Tanzania - Annual Agricultural Sample Survey 2023-2024

National Bureau of Statistics, Office of the Chief Government Statistician

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Identification

SURVEY ID NUMBER
TZA_AASS_2023-2024_v01

TITLE
Annual Agricultural Sample Survey 2023-2024

TRANSLATED TITLE
Utafiti wa Kilimo wa Mwaka 2023/24

COUNTRY

Name	Country code
Tanzania	TZA

STUDY TYPE
Agricultural Survey [ag/oth]

SERIES INFORMATION
The Annual Agriculture Sample Survey (AASS) for the 2023/24 agricultural year is the fourth in a series of annual agricultural surveys conducted in Tanzania. It is the new series which have been implemented by the Government of United Republic of Tanzania under the 50x2030 Initiative.

Previous surveys in this series were conducted in the 2014/15, 2016/17 and 2022/23 agricultural years. The earlier surveys primarily relied on identifying GPS data points followed by household interviews. In contrast, the current 2023/24 survey employs a household-based methodology, directly interviewing sampled agricultural households.

ABSTRACT
The Annual Agriculture Sample Survey (AASS 2023/24) was conducted to generate up-to-date and precise data on crops, livestock and aquaculture activities. Accurate crop production figures are essential for a wide range of stakeholders in the agriculture sector. The data from this survey will provide critical insights for farmers, agricultural businesses, government policymakers, and other key players to inform their decisions in both the short and long term.

The specific objectives of the AASS 2023/24 include:

1. To collect timely data on agricultural production and productivity at both national and regional levels;

2. To gather core data to help develop and review agricultural policies and to guide the implementation of agricultural plans at national and regional levels between agricultural census periods;

3. To compile fundamental statistics that facilitate comparisons in the development of the agriculture sector across the country; and

4. To collect data on agricultural machinery, equipment, and structures, as well as information on women’s empowerment and nutrition.

The Women's empowerment and nutrition was an additional module that was integrated into the AASS 2023/24 to generate nationally representative statistics on empowerment and women's dietary diversity among agricultural households. This module is useful in generating the Women Empowerment Metric for National Statistical Systems (WEMNS) indicator (https://weai.ifpri.info/wemns/) and the Women's Dietary Diversity (MDD-W) indicator.

KIND OF DATA
Sample survey data [ssd]

UNIT OF ANALYSIS
Households for Smallholder Farmers and Farm for Large Scale Farms

Version

VERSION DESCRIPTION
v1.0: Edited, anonymized dataset for public distribution (Public Use File)

VERSION DATE
2025-09-23

Scope

NOTES
The Annual Agriculture Survey 2023/24 covered both large-scale and household farming. The main topics covered were as follows:
a) Household Members and Holder Identification
b) Field Roster
c) Vuli (short rainy season) Plot Roster
d) Vuli Crop Roster
e) Masika (long rainy season) and Dry Season Plot Roster
f) Masika and Dry Season Crop Roster
g) Permanent Crop Production
h) Crop Harvest Use
i) Input Use and Acquisition (Fertilizer and Pesticides)
j) Livestock in Stock and Change in Stock
k) Milk Production
l) Eggs Production
m) Other Livestock Products
n) Aquaculture Production
o) Buildings or Structures for Agriculture
p) Machinery and Equipment Use for Agriculture
q) Women Empowerment and Nutrition

TOPICS

Topic	Vocabulary	URI
Agriculture Production	ELSST Thesaurus (Version 4 - 2023)	Link
Food production	ELSST Thesaurus (Version 4 - 2023)	Link
Crops	ELSST Thesaurus (Version 4 - 2023)	Link

Coverage

GEOGRAPHIC COVERAGE
National, Mainland Tanzania and Zanzibar, Regions

UNIVERSE
The survey covered agricultural households and large-scale farms.

Agricultural households are those that meet one or more of the following two conditions:
a) Have or operate at least 25 square meters of arable land,
b) Own or keep at least one head of cattle or five goats/sheep/pigs or fifty chicken/ducks/turkeys during the agriculture year.

