Liberia Agriculture Census 2024

NON-HOUSEHOLD REPORT

Liberia Institute of Statistics and
Geo-Information Services
(LISGIS)

In Collaboration with

Ministry of Agriculture
(MOA)

AUGUST, 2025

50x2030
DATA-SMART AGRICULTURE

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LIBERIA AGRICULTURE CENSUS 2024 NON-HOUSEHOLD REPORT

STRUCTURAL LISTING OF NON HOUSEHOLDS

DATA SOURCES AND AVAILABILITY

LAC-2024 Final Reports are available online at: https://lisgis.gov.lr/census.php
Additional information from the LAC-2024 can be obtained from the Liberia Open Data Portal via: https://liberia.opendataforafrica.org/data#topic=Agriculture

In addition, information not available in the LAC-2024 Final Reports and on the Open Data Portal may be obtained from the LISGIS Head Quarters.

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RELATED LINK

The LAC-2024 microdata can be obtained from:
https://microdata.lisgislr.org/index.php/catalog/?page=1&ps=15

CITATION REQUIREMENT AND FORMAT GUIDANCE

Liberia Institute of Statistics and Geo-Information Services (LISGIS), Liberia Agriculture Census 2024 Final Non-Household Report, August 2025.

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FOREWARD

The Liberia Agriculture Census 2024 (LAC-2024) marks a significant step in modernizing and expanding the nation's agricultural data collection, reflecting the country's commitment to strengthening its agricultural sector. Conducted by the Liberia Institute of Statistics and Geo-Information Services (LISGIS) in collaboration with the Ministry of Agriculture (MOA) and other key partners, LAC-2024 is Liberia's first comprehensive digital agriculture census. It aimed to collect structural information on various aspects of agricultural households, non-households and communities and their activities, including crop and livestock production activities, household and non-household managers demographics, land use, and access to infrastructure and resources. Given that the last agriculture census was conducted in 1972, this updated census fills a vital gap, providing data that is critical for policy formulation, planning, and decision-making within Liberia's agriculture sector.

It is my fervent hope that this report will provide all data users, including policymakers, planners and researchers involved in the agricultural sector with the necessary information to understand the current state of agriculture in Liberia at the non-household level. I believe that the results of the LAC-2024 will help to improve the prevailing conditions faced by agricultural holdings (both at the household and non-household levels) in Liberia.

On behalf of the Government of Liberia, I wish to express my appreciation for the financial and technical support provided by the World Bank, FAO and IFAD through the Harmonizing and Improving Statistics in West Africa Project (HISWAP) and the 50x2030 Initiative. I would like to extend my sincere gratitude to all members of the census steering committee (headed by the Minister of Agriculture), professional staff of the Liberia Agriculture Census Technical Working Group (comprising staff from LISGIS, MOA, CDA, NaFAA and the FAO). I also want to appreciate all National, Regional and HQ monitors, County Inspectors, Data Quality Assurance Officers, Team Supervisors and field enumerators for their dedicated services. Certainly, without such dedication, the census would not have been successful.

Finally, I want to appreciate all the respondents for their time and valuable responses which cumulated into the results of the census, other persons and institutions, particularly the general public and private sector actors for their support in ensuring the successful implementation of the LAC-2024.

Hon. Richard F. Ngafuan
Director General
Liberia Institute of Statistics and Geo-Information Services

PREFACE

The importance of data for evidence-based decision making to inform agriculture development is invaluable. Quality data is needed across all spectrums of agriculture value chains to inform government, commercial parties, and development partners' actions within the agriculture sector. Beyond the national government level, county authorities also need reliable data to develop their strategic plans.

The Liberia Agriculture census 2024 undertaken by the Liberia Institute of Statistics and Geo-information services (LISGIS) in collaboration with the Ministry of Agriculture through funding from the HISWA PROJECT and with technical support from the Food and Agriculture Organization of the United Nations (FAO) captured data on agriculture households and non-household within the crop, livestock, fishery and aquaculture sub-sectors; also, the census collected important information on technologies, equipment and tools currently been used, land tenures status, processing facilities and many structural issues of the agriculture sector. The census's capture of non-household agricultural holdings across the country to support and enrich the master sample frame is important for future research samples and comparability of results.

It is my fervent hope that this Liberia Agriculture Census 2024 Non-Household Report will provide information about the agricultural sector to all relevant stakeholders including the government, development partners, international and inter-governmental organizations, private-sector actors, policy makers, and planners to support the development of the agriculture sector in Liberia. We encourage all stakeholders, with an aim of improving the agriculture sector either through support of inputs, promotion of agro-processing for industrial value-chain development or for improved farmers' livelihood, to utilize the findings of this non-household assessment as additional guidance for intervention designs, agricultural planning, implementation, monitoring and reporting about the sector. The findings are also important for setting benchmarks for many of the structural issues affecting the agriculture sector.

Special appreciation goes to our development partners for the financial and technical supports provided to these initiatives to close the data gaps in agriculture and rural statistics. Also, I acknowledge and appreciate the leadership and teams from LISGIS, and our team from MOA for their invaluable efforts. I also acknowledge and appreciate the efforts of the field staffs and all those who went near and far to ensure that the data were adequately captured. Finally, I appreciate all the farmers and respondents who accepted and provided insights which culminated into findings from the Liberia Agriculture Census. Let us continue these coordination and collaborations in producing important statistics that are needed for the development of the sector.

J. Alexander Neutah, PhD
Minister, Ministry of Agriculture
Republic of Liberia

EXECUTIVE SUMMARY

The 2024 Liberia Agriculture Census (LAC-2024) non-household component provides the first comprehensive national picture of organized agricultural establishments outside the household sector in more than five decades. Covering 694 agricultural holdings, this segment of the census sheds light on the characteristics, activities, and challenges of agricultural cooperatives, concessions, private farms, farmer-based organizations (FBOs), and communal farms. Collectively, these holdings represent a critical part of Liberia's agricultural economy, given their relatively larger scales of operation, commercial orientation, and potential contribution to employment creation, food security, and export earnings.

The findings reveal that the majority of non-household agricultural managers are male (71.5%), while only 28.5% are female, underscoring persistent gender disparities in agricultural leadership. Age distribution data show that most managers fall within the 35–64 age range, with a concentration in the 45–54 bracket, reflecting the dominance of older generations in decision-making. Youth participation is minimal, suggesting barriers to entry for younger Liberians in the leadership of organized agricultural enterprises. Educational attainment is relatively high compared to household farmers, yet gender disparities remain evident. Male managers are more likely to have completed secondary or tertiary education, while a significant proportion of female managers reported no formal education.

Geographically, non-household holdings are unevenly distributed, with Nimba County hosting the largest share (17.7%), followed by Margibi and Bong. At the lower end, counties such as Grand Kru and River Gee have relatively few non-household holdings. A majority of these entities (85.6%) are formally registered, indicating formalization of institutional agricultural entities in Liberia, though a notable share remains informal. Importantly, more than 88% of holdings reported producing mainly or exclusively for sale, highlighting a strong commercial orientation compared to household farmers, who often engage in subsistence production.

Agricultural activities within the non-household sector are diverse but dominated by crop cultivation, practiced by 91.1% of holdings. Cassava and rice are the leading staple crops, with cassava concentrated in South Central and rice more common in the North Central region. Vegetables such as cucumber, pepper, okra, and bitter balls are also cultivated, with South Central standing out as a major hub for horticultural production. In addition to food crops, cash crops remain central to Liberia's non-household agriculture. Cocoa, oil palm, and rubber are key commercial commodities, each with distinct regional patterns; cocoa dominates in Southeastern B, oil palm in North Western, and rubber in South Central. Together, these crops occupy the largest cultivated areas, with rubber alone accounting for 46% of all land reported under cultivation.

Livestock and poultry production, while less prevalent than crops, also play an important role. The census found that 9.8% of non-household holdings raised livestock and 4.5% raised poultry. Chickens are the most numerous species, with 33,541 reported, followed by pigs (3,552), goats (767), and cattle (297). Other niche livestock activities, such as rabbit and bee keeping, were reported by a small number of holdings. These results suggest that while livestock production remains secondary to crops in scale, it contributes to income diversification and food supply in the non-household sector.

Labor dynamics further illustrate the commercial nature of non-household agriculture. About 82% of holdings reported hiring external laborers, leading to more than 60,000 daily hirings during the reference farming season. Male workers constituted the majority (59.3%), though women also made up a significant share (40.4%), highlighting the sector's role as an important employer for both sexes. Child labor was rare, suggesting compliance with labor standards.

Despite its potential, the sector faces structural challenges, particularly in input and equipment use. Fertilizer adoption remains limited, with only 34.7% of holdings using inorganic or organic fertilizers, and usage varies significantly by region. South Central leads with the highest adoption rate (60.5%), while Southeastern counties lag far behind. Mechanization is also extremely low, with most holdings relying on rudimentary tools such as cutlasses (87.8%) and hand hoes (80.7%). Only a small fraction reported using tractors, irrigation equipment, or threshers. This dependence on manual labor constrains productivity and limits the sector's ability to meet growing food and market demands.

In sum, the non-household component of LAC-2024 paints a picture of an agricultural sector that is simultaneously modernizing and constrained. On one hand, it demonstrates a strong commercial orientation, widespread registration of entities, and engagement in diverse value chains from staples to cash crops. On the other hand, it exposes persistent challenges, including gender and youth underrepresentation in management, uneven access to inputs, and low mechanization. These findings provide a critical evidence base for designing policies and programs to support inclusive growth, promote modernization, and ensure that Liberia's non-household agricultural sector contributes fully to national food security, rural development, and economic transformation.

ABBREVIATIONS

Agri-MACs	Agricultural line Ministries, Agencies and Commissions
CARI	Central Agriculture Research Institute
CDA	Cooperative Development Agency
FAO	Food and Agriculture Organization of the United Nations
FDA	Forestry Development Authority
GPS	Global Positioning System
HISWAP	Harmonizing and Improving Statistics in West Africa Project
IFAD	International Fund for Agriculture Development
LAC	Liberia Agriculture Census
LACRA	Liberia Agriculture Commodity Regulatory Authority
LISGIS	Liberia Institute of Statistics and Geo-Information Services
MACs	Ministries, Agencies and Commissions
MOA	Ministry of Agriculture
NBC	National Bureau of Concessions
NHHs	Non-Households
WCA	World Program for the Census of Agriculture

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INTRODUCTION

a. Rationale

The Liberia Agriculture Census 2024 (LAC-2024) is a landmark initiative aimed at providing comprehensive, reliable, and up-to-date data on the structure and characteristics of Liberia's agricultural sector. This census is crucial for evidence-based policymaking, investment planning, and monitoring of the agricultural sector's performance.

