government should provide equipment and better storage to facilitate pre-harvest and post-harvest management.

References

Africa Development Bank. 2022. Emergency food production program. Republic of Liberia. https://ewsdata.rightsindevelopment.org/files/documents/13/AFDB-P-LR-AA0-013.pdf.

Ahn, A. Briers, G. Baker, M. Price, E. Djebou, C, S. Strong, R. Piña, M. & Kibriya, S. 2022. Food security and agricultural challenges in West-African rural communities: a machine learning analysis, International Journal of Food Properties, 25:1, 827-844, DOI: 10.1080/10942912.2022.2066124.

Anderson, Sharissa. 2023. Cattle and Land Use: The Differences between Arable Land and Marginal Land and How Cattle Use Each, https://clear.ucdavis.edu/explainers/cattle-and-land-use-differences-between-arable-land-and-marginal-land-and-how-cattle-use#:~:text=We%20use%20arable%20land%20to,food%20that%20people%20could%20eat.

Chandrakala, M. Srinivasan, R. Anil Kumar, K. D. Sujatha, K. Hegde, R. Singh, S. K. and Nirmala, H. R. 2019. Land Suitability Evaluation for Rubber in the Tropical Humid Region of Kerala, India, 35(5): 1-9. Article no.CJAST.44650ISSN: 2457-1024. DOI: 10.9734/CJAST/2019/v35i530199.

Chukwu, M. Nwakodo, C.S. and Iwuagwu, M.O. 2018. Some Physical Properties of Groundnut (Arachis Hypogaea Linn) Seeds: Available at SSRN: https://ssrn.com/abstract=3517529 or http://dx.doi.org/10.2139/ssrn.3517529.

Davis, A.P. Kiwuka, C. Faruk, A. et al. 2022.The re-emergence of Liberica coffee as a major crop plant. *Nat. Plants 8*, 1322-1328. https://doi.org/10.1038/s41477-022-01309-5.

Guo, Guancheng. Wen, Qiyu. Zhu, Jingjuan. 2015 The Impact of Aging Agricultural Labor Population on Farmland Output: From the Perspective of Farmer Preferences. Recent Developments on the Stability and Control of Stochastic System. Volume 2015 | Article ID 730618 | https://doi.org/10.1155/2015/730618.

International Monetary Fund. 2000 Liberia: Selected Issues and Statistical Appendix. eISBN: 9781451822786. https://www.imf.org/external/pubs/ft/scr/2000/cr0050.pdf.

Liberia annual country report. 2022. Country Strategic Plan 2019 – 2023, https://docs.wfp.org/api/documents/WFP-0000147969/download/#:~:text=More%20than%20half%20of%20the,challenge%20for%20human%20capital%20development.

Pem, D. Jeewon, R. 2015. Fruit and Vegetable Intake: Benefits and Progress of Nutrition Education Interventions- Narrative Review Article. Iran J Public Health. 44(10):1309-21. PMID: 26576343; PMCID: PMC4644575.

Slavin, J.L. Lloyd, B. 2012. Health Benefits of Fruits and Vegetables. Advances in Nutrition. 3(4). 506-516. ISSN 2161-8313. https://doi.org/10.3945/an.112.002154 (https://www.sciencedirect.com/science/article/pii/S2161831322010262).

ReferenTauer, L. W. 1984. Productivity of Farmers at Various Ages. *North Central Journal of Agricultural Economics, 6*(1), 81-87. https://doi.org/10.2307/1349302.

Van Zanten, H.H.E. Van Ittersum, M.K. De Boer, I.J.M. 2019. The role of farm animals in a circular food system. Global Food Security. 21(18-22). ISSN 2211-9124. https://doi.org/10.1016/j.gfs.2019.06.003.