Large-scale farms are those farms with at least 20 hectares of cultivated land, or 50 herds of cattle, or 100 goats/sheep/pigs, or 1,000 chickens. In addition to this, they should fulfill all of the following four conditions:
i) The greater part of the produce should go to the market,
ii) Operation of farm should be continuous,
iii) There should be application of machinery / implements on the farm, and
iv) There should be at least one permanent employee.

Producers and sponsors

PRIMARY INVESTIGATORS

Name	Affiliation
National Bureau of Statistics	Government of Tanzania
Office of the Chief Government Statistician	The Revolutionary Government of Zanzibar

PRODUCERS

Name	Affiliation	Role
Food and Agriculture Organization of the United Nations	United Nations	Technical assistance in the design, implementation and dissemination of AASS 2023/24
Ministry of Agriculture	Government of Tanzania	Technical assistance
Ministry of Livestock and Fisheries	Government of Tanzania	Technical assistance
Ministry of Industry and Trade	Government of Tanzania	Technical assistance
Ministry of Agriculture, Irrigation, Natural Resources and Livestock	The Revolutionary Government of Zanzibar	Technical assistance

FUNDING AGENCY/SPONSOR

Name	Abbreviation
The Government of United Republic of Tanzania	
World Bank's IDA project	WB
International Fund for Agricultural Development	IFAD
Food and Agriculture Organization of the United Nations	FAO

Sampling

SAMPLING PROCEDURE

The frame used to extract the sample for the Annual Agricultural Sample Survey (AASS 2023/24) in Tanzania was derived from the 2022 Population and Housing Census (PHC-2022) Frame that lists all the Enumeration Areas (EAs/Hamlets) of the country. The AASS 2023/24 used a stratified two-stage sampling design which allows to produce reliable estimates at regional level for both Mainland Tanzania and Zanzibar.

In the first stage, 1,504 EAs were selected by using a systematic sampling procedure with probability proportional to size (PPS), where the measure of size is the number of agricultural households in the EA. Before the selection, within each stratum and domain (region), the Enumeration Areas (EAs) were ordered according to the District and Council codes which reflect the geographical proximity, and then ordered according to the codes of Constituency, Division, Wards, and Village. An implicit stratification was also performed, ordering by Urban/Rural type at Ward level.

In the second stage, a simple random sampling selection without replacement was conducted, for the selection of 12 SSUs (agricultural households) in each selected EAs. A total sample of 18,048 agricultural holdings across 1504 EAs.

WEIGHTING

Calibrated weights were calculated for each data file. For information on the weighting procedure, see the Weights computation file attached as external resource/documentation.

Data Collection

DATES OF DATA COLLECTION

Start	End
2024-11-13	2025-02-04

DATA COLLECTION MODE
Computer Assisted Personal Interview [capi]

SUPERVISION
The oversight of the data collection process is crucial to ensure the quality and accuracy of the information gathered during the Annual Agriculture Sample Survey for the agriculture year 2023/24. The supervision strategy involved a structured hierarchy of enumerators, controllers, and supervisors, with additional oversight by NBS/OCGS management. This approach helped maintain the integrity of the data collection process and supervision, ensuring that the final dataset was reliable and accurately represented the agricultural activities in the surveyed regions. Here is a detailed description of the supervision process:

(i) Organization of Enumerators in Teams
Enumerators were organized into teams, each consisting of a group of interviewers, a quality controller, and a supervisor. This hierarchical structure ensured effective oversight and support throughout the data collection process. Typically, each team had one supervisor for every five to ten enumerators. The quality controller was responsible for overseeing both the regional supervisors and the work of the interviewers. This specialization allowed for adequate supervision and support, ensuring that any issues encountered by the enumerators could be promptly addressed.

(ii) Roles of Controllers/Supervisors
- Supervisors/Controllers closely monitored the data collected by enumerators, reviewing questionnaires for completeness and accuracy according to survey guidelines.
- Provided immediate feedback to enumerators on any errors or inconsistencies found in the data, offering guidance on how to correct and avoid such issues in the future.
- Assisted enumerators with any technical issues encountered during data collection, including difficulties with tablets or specific question interpretation.
- Supervisors were in charge of managing the overall team operations. They coordinated daily activities, ensuring that enumerators adhered to their schedules and completed their assigned tasks.
- Supervisors conducted regular field visits to observe enumerators during interviews, providing real-time coaching and support. They ensured that enumerators followed the proper protocols and maintained standards of data collection.
- Supervisors addressed any logistical or operational challenges faced by the teams, such as transportation issues, respondent availability, or environmental factors affecting data collection.
- Supervisors compiled regular reports on the progress and challenges of the data collection process and communicated these to upper management for further action.