Liberia's agricultural sector remains a vital component of the national economy, employing a significant portion of the population and serving as a key driver of food security, rural livelihoods, and economic growth. However, the sector faces numerous challenges, including outdated data on agricultural holdings, limited information on farming practices, and a lack of precise statistics on livestock, fisheries, and forestry. The census seeks to address these data gaps by leveraging digital tools and international best practices, ensuring that the country's agriculture policies and development programs are based on accurate and timely information.

The LAC-2024 represents Liberia's first fully digital agriculture census, utilizing Computer-Assisted Personal Interviewing (CAPI) technology to enhance data quality and efficiency. It aligned with the methodological framework recommended by the Food and Agriculture Organization (FAO) and was supported by the World Bank's Harmonizing and Improving Statistics in West Africa (HISWA) Project and the 50x2030 Initiative.

b. Scope

The Liberia Agriculture Census 2024 covered all major agricultural activities in the country, including:

- Crop production (food and cash crops)
- Livestock rearing (cattle, poultry, goats, pigs, etc.)
- Forestry (timber, non-timber forest products, and conservation practices)
- Aquaculture and fisheries

The census targeted all agricultural establishments, including:

- Households engaged in agricultural activities
- farmer-based organizations
- Commercial agricultural enterprises, such as agricultural concessions, cooperatives, and private farms
- Communal farms and institutional farming initiatives

Geographically, the census spanned all 15 counties and 160 statistical districts of Liberia, utilizing a stratified cluster sampling approach based on enumeration areas (EAs) from the 2022 National Population and Housing Census (NPHC). The census methodology ensured representative data collection across urban and rural areas.

c. Objectives

The primary objective of the Liberia Agriculture Census 2024 was to collect structural and up-to-date statistics on the country's agricultural sector to support policy formulation, program development, and decision-making. Specifically, the census aims to:

1. Provide accurate and reliable data on agricultural activities, including crop production, livestock, poultry, forestry, and aquaculture.
2. Assess the structure and characteristics of agricultural holdings, including land use, farm size, production methods, and technology adoption.
3. Analyze the socioeconomic conditions of agricultural households, including housing ownership, condition of housing units, and access to services.
4. Identify challenges and opportunities in the agricultural sector to inform targeted interventions and development strategies.
5. Develop a Master Sampling Frame for future agricultural surveys, enabling more efficient and cost-effective data collection.

d. Census Questionnaires

To achieve the above objectives, the LAC-2024 employed three questionnaires; household, non-household and community questionnaires. These questionnaires were used to collect structural information on Liberia's agricultural sector. The results of the LAC-2024 are summarized in three separate reports based on these questionnaires. These include: Household, Community and Non-household reports.

e. The Current Report and Its Objective

This report presents the main results of the LAC-2024 non-household component. Its objective is to provide structural information on the non-household sector, including the socio-demographic characteristics of non-household managers in Liberia and the various agricultural activities practiced by these holdings. The report also presents the various forms of labor, inputs, tools and equipment used by Liberia's non-household holdings.

DEFINITION OF KEY TERMS

Agricultural concession: Are legal entities or companies (usually private) that have been granted land use right for agriculture production activities (crop, livestock, poultry, aquaculture or forestry) by the government of Liberia.

Agricultural holding: economic unit of agricultural production under single management comprising all livestock kept and all land used wholly or partly for agricultural production purposes, without regard to title, legal form or size.

Aquaculture (Fish Farming): refers to rearing/harvesting of fish. It is different from fishing in that, in fish farming, the fish have to be reared and fed. Fish traps or captures naturally in rivers and the sea are not considered under aquaculture (Marine, river, lake, or creek fishing is excluded). For a non-household Aquaculture (or Fish Farming) holding, the holding must keep 0.5ha or more of fish farming production units.

Census reference year: usually a period of twelve months, either a calendar year or an agricultural year, generally encompassing the various time reference dates or periods of data collection for individual census items. The LAC-2024 reference year is from November 2022 to December 2023.

Communal Farms: These are farms operated by community members to carryout agriculture/farming related projects or activities intended for community improvement through self-help initiatives for self-sufficiency in local food production and also involving themselves into project implementation such as: construction of town Halls, Farm-to-market Road, Bridges, and Clinics.

Concessions: Are legal entities or companies that have been granted land use right for agriculture production activities (crop, livestock, poultry, aquaculture or forestry) by the government of Liberia.

Cooperatives: group or association that is registered with the Cooperative Development Agency (CDA) and has at least 15 shareholders who are actively involved in agricultural production activity (ies) that is/are common to all members.

Farmer Based Organizations (FBOs): Any group or association having at least 25 members who are actively involved in agricultural production activity (ies) in the name of the group or association. In the case of crop, the FBO must cultivate at least 20 hectares of farm land.

Green house: an enclose structure, sometime a building or tank in which plants are grown that need protection from cold weather.

Irrigation: action of purposely providing land with water, other than rain, for improving pastures or crop production.

Land tenure: arrangements or rights under which the holder operates the land making up the holding.

Legal status of the holder: juridical aspects under which an agricultural holding is operated.

Livestock: all animals kept or reared in captivity mainly for agricultural purposes. In the LAC-2022/2023, households that consider their animal (s) as not been part of their livelihood activity or income were not considered as livestock producing households.

Livestock Holding: A holding is considered a Livestock holding if it exercised Livestock husbandry during the reference agricultural year. For a non-household livestock holding, the number of livestock has to be at least 25 head of cattle, 50 goats/sheep/pigs/rabbits, etc. The greatest share of the produce should go to the market.

Natural or Civil Persons: a human being, as opposed to a "legal" person, which is an entity or group considered collectively as a single individual for legal purposes.

Non-household holding: Non-household holdings are those in sectors other than the household sector. In Liberia, Non-household holdings include agriculture concessions, cooperatives, farmer-based organizations (FBOs), communal farms, religious and institutional farms and private farms.

Parcel: any continuous piece of land of one land tenure type, entirely surrounded by other land, water, road, forest or other features not forming part of the holding or forming part of the holding under a different land tenure type.

Plot: A continuous piece of land under one utilization category. Examples of utilization categories are growing crops, using for pasture, leaving fallow, renting out, and so on. For crops, a single plot can have one crop or a mixture of crops grown together under a uniform crop management system.

Poultry: all birds kept or reared in captivity or domesticated mainly for agricultural purposes. In the LAC-2022/2023, households that consider their bird(s) as not been part of their livelihood activity or income were not considered as poultry producing households.

Poultry Holding: A holding is considered a Poultry holding if it exercised Poultry (chickens, ducks, turkeys, etc.) during the reference agricultural year. For a non-household poultry holding, the number of poultries has to be at least 500 chickens/turkeys/ducks. The greatest share of the produce should go to the market.

Private farm: A large commercial farm, measuring at least 20 hectares own by private individuals who employ at least 15 persons.

METHODOLOGY

The 2024 Liberia Agriculture Census represents a critical effort to generate comprehensive and reliable agricultural statistics across both household and non-household sectors. In alignment with national data need and the World Programme for the Census of Agriculture (WCA-2020), the census aims to ensure full coverage of agricultural holdings, including those operated by cooperatives, concessions, private farms, farmer-based organizations (FBOs), and communal farms. The inclusion of the non-household sector responds to Liberia's desire to close the existing agricultural data gap. It also responds to FAO's recommendation for separate enumeration of non-household holdings, recognizing their distinct characteristics and production practices. This methodological section outlines the procedures, tools, and governance mechanisms employed to ensure data quality, comparability, and relevance.

1. Target Population and Coverage

Non-household agricultural holdings in Liberia encompass a diverse range of institutional and commercial entities. These include cooperatives registered with the Cooperative Development Agency, concessions regulated by the National Bureau of Concessions, large-scale private farms, communal farms, and FBOs. The census targeted all such entities operating within Liberia's borders, ensuring geographic coverage across all counties. The definition and scope were guided by both administrative records and field verification exercises, ensuring that no eligible holding was omitted.

2. Non-Household Census Frame

The frame for the non-household sector was constructed using administrative data (dated as of 2023) from four key institutions: the Cooperative Development Agency (CDA), Ministry of Agriculture (MOA), National Bureau of Concessions (NBC), and the Ministry of Internal Affairs (MIA). The CDA provided the list of agricultural cooperatives, the NBC provided the list of agricultural concessions, the MIA provided list of communal farms, while the MOA provided the list of farmer-based organizations (FBOs). No pre-existing list for private farms was available. To enhance completeness, a special verification and listing exercise was conducted by LISGIS through the Liberia Agriculture Census Technical Team. The technical team was made of staff from LISGIS, MOA, CDA, MIA, and NaFAA. The team collected geographic and demographic information on non-household holdings and holders from June 22 to July 7, 2023. This exercise identified dormant holdings or those that no longer existed. It also identified additional holdings not captured in existing registers. The final frame served as the basis for a full enumeration, giving the relatively small number of holdings identified and validated.

3. Questionnaire Design

The questionnaire for the non-household sector was developed to capture the structural and operational characteristics of non-household agricultural holdings. In line with WCA-2020 guidelines, the design process emphasized clarity, relevance, and adaptability to Liberia's diverse farming contexts. Key features included:

- **Modular Structure**: A core module captured essential items such as holding and holder characteristics, land area, crop types, livestock types and numbers, labor inputs and tools/equipment. Supplementary sections addressed production practices and destinations.
- **Tailored Content**: Questions were adapted to reflect the unique attributes of cooperatives, concessions, and communal farms, avoiding assumptions based on household farming norms.
- **Enumerator Guidance**: The questionnaire was accompanied by an enumerator's manual and included embedded instructions and skip patterns to support consistent administration and reduce respondent burden.
- **Pre-Testing and Refinement**: The instrument underwent pilot testing in selected counties (Grand Cape Mount, Bomi and Gbarpolu) to assess comprehension, timing, and data quality. Feedback informed revisions prior to full deployment.

The final questionnaire was designed to be completed within 45 minutes, balancing comprehensiveness with respondent engagement.

4. Data Collection Approach

Data collection for the non-household sector was conducted through full enumeration, leveraging a decentralized field structure. Regional and County Agriculture Coordinators (RACs and CACs) from the Ministry of Agriculture, along with County Statistics and Information Offices Directors from LISGIS, served as enumerators. Each county was assigned two staff; one from each institution, ensuring technical oversight and statistical rigor. The use of trained personnel familiar with local agricultural dynamics contributed to the accuracy and contextual relevance of the data collected.

5. Reference Period and Timing

The census reference period was the 2022/2023 farming season. Data collection spanned from **January 22 to March 22, 2024**, covering a 60-day enumeration window. This timing was selected to maximize respondent availability and ensure that all holdings in the frame were enumerated. The reference date was standardized across counties to ensure temporal consistency in reporting.

6. Data Quality Assurance

Ensuring the integrity of census data was a central priority. The quality assurance framework was drawn from the WCA-2020 operational guidelines and incorporated Liberia-specific mechanisms:

- **Training and Supervision**: Enumerators received intensive training on questionnaire content, interview techniques, and data validation protocols. Supervisors conducted spot checks and provided real-time feedback. National and Regional monitors follow-up with field teams to ensure accurate data capture and full coverage.
- **Verification Protocols**: A dual-verification system was implemented during the listing phase, cross-checking administrative records with field observations to confirm holding eligibility and validate census data.

- **Consistency Checks**: Logical validation rules were embedded in the data entry system to flag anomalies, such as mismatched land area and livestock numbers.
- **Monitoring and Reporting**: Daily progress reports were submitted by county teams, enabling central coordination units to identify and address operational bottlenecks.
- **Post-Enumeration Review**: A targeted review of selected records was conducted to assess enumeration accuracy and inform future improvements.

7. Use of Technology

The 2024 non-household census leveraged a suite of digital tools to enhance data quality, operational efficiency, and field coordination. Technology played a central role across multiple phases of the enumeration process, consistent with international best practices and WCA-2020 recommendations.

- **Computer-Assisted Personal Interviewing (CAPI)**: The census adopted CSPro for questionnaire design and digital data collection. This approach minimized manual errors, enabled real-time skip logic and validations, and streamlined data transfer from the field to central servers.
- **GIS Integration**: Geographic Information System (GIS) software was used to define and validate the boundaries of Enumeration Areas (EAs). The technology ensured spatial accuracy and completeness by overlaying EA maps with field coverage reports submitted by enumerators.
- **Real-Time Monitoring via Power BI**: A dynamic Power BI dashboard was developed and deployed to monitor field operations in real time. The dashboard tracked key indicators such as questionnaire completion rates, flagged data inconsistencies, and generated automated alerts. This enabled supervisors to rapidly identify errors, recommend corrections, and ensure consistent adherence to protocols.
- **Remote Coordination**: Mobile applications and online communication platforms, such as WhatsApp chatrooms facilitated daily reporting and troubleshooting between field teams and central operations staff.

The integration of digital platforms significantly strengthened Liberia's census execution and set a precedent for future statistical operations involving complex institutional entities.

8. Challenges and Data Limitation

The conduct of the 2024 Liberia Agriculture Census (LAC-2024) non-household component encountered several challenges and data limitations that must be recognized when interpreting the results of this report. These challenges reflect both the complexity of enumerating a diverse set of agricultural establishments outside of household structures and the logistical constraints inherent in implementing a nationwide census.

First, the construction of the non-household census frame posed difficulties. While the frame was based on administrative records from multiple agencies, including the Cooperative Development Agency (CDA), Ministry of Agriculture (MOA), National Bureau of Concessions (NBC), and Ministry of Internal Affairs (MIA); there were discrepancies between administrative lists and actual field conditions. Some holdings recorded in registers were found to be dormant, defunct, or had shifted into other forms of activity. Conversely, some holdings that were active in the field were missing from the official lists. Although a verification exercise was conducted to improve coverage, the potential for under coverage or misclassification cannot be entirely ruled out.

Second, accessibility issues affected data collection. Many non-household holdings are difficult to access due to lack of physical address of holders and administrative bureaucracies. This sometimes led to delays in reaching holdings, shortened interview times, or reliance on proxies for information. In a few cases, enumerators encountered difficulties arranging interviews with key managers, particularly within concession companies or larger private farms, where authorization procedures were required. This affected the ability to obtain detailed responses on sensitive topics such as land size, land use, tools and equipment usage and type of labor utilized. In fact, three of the agricultural concessions recognized by the NBC were not covered by the census despite several attempts by enumerators and census staff.

Third, while the census relied heavily on digital data collection tools (CAPI), connectivity constraints in rural areas occasionally delayed real-time data transfer and monitoring. Enumerators sometimes faced technical issues with tablets, particularly with battery life in areas lacking electricity. Although supervisors provided backup and troubleshooting support, these challenges highlight the need for stronger technological infrastructure to support fully digital operations.

Fourth, some respondents expressed reluctance to provide complete information, particularly on land size, land ownership arrangements, or labor practices. For example, questions on land size and labor hiring occasionally received partial or vague responses, reflecting both the sensitivity of the information and gaps in record keeping among some institutions. Similarly, while the census intended to capture detailed data on equipment use and mechanization, many respondents could not provide exact numbers, leading to reliance on estimates.

Another challenge relates to the definition and thresholds applied for non-household holdings. For example, non-household livestock and poultry holdings were defined using specific size criteria (such as 25 head of cattle or 500 chickens). While these thresholds ensured consistency with international standards, they also excluded smaller institutional farms that may still contribute to agricultural production in significant ways at the local level. This limitation means that the census provides a picture of medium-to-large non-household holdings but may underrepresent smaller-

scale organized farms. The category of non-household holdings that was particularly affected by this situation is private farming, many of whose farmers are known for rubber cultivation.

Finally, despite robust training, differences in enumerator capacity and respondent understanding led to variability in data quality. Although logical checks and quality assurance measures were embedded in the data system, there may still be minor errors due to respondent recall bias, inconsistent record keeping, or enumerator interpretation of definitions.

In summary, while the LAC-2024 non-household census represents a major achievement in agricultural data collection in Liberia, its findings should be interpreted with awareness of these challenges and limitations. The challenges encountered and recorded underscore the importance of continuous improvement in statistical capacity, institutional coordination, and respondent engagement to strengthen future rounds of agricultural censuses and surveys.

KEY FINDINGS

DEMOGRAPHIC PROFILE OF MANAGERS

71.5% MALE

28.5% FEMALE

LEGAL STATUS AND MARKET ORIENTATION

85.6% Formally Registered

88.2% Oriented toward market

GEOGRAPHIC DISTRIBUTION OF HOLDINGS

Nimba County **17.7%**

River Cess **2.3%**

8 out of 10 holdings hired external laborer.

33,551 & 3,552 Chickens & Pigs raised.

Men hired: **59.3%**
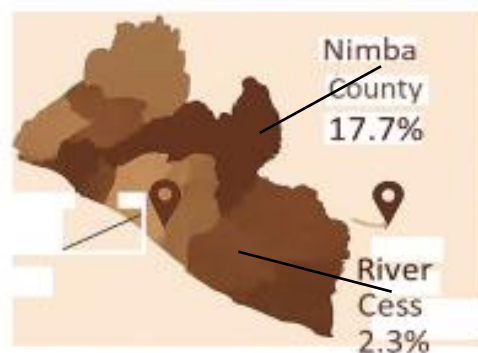
AGRICULTURAL ACTIVITIES AND CROPS

Rice   cassava   oil palm   rubber

9.8% holdings engaged in livestock

AGRICULTURAL LABOR

Women & Children hired: 40.4% & 0.26%.

87.8% & 80.7% of holdings used cutlass & hand hoe, respectively.

INPUTS AND MECHANIZATION

34.7% use fertilizer

CHAPTER 1: CHARACTERISTICS OF MANAGERS AND HOLDINGS IN THE NON-HOUSEHOLD SECTOR

1.1. Characteristics of Managers in the Non-Household Sector

As part of the 2024 Liberia Agriculture Census, data were collected from holdings in the non-household sector, including cooperatives, concessions, communal farms, private farms, and farmer-based organizations (FBOs). A total of 694 respondents participated in this segment of the census. Of the total respondents, 291 were mangers of holdings in the non-household sector, serving as holders, co-holders, president/chairpersons, vice president/vice chairpersons, or shareholders. These categories of persons are considered to have direct decision-making power over resource use and management control over the agricultural holding operations.

Decision making related to resource use and management control over the agricultural holding activities or operations is an important aspect in agricultural analysis. Understanding the socio-demographic characteristics of those who have decision making power over the holding is important for policy formulation and planning. In this section, socio-demographic information on the 291 managers is presented. More specifically, the section presents information on the sex, age, and level of education of managers in the non-household sector.

1.1.1. Sex and Age Distribution

> Structural gender disparities in access to and control over agricultural enterprises in Liberia's non-household sector.

The sex-disaggregated distribution of managers in Liberia's non-household sector shows a significant gender imbalance. Of the total managers, 208 (71.5%) were males while 83 (28.5%) were females. This indicates that there were nearly three times more male managers than females.

The data may reflect broader structural gender disparities in access to and control over agricultural enterprises in Liberia, particularly within organized or formalized non-household settings. This finding highlights the importance of integrating gender-sensitive approaches in agricultural development programs and policies aimed at improving equity and participation in the sector. The age distribution of the 291 managers reveals that the majority of individuals having decision making power or control over

> Decision making or control in non-household agricultural units is largely dominated by elderly people.

Figure 1 Distribution of agricultural holders by

71.5%

28.5%
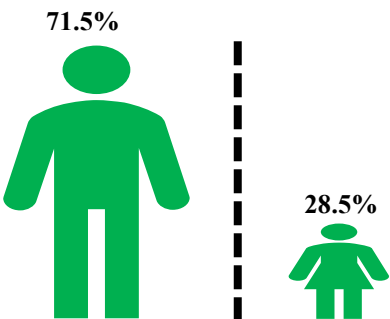
resource use and management of non-household agricultural units are within the prime working age range of 35 to 64 years. The largest proportion of agricultural managers (32.0%) falls within the 45–54 age group, followed by the 55 - 64 (24.7%) and 35 – 44 (24.1%) age groups. Together,

these three age groups account for nearly 81% of all agricultural managers, underscoring that decision making or control in non-household agricultural units is largely dominated by elderly people.