(iii) Visits by NBS/OCGS Management
NBS/OCGS management conducted periodic field visits to monitor the data collection process and ensure adherence to the survey plan. These visits typically occurred at key stages of the survey, such as the beginning, mid-point, and before the end of the data collection period. During these visits, the management
- Assessed and reviewed data quality checks and validation processes to ensure standards were maintained.
- Interacted with enumerators, controllers, and supervisors to understand the challenges they faced and to provide additional support and motivation.
- Checked that all teams were complying with survey guidelines and protocols, addressing any deviations promptly.
- Offered strategic and extra guidance based on observations and feedback from the field, helping to refine data collection techniques and improve efficiency.

DATA COLLECTION NOTES
Fieldwork supervisors and enumerators were trained before the start of the Survey. They were taught the importance of collecting quality data. The issue of consistency checks to enhance the quality of the data was also emphasized. The trainers were from the National Bureau of Statistics, Office of the Chief Government Statistician, and Agriculture Sector Lead Ministries.

DATA COLLECTORS

Name	Abbreviation	Affiliation
National Bureau of Statistics	NBS	Government of Tanzania
Office of the Chief Government Statistician	OCGS	The Revolutionary Government of Zanzibar

Questionnaires

QUESTIONNAIRES

The 2023/24 Annual Agricultural Survey used two main questionnaires, Smallholder Farmers and Large-Scale Farms Questionnaire, consolidated into a single questionnaire within the CAPI System. Smallholder Farmers questionnaire captured information at household level while Large Scale Farms questionnaire captured information at establishment/holding level. These questionnaires were used for data collection that covered core agricultural activities (crops, livestock, and fish farming) in both short and long rainy seasons. The Questionnaire is attached as an external resource in the downloads tab.

Data Processing

DATA EDITING

The data processing and data editing phases were critical components of the Annual Agriculture Sample Survey for the agricultural year 2023/24. These phases ensure that the collected data is of high quality, consistent, coherent, and ready for analysis and reporting. The technical team responsible for these tasks included members from the National Bureau of Statistics (NBS), the Office of the Chief Government Statistician (OCGS), Agricultural Sector Lead Ministries (ASLMs), and academia, with technical support from FAO experts at various levels.

A. Data Processing

A.1. Data Entry:
- Enumerators entered data directly into tablets during interviews, eliminating the need for a separate data entry activity. This method minimized errors associated with manual data entry. Data collected in the field was periodically synchronized with a central database, ensuring that the information was securely stored and readily accessible for processing.

A.2. Data Cleaning:
- Upon synchronization, the data underwent initial automated checks to identify and flag obvious errors, such as missing values, out-of-range responses, and inconsistencies.
- Technical staff conducted a manual review of flagged entries, correcting errors based on predefined rules and protocols. This step ensured that all data was accurate and complete before further processing.

A.3. Data Integration:
- Data from different sections of the questionnaire (e.g., household information, crop production, livestock data) were integrated into a unified dataset. This process involved matching and merging records to ensure consistency across all sections by data scientists/ data programmers.
- The technical team harmonized data formats and units of measurement to ensure consistency. This step was important for maintaining coherence in subsequent analyses.

B. Data Editing

B.1. Consistency Checks:
- The data editing phase included rigorous checks for internal consistency within the dataset. This involved ensuring that related variables were logically consistent (e.g., the number of chicken reported matched the eggs production data).
- The team conducted cross-sectional checks to verify consistency across different sections of the questionnaire. For example, crop production data were cross-referenced with input use and labor data to identify and correct discrepancies.

B.2. Outlier Detection and Treatment:
- Statistical techniques were employed to identify outliers in the dataset. Outliers could indicate data entry errors or exceptional cases that required further investigation.
- Identified outliers were validated through additional checks by using STATA program or, if necessary, follow-up with the respondents. This ensured that the outliers were genuine and not due to errors.