Younger age groups are underrepresented, with those below 35 years constituting only 10.3%. This age structure suggests that youth participation in decision making or control over non-household agricultural enterprises remains low, possibly due to limited access to land, capital, or leadership roles. These findings point to the need for policies and programs that encourage youth engagement and succession planning within organized agriculture to ensure sustainability and innovation in the sector.

Figure 2. Percentage distribution of managers in the non-household sector by age
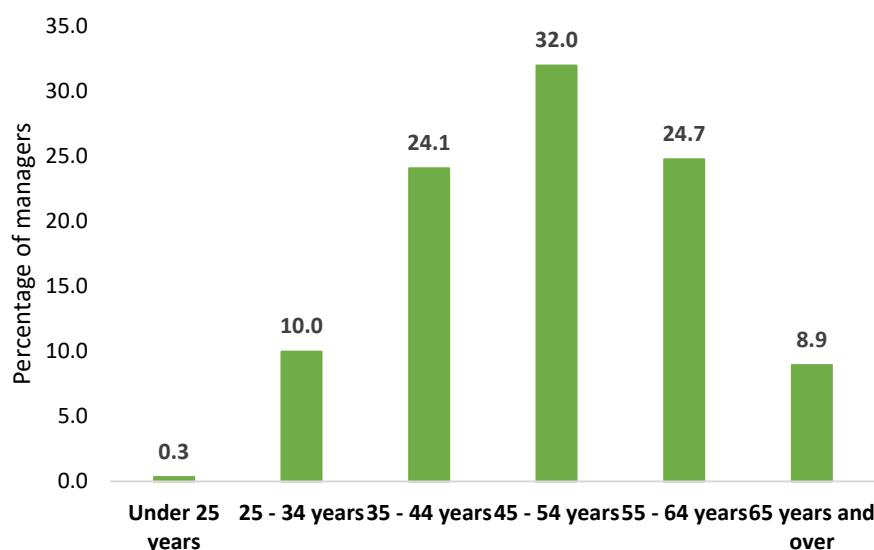

1.1.2. Level of Education

Although a significant number of managers have received formal education beyond primary school, there remains a subset, particularly among females, with limited or no educational background.

Overall, the majority of managers in the non-household sector (35.7%) completed senior high school, followed by those with tertiary education (19.2%). Only a small proportion reported vocational education (4.5%).

The data indicate that while a significant portion of managers in the non-household sector have received formal education beyond primary school, there remains a subset, particularly among females, with limited or no educational background. About 31.3% of females reported having no formal education, compared to only 10.1% of males. The data shows that males are more likely to have completed senior high school (40.1%) and tertiary education (22.6%) than females (22.9% and 10.8%), respectively. This distribution highlights a significant gender disparity in educational attainment among those involved in decision making and management of non-household agricultural units' activities. These disparities may reflect broader societal barriers affecting women's access to education and, subsequently, to leadership roles in agricultural organizations.

Table 1. Distribution of managers by sex and educational level

Education Level	Male		Female		Total	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
None	21	10.1	26	31.3	47	16.2
Elementary	14	6.7	11	13.3	25	8.6
Junior High	26	12.5	13	15.7	39	13.4
Senior High	85	40.9	19	22.9	104	35.7
Vocational	9	4.3	4	4.8	13	4.5
Tertiary	47	22.6	9	10.8	56	19.2
Other specify	6	2.9	1	1.2	7	2.4
Total	**208**	**100.0**	**83**	**100.0**	**291**	**100.0**

1.2. Characteristics of Holdings in the Non-Household Sector

The Liberia Agriculture Census 2024 provides critical insights into the structure and dynamics of non-household agricultural holdings. This section presents an overview of their main characteristics, beginning with the size and distribution of holdings across counties, which highlights notable regional differences in concentration. It then examines the legal status of these holdings, shedding light on the extent of formal registration and the degree of informality within the sector. Finally, the section explores the main purpose of production, emphasizing the market orientation that defines most non-household agricultural enterprises. Together, these subsections provide a comprehensive understanding of the organizational and economic features shaping Liberia's non-household agricultural sector.

1.2.1. Size of holdings in the non-household sector

Amid relatively low number of non-household holdings in Liberia, Nimba county accounts for the majority.

In Liberia, agricultural holdings in the non-household sector are relatively small in terms of size. The LAC-2024 identified a total of 694 agricultural holdings in the non-household sector. The data collected offers a detailed overview of agricultural holdings in the non-household sector across counties which is essential for strategic planning and resource allocation. The findings show that Nimba has the highest concentration of agricultural holdings at 123, constituting 17.7% of the total. Nimba is followed by Margibi with 76 agricultural holdings (constituting 11.0%), and Bong at 73 (10.5%). Grand Kru reported the lowest number of holdings in the non-household sector (15 holdings constituting 2.2%).

Table 2. Number and percentage distribution of non-household holdings by county

County	Number	Percent
Bomi	49	7.1
Bong	73	10.5
Grand Bassa	44	6.3
Grand Cape Mount	56	7.9
Grand Gedeh	24	3.5
Grand Kru	15	2.2
Lofa	49	7.1
Margibi	76	11.0
Maryland	16	2.3
Montserrado	37	5.3
Nimba	123	17.7
Rivercess	16	2.3
Sinoe	59	8.5
River Gee	18	2.6
Gbarpolu	39	5.6
Total	**694**	**100.0**

1.2.2. Legal status of holdings in the non-household sector

> Although the majority of non-household holdings are registered, a significant share of them remain unregistered.

The LAC-2024 results show that, while most non-household agricultural holdings are registered entities, a significant share remains unregistered. The majority of them (40.9%) are registered holdings operated by natural or civil persons, indicating a significant level of formalization among individual operators. However, a considerable portion (21.8%) consists of unregistered natural or civil persons, which highlight a substantial informal sector presence. Registered partnerships account for 22.5 per cent, while unregistered partnerships represent 12.2 per cent, suggesting that partnerships (both formal and informal) play a notable role in agricultural production outside the household sector. These findings highlight potential areas for policy interventions to strengthen formalization and regulatory compliance in the agricultural sector.

Figure 3. Distribution of Non-household Agricultural Holdings by Legal Status

Legend:
- ■ Natural person (registered)
- ■ Natural person (Not registered)
- ■ Partnership (registered)
- ■ Partnership (Not registered)
- ■ Other

Values: 40.9, 21.8, 22.5, 12.2, 2.6
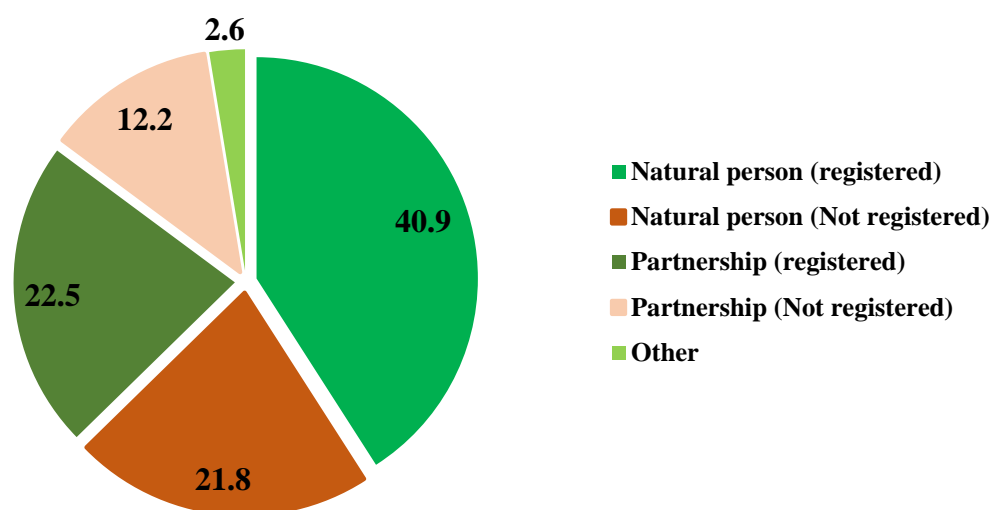
1.2.3. Main purpose of production in the non-household sector

> Liberia non-household agricultural holdings show strong commercial orientation.

Most agricultural holdings in the non-household sector operate with a market-oriented focus. In fact, 33.0% produced exclusively for sale while an even larger percentage (55.2%) produced mainly for sale with some own consumption. Combined, these purposes represent over 88 per cent of all agricultural holdings, indicating a strong commercial orientation within this segment of the agriculture sector. A smaller share of agricultural holdings (1.2%) produced solely for own consumption (see **Figure 4**).

Figure 4. Distribution of Non-household Holdings by Main Purpose of Production

- Producing mainly for sale with some own consumption: 55.2
- Producing only for sale: 33.0
- Producing mainly for own consumption with some sales: 9.7
- Producing only for own consumption: 1.2
- Other specify: 1.0
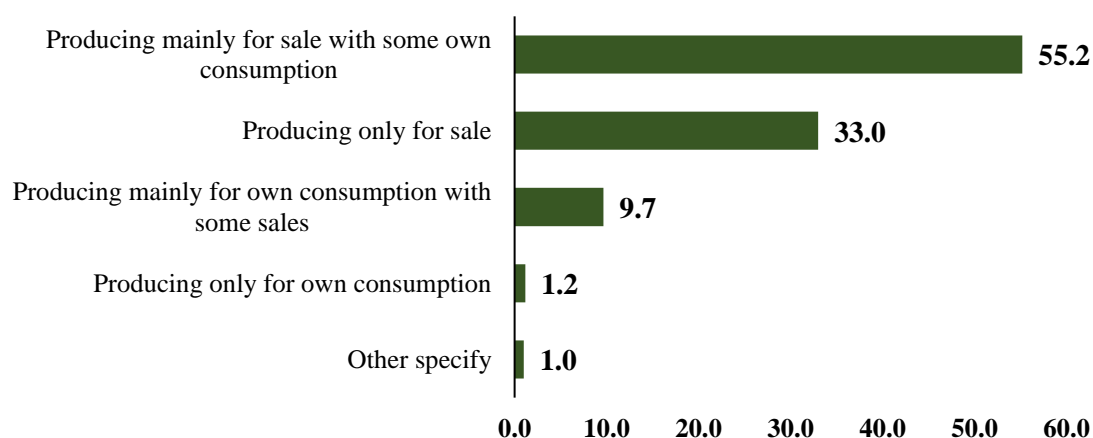
CHAPTER 2: AGRICULTURAL ACTIVITIES

This chapter presents information on the various agricultural activities practiced by non-household agricultural holdings during the Liberia 2022/23 farming season. The chapter provides data on the number of non-household agricultural holdings practicing various agricultural activities, including crop cultivation, livestock, poultry rearing, fisheries, aquaculture, and forestry/agro-forestry. It provides detailed information on the crops mainly grown by these agricultural units and the type of livestock and poultry commonly raised. In addition, the chapter presents information on the number of parcels, plots, and cultivated areas at the non-household level.

2.1. Types of Agricultural Activities Practiced in the Non-Household Sector

> Crop cultivation is the dominant agricultural activity practiced by agricultural holdings in Liberia's non-household sector.

The agriculture census results show that 632 out of 694 non-household holdings (constituting 91.1%) engaged in growing crops during the 2022/2023 farming season. Crop cultivation is followed by livestock and poultry rearing, with 68 (9.8%) and 31 (4.5%) holdings respectively practicing these activities. Other agricultural activities such as fisheries, aquaculture, and forestry/agro-forestry are practiced by a small proportion of holdings in the non-household sector. The data review a high level of specialization in crop cultivation among formalized agricultural units, while diversification into animal-based and forestry activities remains relatively limited. This finding highlights significant potential for growth and investment in underrepresented areas such as aquaculture and agro-forestry to broaden the sector's resilience and value-chain opportunities.

Figure 5. Number of Non-household Holdings by Agricultural Activities Practiced
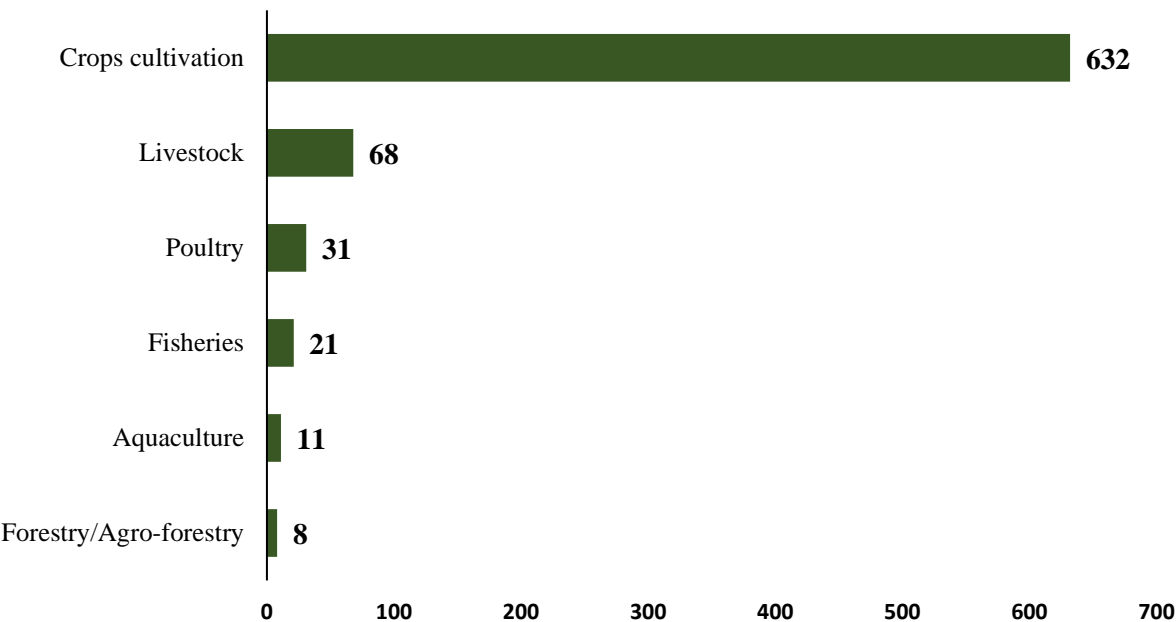
2.1.1. Main Crops Cultivated

Figure 6 presents the ten major crops cultivated by holdings in the non-household sector. Compare to other crops, cassava and rice are the most widely cultivated crops among non-household agricultural holdings. The data shows that (39.6%) of holdings in the non-household sector cultivated cassava during the 2022/2023 farming season, while (32.6%) cultivated rice. In contrast, cash crops such as cocoa, palm oil, and rubber are cultivated by fewer non-household holdings. Although Liberia is one of the leading producers of rubber in Africa, this activity is dominated by a very small number of non-household holdings and the census result shows that only 5.5% of non-household holdings cultivated rubber.

Figure 6. Percentage of Non-household agricultural holdings cultivating major crops
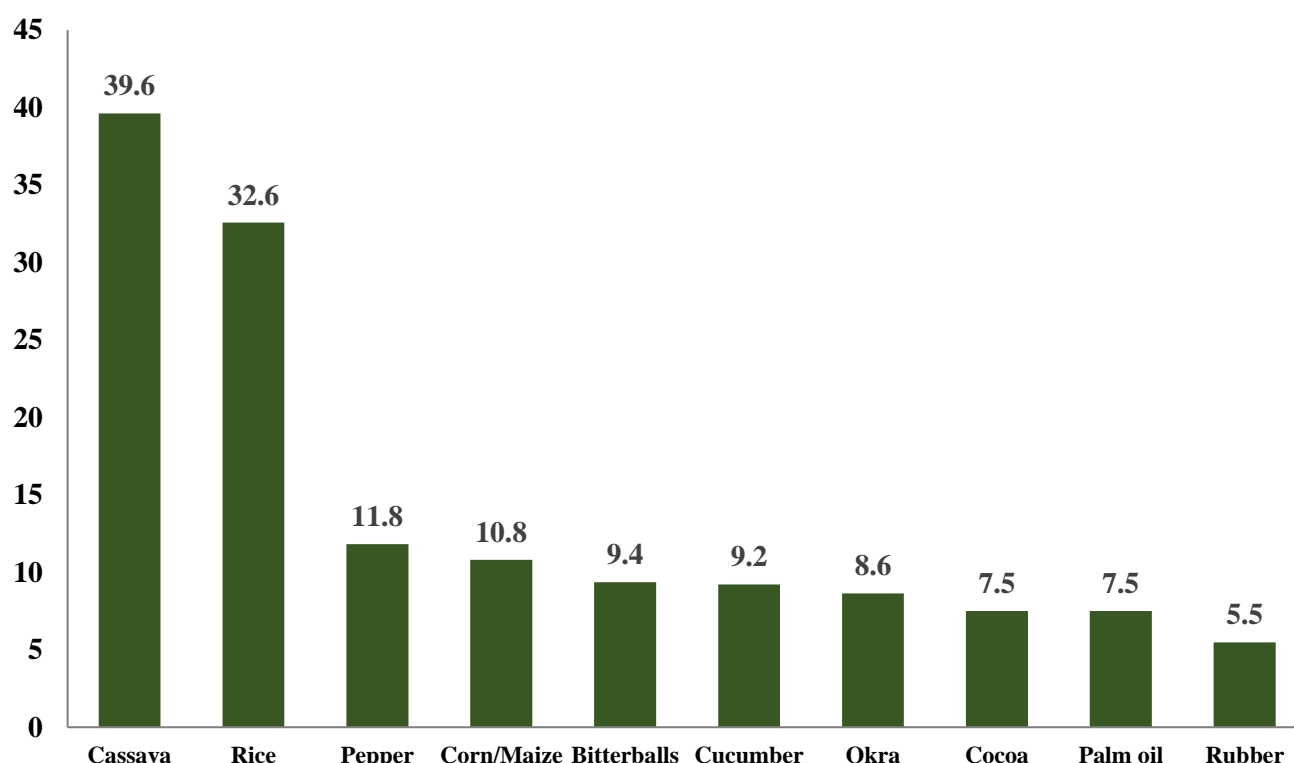
2.1.2.   Cultivation of Cereals, tubers or roots

Cassava cultivation is more common among non-household holdings in South Central region while rice cultivation is more common among those in the North Central region.

As seen previously, the majority of non-household holdings cultivated crops in the cereals, tubers or roots group (more specifically cassava and rice). The analysis at the regional level is presented in **Table 3**. The table presents the percentage of non-households in each region that cultivated each of the top three cereals, tubers or roots crops. Regionally, South Central reported the highest percentage of cassava cultivation (50.3%) and the highest maize engagement (21.0%), while North Central leads

in rice cultivation (49.4%) but shows relatively low maize cultivation (4.1%). Southeastern A and B regions have lower levels of rice and maize cultivation compared to the national average, though Southeastern A records a notably high cassava rate (48.5%).

Figure 7. Percentage distribution of Non-household Holdings Cultivating the Top Three Cereal, Tubers or Roots
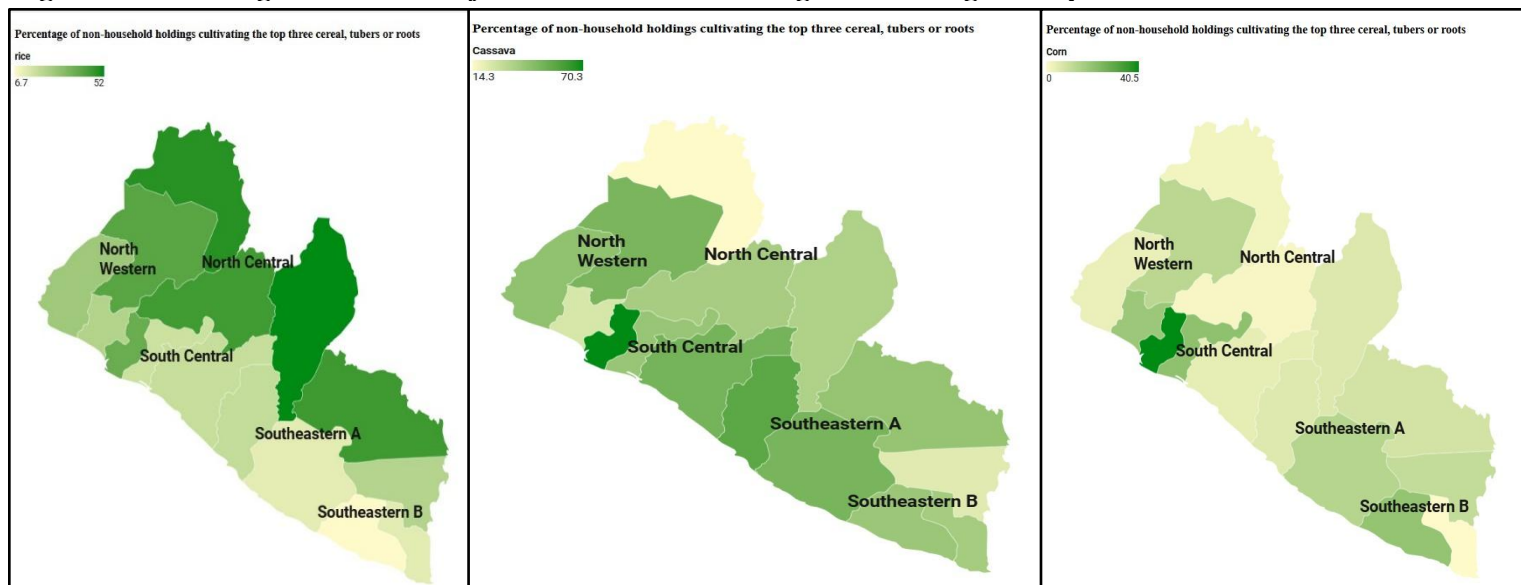
Table 3. Percentage of non-household holdings cultivating the top three cereal, tubers or roots