B.3. Imputation of Missing Data:
- For instances where data was missing, the team used imputation techniques to estimate the missing values. Imputation methods included statistical techniques such as mean substitution, regression imputation, or hot-deck imputation, where necessary. All imputed values were documented by do files (STATA files). This transparency ensured that subsequent analyses accounted for the imputed data appropriately.

B.4. Data Validation:

- The dataset was validated against external data sources, such as previous surveys, administrative records, and satellite imagery (limited), to ensure accuracy and reliability.
- The validation process included a feedback loop where any identified issues were communicated back to the data collection teams for clarification and correction.
- Technical online meetings between FAO, NBS, OCGS and ASLMs related to data validation were conducted professionally to ensure accountability of data along the value chain.

C. Continuous Improvement
- After the completion of the survey, the entire process was reviewed to identify areas for improvement. Feedback from all team members and stakeholders was gathered to refine the methodologies and protocols for future agriculture surveys in series under 50x20230 initiatives.
- Detailed documentation of all processes, decisions, and methodologies was maintained. This documentation served as a reference for future surveys and contributed to the transparency and reproducibility of the survey process.

STATISTICAL DISCLOSURE CONTROL (SDC)

Microdata are disseminated as Public Use Files under the terms indicated in Appendix A of the NBS Dissemination and Pricing Policy (https://www.nbs.go.tz/publications/policies-and-legislations). These access conditions are also indicated in the "data access" section below.

Statistical Disclosure Control (SDC) methods have been applied to the microdata, to protect the confidentiality of the individuals that data was collected from. These methods include: i) removal of information that may directly identify a respondent (name, address, etc.), ii) grouping values of some variables into categories (e.g. age), iii) limiting geographical information to the region level or higher, iv) suppression of some data points for variables that, in combination with others, may pose a relevant risk of identification of a statistical unit, v) adding noise to continuous variables, vi) censoring the highest values (top-coding) and replacing them with less extreme values from other respondents, or vii) rounding numerical values.

Users must be aware that these anonymization or SDC methods modify the data, including suppression of some data points. This affects the aggregated values derived from the anonymized microdata, and may have other unwanted consequences, such as sampling error and bias. The impact of anonymization is generally stronger on the smaller subpopulations (lower frequencies). For instance, data from large-scale farms are often more distorted than data from agricultural households as a result of the SDC process, because large-scale farms are fewer in number in comparison to the sampled agricultural households.

Access policy

CONFIDENTIALITY
1. Confidentiality Ensuring the confidentiality of respondents is paramount not only in the Annual Agriculture Sample Survey for the agriculture year 2023/24 but also for all individual data collected by NBS/OCGS for statistical purposes. The UN Fundamental Principles of Official Statistics (http://unstats.un.org/unsd/dnss/gp/FP-New-E.pdf) indicate, under principle 6, that "individual data collected by statistical agencies for statistical compilation, whether they refer to natural or legal persons, are to be strictly confidential and used exclusively for statistical purposes". Protecting respondents' privacy fosters trust, encourages participation, and upholds legal and ethical standards. 2. Legal Framework and Agreements (i) National Statistics Act, [Cap 351 R.E 2019] The confidentiality of respondent data is protected under the National Statistics Act Cap 351 R.E 2019. This legislation mandates that all personal data collected through surveys be kept confidential and used solely for statistical purposes. The Act includes provisions for penalties against individuals or organizations that breach confidentiality agreements, ensuring strict adherence to privacy standards. (ii) Data Protection and Privacy Regulations: The survey adheres to national data protection and privacy regulations, which outline specific requirements for the handling, storage, and sharing of personal data. These regulations ensure that respondent information is not disclosed without consent. Additionally, respondents were briefed on the confidentiality and were required to listen to the consent information and confirm their understanding and agreement before participating in the survey. Confidentiality Agreements: All enumerators and other staff along the value chain involved in the data collection were required to sign confidentiality agreements. These agreements legally bind them to protect the privacy of respondents and prohibit the unauthorized sharing of data. 3. Instructions for Data Access: (i) Restricted Access: Access to the survey data is restricted. Only authorized personnel, who have undergone necessary training on data confidentiality, are allowed to handle the raw data. In addition, access levels are assigned based on roles, ensuring that individuals only have access to the data necessary for their specific tasks. For example, enumerators have access to the data they collect, while analysts have access to aggregated datasets. (ii) User Agreements for Data Access: Users who wish to access the survey data online must formally agree to specific terms and conditions (must sign it) to protect the confidentiality of respondents. This Data Use Agreement (DUA) outlines the permissible uses of the data, restrictions on sharing, and requirements for data security. The Non-Disclosure Agreement