Region	Total Number of Non-HHs	Rice	Cassava	Corn/Maize
Southeastern A	99	21.2	48.5	11.1
Southeastern B	49	14.3	32.7	10.2
North Central	245	49.4	31.4	4.1
North Western	144	29.2	38.2	11.1
South Central	157	22.3	50.3	21.0
Liberia	**694**	**32.6**	**39.6**	**10.8**

2.1.3. Cultivation of Vegetable Crops

Cultivation of vegetable crops is more pronounced in the South-Central region compare to other regions.

The LAC-2024 result shows significant regional disparities in non-household cultivation of vegetable, with the South-Central region emerging as the dominant cultivator across all vegetable crops. The South-Central region records the highest percentages in cucumber (21.7%), pepper (17.8%), bitter balls (17.2%), and okra (19.2%), indicating a strong focus on diversified vegetable farming in the region. In contrast, Southeast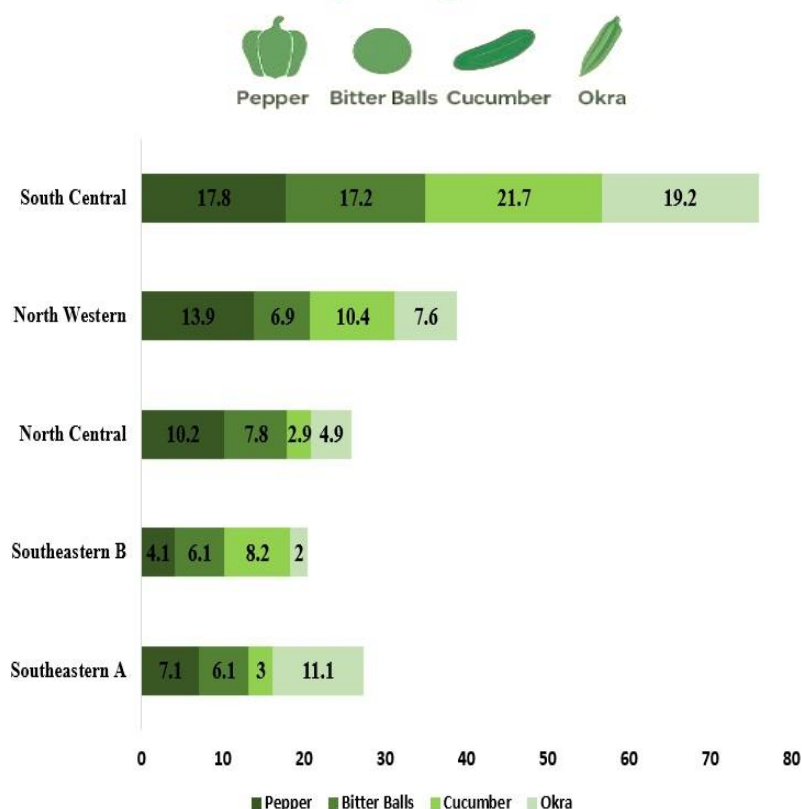ern B consistently shows the lowest production levels, particularly for okra (2.0%) and pepper (4.1%), suggesting limited engagement in non-household vegetable cultivation. Other regions such as North Central and North Western demonstrate moderate activity, with notable contributions in pepper and cucumber.

Figure 8. **Distribution of NonHHs Cultivating Vegetable Crops**

Pepper   Bitter Balls   Cucumber   Okra

Region	Pepper	Bitter Balls	Cucumber	Okra
South Central	17.8	17.2	21.7	19.2
North Western	13.9	6.9	10.4	7.6
North Central	10.2	7.8	2.9	4.9
Southeastern B	4.1	6.1	8.2	2
Southeastern A	7.1	6.1	3	11.1

2.1.4. Cultivation of Cash Crops

Although practiced by fewer holdings, cash crop cultivation in Liberia is a key component of the agricultural sector. It

Regional specialization revealed in cash crop cultivation among Liberia's non-household agricultural holdings.

is primarily driven by tree crops such as rubber, cocoa, and oil palm, which contribute significantly to export earnings and rural employment. Non-household holdings, including agriculture concession companies[1] and private farms[2], play a crucial role in the production of these crops due to their access to larger landholdings and investment capital. The table 5 highlights the percentage of non-household holdings engaged in cultivating the top three cash crops across Liberia's five regions.

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[1] This report does not include information on the major agriculture concessions (Firestone, Golden, Maryland Oil Palm and Mano Concession)

[2] The number of private farms captured in the agriculture census is underestimated due to difficulties in distinguishing them from household holdings.

Nationally, cocoa and oil palm are equally cultivated by 7.5% of non-household holdings, while rubber is cultivated by 5.5%. Regionally, Southeastern B stands out with the highest engagement in cocoa (18.4%) while North Western leads in oil palm cultivation (13.2%). South Central has the highest share of rubber cultivation (15.3%), significantly above the national average. In contrast, Southeastern A reports very low cultivation across all three crops.

Table 5. Percentage of non-household holdings cultivating the top three cash crops

Region	cocoa	palm oil	rubber
Southeastern A	9.1	2.0	1.0
Southeastern B	18.4	10.2	8.2
North Central	6.5	6.9	1.2
North Western	5.6	13.2	4.2
South Central	6.4	5.7	15.3
Liberia	**7.5**	**7.5**	**5.5**

Percentage of non-household holdings cultivating the top three cash crops

Oil Palm, Rubber & Cocoa Cultivation

2.2. Cultivated Area

Attribution of Large Number of Cultivated Areas to Rubber and Oil Palm.

The majority of cultivated areas reported by non-household agricultural holdings were used for rubber and oil palm cultivation. About 77,502 hectares of land was cultivated with various crops during the reference agricultural season, with rubber accounting for 35,709 hectares (or 46.1%) while oil palm accounted for 26,128 hectares (or 33.7%). Thus, Rubber and Oil palm alone accounted for about 58% of the total cultivated area (see Figure 9).

Figure 9. Distribution of Total Cultivated Area by Crop (in Hectares and Percent)

35,709 (46.1%)

26,128 (33.7%)

4,934 (6.4%)

3,646 (4.7%)

1,502 (1.9%)

5,582 (7.2%)

Rubber   Oil Palm   Rice/Paddy   Cassava   Cocoa   Other Crops
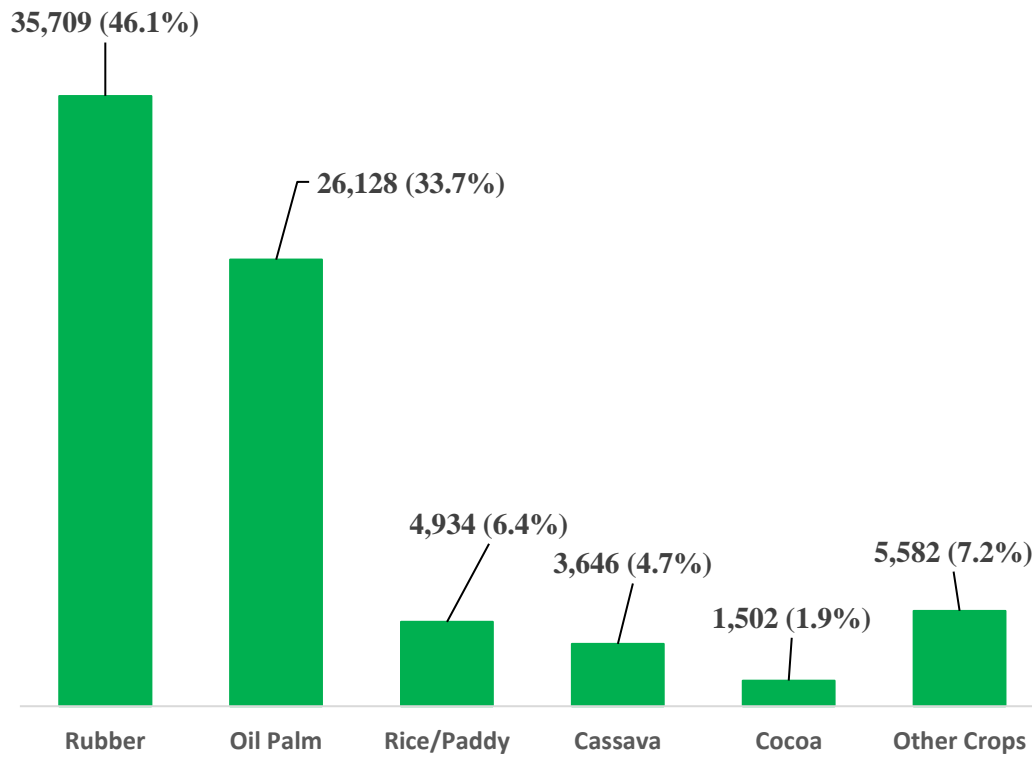
2.3. Livestock and Poultry Rearing Among Non-Household Agricultural Holdings

Non-household agricultural holdings contribute to livestock and poultry production in Liberia. These entities exhibit varying degrees of formalization, technical capacity, and market orientation, with livestock rearing serving both subsistence and commercial purposes.

The result of the Liberia Agriculture Census 2024 shows that 24 non-household holdings reported raising chickens, while 36 raised goats, 31 raised pigs, and 21 raised cattle. Chickens were by far the most prevalent, with 33,541 birds raised across the reporting holdings, averaging 1,398 chickens per holding. This suggests a strong commercial orientation, particularly among entities engaged in broiler and layer production.

Pig farming also showed notable intensity, with 3,552 pigs raised by 31 holdings, averaging 115 pigs per entity. This concentration indicates that piggery is a key focus for many non-household operations, likely due to its relatively short production cycle and growing market demand. Goats and cattle were raised in more modest numbers, averaging 21 goats and 14 cattle per holding, respectively. Sheep were less common, with 15 holdings raising a total of 115 sheep.

Other livestock categories (including rabbits and bees), were reported by 5 holdings, yet collectively accounted for 2,042 animals. This result of the LAC-2024 suggests niche specialization among certain entities, possibly linked to value-added products such as honey or rabbit meat.

LIVESTOCK & POULTRY IN LIBERIA'S NON-HOUSEHOLD SECTOR

Liberia Agriculture Census 2024

NUMBER OF NON-HOUSHHOLD HOLDINGS BY LIVESTOCK TYPE

Bar chart values: Goats 36, Pigs 31, Chickens 24, Cattles 21, Sheep 15, Ducks 6, Other livestock (rabbit, bees, etc.) 5
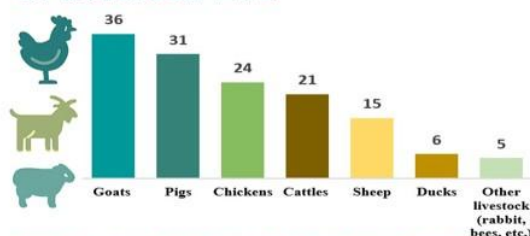
TOTAL LIVESTOCK & POULTRY RAISED

Livestock Type	Number of Livestock Raised
Chickens	33,541
Pigs	3,552
Goats	767
Cattles	297
Ducks	267
Sheep	115
Other livestock (rabbit, bees, e	2,042

AVERAGE NUMBER PER HOLDING

Livestock Type	Average Number of Livestock raised
Cattles	14
Goats	21
Sheep	8
Pigs	115
Chickens	1,398
Ducks	45
Other livestock (rabbit, bees, etc.)	408

CHAPTER 3: AGRICULTURAL LABOUR, INPUT AND EQUIPMENT

3.1. Agricultural Labour

Hired Labor plays a crucial role in agricultural production by providing the necessary workforce to sustain large-scale and labor-intensive farming activities. In many contexts, especially among non-household agricultural enterprises, hired labor ensures timely land preparation, planting, weeding, harvesting, and post-harvest handling, which directly affects productivity and yields. It also creates significant employment opportunities in rural areas, with both men and women contributing to the agricultural labor force, thereby supporting livelihoods and reducing poverty. Moreover, a reliance on hired labor for agricultural activities highlights the sector's importance as a major employer and its potential to drive rural economic growth.

3.1.1 Type of Labor Used in Crop Production Activities

> Liberia's non-household holdings strongly rely on hired labor for crop production activities.

The data reveals a strong reliance on hired labor for crop production across all regions in Liberia, with South Central (86.0%) and North Central (85.3%) showing particularly high proportions of holdings using hired workers. Southeastern regions exhibit slightly more balanced labor inputs, especially Southeastern B, where 36.7% of holdings rely on their members for crop cultivation. Nationally, 82.1% of holdings use hired labor, indicating a widespread preference or necessity for external labor sources.

Table 4. Distribution of holdings by type of labour input used for crop production activities

Region	Hired workers		NHH members		Total	
	Number	Percent	Number	Percent	Number	Percent
Southeastern A	74	74.7	25	25.3	99	100
Southeastern B	31	63.3	18	36.7	49	100
North Central	209	85.3	36	14.7	245	100
North Western	121	83.9	23	16.1	143	100
South Central	135	86.0	22	14.0	157	100
Liberia	**570**	**82.1**	**124**	**17.9**	**694**	**100**

3.1.2 Size of Daily Hiring

Daily hiring of labor in agriculture plays a pivotal role in sustaining crop production, especially in contexts where holding-member labor is insufficient or unavailable. It enables scalability, ensures timely execution of farming activities, and supports specialized tasks that may require external expertise.

Over 60,900 daily hirings occurred in Liberia's non-household sector. In Liberia, the widespread use of hired labor reflects both the economic significance of agriculture and the structural reliance on external labor inputs. This dynamic is particularly relevant in regions with larger agricultural holdings or more commercialized farming practices, where labor demands exceed what holding members alone can provide.

According to the LAC-2024 result, a total of 60,930 hirings for crop production activities occurred in the non-household sector during the 2022/2023 farming season. This result shows that approximately 88 hirings per non-household occurred in the sector. Men constituted the majority of hired labor (36,160 or 59.3%), followed by women (24,609 or 40.4%). The hiring of children by non-household holdings for crop production activity is relatively rare.

The analysis at the regional level shows that the North Central region accounted for the highest hiring volume (36,281 or 59.5% of the national total), with a relatively balanced gender distribution. Southeastern A and B, while smaller in scale, still showed notable engagement of women in agricultural labor, especially in Southeastern A where women made up nearly 40% of the hired workforce. The low hiring of children in the non-household sector suggests adherence to labor standards, though even small numbers warrant attention. Overall, the data underscores the critical role of hired labor, particularly adult men and women, in driving agricultural productivity across Liberia's regions.

Table 5. Number of hiring by gender and region

Region	MEN	WOMEN	CHILDREN	TOTAL
Southeastern A	2,709	1,830	56	4,595
Southeastern B	1,812	1,106	25	2,943
North Central	19,239	16,967	75	36,281
North Western	2,863	1,616	0	4,479
South Central	9,537	3,090	5	12,632
Liberia	**36,160**	**24,609**	**161**	**60,930**

3.2. Input and Equipment Used

The 2024 Agriculture Census reveals important patterns in the use of agricultural inputs and equipment among non-household holdings. These holdings, though relatively few in number, demonstrate varying degrees of input adoption and mechanization, which are critical for understanding productivity levels and modernization within the sector. This section examines input and equipment usage in the non-household sector. It begins with a focus on fertilizer usage, where adoption remains modest overall but shows significant regional variation. Fertilizers are followed by an assessment of manually operated tools, which continue to play a dominant role in crop cultivation and field management across the country.

The analysis then turns to the role of machine-powered equipment, highlighting its limited but emerging presence in land preparation, irrigation, crop maintenance, and post-harvest activities. While traditional tools such as cutlasses, hoes, and diggers remain the backbone of agricultural production, the introduction of pumps, sprayers, and tractors in some holdings signals gradual steps toward mechanization.

3.2.1. Fertilizers Usage

Fertilizer usage is a cornerstone of modern agriculture, enhancing soil fertility and boosting crop yields by supplying essential nutrients that may be lacking in natural soils. Its application can significantly improve productivity, especially in regions facing soil degradation or nutrient depletion. In developing agricultural systems, fertilizers help bridge the gap between subsistence and commercial farming, enabling farmers to meet growing food demands and improve livelihoods. Moreover, strategic fertilizer use contributes to crop resilience, allowing for better performance under variable climatic conditions and supporting sustainable agricultural practices when combined with proper soil management.

> Fertilizer adoption rate among non-household holdings remains relatively modest.

The agriculture census non-household result on fertilizer usage indicates that approximately 4 out of ten holdings used fertilizer during the 2022/2023 farming season. South Central stands out with the highest adoption rate at 60.5%. In contrast, Southeastern A and Southeastern B show the lowest usage rates at 15.2% and 22.4%, respectively, which may reflect limited access to inputs, lower awareness, or differing crop types. North Central and North Western exhibit moderate adoption levels, indicating some engagement with input-based farming. These regional disparities highlight the need for targeted interventions to improve access to fertilizers and promote balanced nutrient management across Liberia's agricultural landscape.

Table 6. Distribution of holdings Using Fertilizers by Region

Region	Number	Percent of Total
Southeastern A	15	15.2
Southeastern B	11	22.4
North Central	79	32.2
North Western	41	28.5
South Central	95	60.5
Liberia	**241**	**34.7**

3.2.2. Equipment Used

Manually operated agricultural tools remain vital for enhancing productivity and labor efficiency, especially in small-scale and semi-mechanized farming systems such as those commonly found in Liberia. Tools like cutlasses, hoes, shovels, and diggers are indispensable for land clearing, planting, weeding, and basic soil cultivation.

Equipment such as wheelbarrows and rakes facilitate post-harvest handling and field maintenance, while sprayers and power saws support pest control and tree crop management. These tools are typically affordable, require minimal technical skills, and are well-suited for Liberia's mixed-farming landscapes and the labor-based approaches practiced by many non-household agricultural holdings.

> Liberia non-household holdings predominantly used cutlasses and hand hoes for crop cultivation.

The data shows that cutlasses (used by 609 or 87.8% of holdings) and hand hoes (used by 560 or 80.7% of holdings) are the most commonly used manually operated tools across all regions, highlighting their centrality to basic farming operations in Liberia. North Central consistently records the highest usage across most equipment types, followed closely by South Central. Tools requiring slightly more effort or specialization, such as sprayers (used by 135 or 19.5% of holdings) and power saws (used by 123 or 17.7% of holdings), are less frequently used, suggesting limited application of advanced manual tools. The relatively high counts for Sharpening files, shovels, axes, and diggers across all regions further reflect the dependence on physical labor for land preparation and maintenance. This distribution of equipment usage underscores the urgent need for investment in both training and access to improved, labor-saving technologies to enhance productivity in Liberia's non-household agricultural sector.

Table 7. Distribution of Holdings Using Manually Operated Equipment by type

Equipment	Southeastern A	Southeastern B	North Central	North Western	South Central	Liberia
Cutlass	75	43	217	128	146	609
Hand Hoe	69	31	200	121	139	560
Sharpening File	59	22	150	104	125	460
Shovel	56	24	155	89	129	453
Axe	50	14	141	96	121	422
Digger	38	20	98	82	115	353
Wheel Barrow	46	27	102	63	93	331
Rake	45	21	63	63	107	299
Sprayers	6	10	51	22	46	135
Power saw	13	6	22	39	43	123

> Non-household holdings reported using Large number of cutlasses, diggers, sharpening files and hand hoe during the 2022/2023 farming season.