(NDA) legally binds data users to maintain the confidentiality of the data and to not disclose any personally identifiable information. (iii) Data Anonymization: Before any data is shared or published, it undergoes an anonymization process (Statistical Disclosure Control). This includes removing or masking personally identifiable information (PII) such as names, addresses, GPS coordinates and contact details. Among other measures, geographic information is limited to the region level or higher, to protect individual respondents from identification in the published results. (iv) Data Security Measures: Data is stored on secured servers with robust encryption protocols to prevent unauthorized access. NBS, OCGS, and FAO have the survey's data secured on their respective servers. Physical and digital security measures are implemented to protect the data from breaches. (v) Training and Awareness: All personnel involved in the survey process undergo comprehensive training on data confidentiality, emphasizing the importance of protecting respondent information. Continuous awareness programs and refresher training sessions were conducted to keep staff updated on best practices and legal requirements related to data confidentiality.

ACCESS CONDITIONS

The dataset has been anonymized and is available as a Public Use Dataset. It is accessible to all for statistical and research purposes only, under the following terms and conditions, as per Appendix A of the NBS Dissemination and Pricing Policy (https://www.nbs.go.tz/publications/policies-and-legislations):

1. The data and other materials will not be redistributed or sold to other individuals, institutions, or organizations without the written agreement of the National Bureau of Statistics.
2. The data will be used for statistical and scientific research purposes only. They will be used solely for the reporting of aggregated information, and not for investigation of specific individuals or organizations.
3. No attempt will be made to re-identify respondents, and no use will be made of the identity of any person or establishment discovered inadvertently. Any such discovery would immediately be reported to the National Bureau of Statistics.
4. No attempt will be made to produce links among datasets provided by the National Bureau of Statistics, or among data from the National Bureau of Statistics and other datasets that could identify individuals or organizations.
5. Any books, articles, conference papers, theses, dissertations, reports, or other publications that employ data obtained from the National Bureau of Statistics will cite the source of data in accordance with the Citation Requirement provided with each dataset.
6. An electronic copy of all reports and publications based on the requested data will be sent to the National Bureau of Statistics.

The original collector of the data, the Tanzania NBS, and the relevant funding agencies bear no responsibility for use of the data or for interpretations or inferences based upon such uses.

CITATION REQUIREMENTS

Tanzania National Bureau of Statistics. Annual Agriculture Sample Survey 2023/24 (AASS 2023/24), Version 1.0 of the public use dataset (October 2025), available at the National Data Archive: (https://microdata.nbs.go.tz/).

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DISCLAIMER
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Metadata production

DDI DOCUMENT ID
DDI_TZA_AASS_2023-2024_v01

PRODUCERS

Name	Abbreviation	Affiliation	Role
National Bureau of Statistics	NBS	Government of Tanzania	Documentation of the study
Office of the Chief Government Statistician of Zanzibar	OCGS	The Revolutionary Government of Zanzibar	Documentation of the study
Food and Agriculture Organization	FAO	United Nations	Technical assistance

DATE OF METADATA PRODUCTION
2025-09-23

DDI DOCUMENT VERSION
Version 1 (September 2025).

Data Dictionary

Data file	Cases	Variables
AASS2024f	18836	16
CROP_USE	36480	22
FIELD	29390	4
HOUSEHOLD	88977	17
InputRoster_masika	15694	4
InputRoster_vuli	5192	4
MASIKACROP	34574	46
MASIKAPLOT	27917	42
permanent_crop	6999	34
VULIPLOT	15495	42
buildings_roster	17566	64
collection_roster	535	4
input_Use_roster	31365	11
s17_aquaculture	262	6
sec16_otherproducts	6764	10
WEN	4405	120
VULICROP	18757	42