Table 9 presents the total number of manually operated equipment and the average number per non-household holding (NHH). The cutlass leads with 32,165 units, averaging 46.3 per NHH, followed by diggers (20,749 units, 29.9 per NHH). These high number of cutlasses and diggers reinforce the dependence on traditional tools in farming practices among non-household holdings. The high average per holding suggests that individual farmers or farming groups often use multiple units of the same equipment, possibly due to the intensity of labor.

Table 8. Number of Manually Operated Equipment Used by Non-household Holdings

Manually operated equipment	Total Number	Average Number per NHH
Cutlass	32,165	46.3
Digger	20,749	29.9
Filling/File	20,251	29.2
Hand Hoe	20,137	29.0
Shovel	12,616	18.2
Wheel Barrow	9,899	14.3
Rake	9,583	13.8
Axe	8,228	11.9
Whipper	5,882	8.5
Sprayers	2,613	3.8
Power saw	328	0.5

> Usage of machine-powered equipment for various farm activities is very low among Non-household holding.

The Liberia agricultural sector at both the Household and Non-household level is dominated with rudimentary tools and equipment. The LAC-2024 results revealed low usage of machine-powered equipment for various farm activities. The most common types of machine-powered

equipment used by non-household holdings in Liberia are water pumps and sprayers, used by 16.6 and 16.5 per cent of holdings for irrigation and crop maintenance, respectively.

Mechanized Equipment for land preparation and planting, such as power tillers, see minimal frequency of utilization, accounting for just 8.2 per cent of non-households. Overall, these figures suggest that mechanized agriculture is underdeveloped at the non-household level.

Table 9. Non-household Holdings Using Machine-Powered Equipment

Machine-powered equipment	Total Number of Holdings	Percent of Total Holdings
Irrigation		
Water pumps	105	16.6
Drip irrigation equipment	8	1.3
Sprinkler irrigation equipment	11	1.7
Sprayers and other localized irrigation devices	59	9.3
General farm use		
Generators for the production of electricity	68	10.8
Computers, laptops, tablets or smart phones	82	13.0
Other (electric motors, etc.)	16	2.5
Tractors, Bulldozers and other vehicles		
Four-wheel drive tractors	26	4.1
Two-wheel drive tractors	10	1.6
Bulldozers	11	1.7
Trucks	28	4.4
Other vehicles (Track-laying tractors, etc.)	51	8.1
Land preparation and Planting		
Power tillers	52	8.2
Other (Cultivators, levelers, etc.)	31	4.9
Crop maintenance		
Sprayers	104	16.5
Other crop maintenance	21	3.3
Post-harvest		
Threshers	34	5.4
Other post-harvest equipment	33	5.2

Table 11 quantifies the presence of machine-powered irrigation equipment. A total of 271 water pumps and 1,294 drip irrigation systems are reported. Despite the low number of holdings using such equipment in Table 10, this table suggests that where adopted, holdings may use multiple units. This result might suggest that mechanized assets are concentrated among a few more commercially oriented or well-resourced farms. It also indicates a possible opportunity for expanding mechanization through cooperative use or service provision models.

Table 10. Number of Machine Power Equipment Used by NHH holdings by Type

Machine-powered equipment	Total Number
Irrigation	
Water pumps	271
Drip irrigation equipment	1,294
Sprinkler irrigation equipment	1,164
Sprayers and other localized irrigation devices	718
General farm use	
Stand-alone combustion engines	11
Stand-alone electric motors	8
Generators for the production of electricity	188
Computers, laptops, tablets or smart phones used for farm management	5,617
Tractors, Bulldozers and other vehicles	
Track-laying tractors	1,509
Four-wheel drive tractors	1160
Two-wheel drive tractors	21
Bulldozers	99
Trucks	2694
Boats	360
Trailers	17
Land preparation and Planting equipment	
Ploughs	25
Power tillers	90
Levelers	20
Diggers used for land preparation	513
Planters	50
Crop maintenance	
Manure spreaders	191
Fertilizer broadcasters	39
Sprayers	693
Dusters	1
Crop harvesting	
Hay rakes	52
Corn pickers	16
Post-harvest	
Threshers	46
Grain cleaners	20

CONCLUSION

The 2024 Liberia Agriculture Census non-household report provides the first comprehensive profile of agricultural holdings outside the household sector in more than five decades. The findings highlight the crucial role that non-household holdings, including cooperatives, concessions, private farms, farmer-based organizations, and communal farms, play in Liberia's agricultural landscape.

The results reveal a sector that is both diverse and highly commercialized. Most non-household holdings are registered entities with a strong market orientation, producing primarily for sale rather than subsistence. Crop cultivation dominates their activities, with cassava and rice as the most widely grown food crops, complemented by cash crops such as rubber, cocoa, and oil palm that underpin Liberia's agricultural exports. At the same time, livestock and poultry production, while less prevalent, demonstrate significant specialization, with chicken and pig farming emerging as commercially oriented ventures among non-household operators.

The census also underscores the importance of labor in sustaining non-household agriculture. With over 60,000 daily hirings during the 2022/2023 farming season, the sector provides employment opportunities to both men and women, though men constitute the majority. The reliance on hired labor reflects both the scale of operations and the commercial nature of these holdings.

Despite these strengths, the sector remains constrained by low levels of mechanization and input use. The heavy dependence on rudimentary tools such as cutlasses and hoes illustrate the persistence of labor-intensive farming practices. Fertilizer adoption is uneven across regions, with South Central showing high usage but Southeastern counties lagging behind. Similarly, machine-powered equipment such as tractors, irrigation systems, and threshers remain scarce, limiting productivity gains and modernization.

From a demographic perspective, the dominance of male managers and the underrepresentation of youth highlight structural inequalities in access to agricultural decision-making roles. Gender disparities in education further compound these inequalities, limiting women's participation in leadership positions within agricultural organizations. These findings point to the need for inclusive strategies that foster gender equity and youth involvement in agriculture.

Overall, the LAC-2024 non-household census provides a critical evidence base for policy, planning, and investment. By quantifying the size, characteristics, and activities of non-household holdings, the report fills a longstanding data gap and supports the development of a master sampling frame for future surveys. Its insights will help shape strategies to modernize agriculture, strengthen food security, and harness the sector's potential as a driver of economic growth and rural transformation.

RECOMMENDATIONS

Building on the findings of the 2024 census and acknowledging the challenges and limitations faced, several recommendations are proposed to strengthen the role of the non-household agricultural sector in Liberia's development:

1. **Promote Mechanization and Technology Adoption**
   o Expand access to machine-powered equipment through cooperative schemes, service provision models, or public-private partnerships.
   o Support training in the use and maintenance of modern agricultural machinery, irrigation systems, and post-harvest technologies.
   o Encourage investment in digital agriculture solutions, including farm management software and precision agriculture tools.
2. **Strengthen Input Access and Sustainable Practices**
   o Improve the distribution of fertilizers, pesticides, and improved seed varieties, particularly in under-served regions such as Southeastern Liberia.
   o Promote integrated soil fertility management and climate-smart agricultural practices to enhance productivity while ensuring sustainability.
   o Facilitate partnerships with private suppliers and cooperatives to reduce input costs and improve affordability.
3. **Enhance Gender Equity and Youth Participation**
   o Implement targeted programs to increase women's access to education, training, and leadership opportunities within agricultural organizations.
   o Develop incentives for youth participation, such as access to land, credit facilities, and incubation programs for agribusiness start-ups.
   o Integrate gender- and youth-sensitive approaches into all agricultural development strategies and policies.
4. **Strengthen Institutional Coordination and Regulatory Frameworks**
   o Improve coordination between LISGIS, MOA, CDA, NBC, and other relevant agencies to maintain accurate registers of non-household holdings.
   o Enhance the legal and regulatory environment to encourage formalization of unregistered holdings and strengthen compliance with land tenure and labor standards.
   o Establish a regular mechanism for updating and verifying the non-household frame to ensure comprehensive coverage in future surveys.
5. **Strengthen Collaboration with Large Agricultural Holdings**
   o Secure the cooperation of large-scale commercial farms such as Firestone and other concessions.
   o Enforce existing legal and institutional frameworks, that enhance stakeholder engagement.
   o Establish clear protocols for the timely provision of data from these holdings.
6. **Invest in Capacity Building and Data Systems**
   o Provide continuous training for enumerators, supervisors, and agricultural statisticians to enhance data quality.
   o Strengthen LISGIS' capacity to conduct digital data collection, manage agricultural databases, and disseminate results in user-friendly formats.

- Expand the use of GIS, CAPI, and real-time monitoring systems in future censuses and surveys to improve accuracy and efficiency.
7. **Foster Value Chain Development and Market Linkages**
    - Support non-household holdings to integrate more fully into national and regional value chains, particularly in cash crops and livestock.
    - Invest in agro-processing, storage facilities, and transportation infrastructure to reduce post-harvest losses and increase value addition.
    - Facilitate access to finance for non-household holdings through tailored credit schemes, guarantees, and risk-sharing mechanisms.

In conclusion, the non-household agricultural sector in Liberia holds significant potential to drive growth, create employment, and contribute to food and nutrition security. Realizing this potential will require sustained investment, policy reforms, and inclusive development strategies informed by the evidence generated through the LAC-2024. By implementing these recommendations, Liberia can move toward a more modern, resilient, and inclusive agricultural sector.

APPENDIX

SN	Institutions
1	Ministry of Agriculture
2	Liberia Institute of Statistics and Geo-Information Services (LISGIS)
3	Ministry of Finance and Development Planning
4	Ministry of Gender, Children & Social Protection
5	Ministry of Internal Affairs
6	National Fisheries and Aquaculture Authority
7	Cooperative Development Agency
8	Liberia Agriculture Commodity Regulatory Authority
9	Forestry Development Authority
10	Central Agriculture Research Institute
11	Environmental Protection Agency
12	National Food Assistance Agency
13	National Bureau of Concession
14	National Disaster Management Agency
15	Liberia Land Authority
16	Action Against Hunger
17	Scale Up Nutrition Secretariat
	University of Liberia Agriculture College
18	Farmers Union Network of Liberia

APPENDIX B: LIST OF LAC COORDINATING COMMITTEE MEMBERS

SN	Institutions
1	Minister for Planning and Development, MOA
2	Liberia Institute of Statistics and Geo-Information Service (LISGIS)
3	National Fishery and Aquaculture Authority
4	Forestry Development Authority
5	Central Agriculture Research Institute
6	Cooperative Development Agency
7	Liberia Agriculture Commodity Regulatory Authority
8	National Food Assistance Agency
9	Farmers Union Network of Liberia

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