



*REPUBLIC OF GHANA*

**REPORT**  
**ON**  
**SAMPLE CENSUS OF AGRICULTURE**  
**OF GHANA, 1984**

*VOLUME I*

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# CONTENTS

	<u>Page</u>
<u>TABLE OF CONTENTS</u>	i-iv
<u>1. INTRODUCTION</u>	1-4
1.1 Background	1
1.2 Administrative Responsibility	1-2
1.3 Census Objectives	2
1.4 Census Organization	2-3
1.5 Publicity	3-4
<u>2. PLANNING AND ORGANIZATION OF PHASE I OF THE CENSUS</u>	5-12
2.1 Introduction	5
2.2 Preparatory Activities	5
2.3 Sampling Plan and Sample Selection	5-9
2.4 Area Measurement Methodology	9-10
2.5 The Census Questionnaires	10-11
2.6 Training of Field Enumerators	11
2.7 Field Work	11-12
<u>3. CONCEPTS AND DEFINITIONS</u>	13-15
3.1 Introduction	13
3.2 Agricultural Holding and Holder	13
3.3 Household	13
3.4 Farm Household	14
3.5 Head of Household	14
3.6 Agricultural Year	14
3.7 Main (First) and Minor (Second Seasons	14
3.8 Parcel	14-15
3.9 Field	15

	<u>Page</u>
<u>Holdings</u>	16-
Introduction	16
4.2 Number of Holders	17-
4.3 Holders and Crops Grown	18-
4.4 Number and Size of Holdings	25-
4.5 Number of Farms (Parcels)	32-
5. <u>AREA UNDER CROPS</u>	36-7
5.1 Introduction	36
5.2 Cereals	36-4
5.3 Root Crops	47-5
5.4 Pulses and Nuts	57-6
5.5 Vegetables	61-6
5.6 Tree Crops and Long Duration Crops	65-7
6. <u>COMPARISON OF ESTIMATES OF 1970 AND 1984 CENSUSES</u>	71-75
6.1 Introduction	71
6.2 Holders and Holdings	71-72
6.3 Crops	73-75

LIST OF TABLES

1.1 Regional Staff Used for Census Enumeration	3
2.1 List of Resulting Strata	6-7
2.2 Number of Sample Enumeration Areas by Region	8
2.3 Frequency Distribution of Number of Districts by Number of EAs Contained	8
4.2.1 Number of Holders by Region and District	16-17
4.3.1 Number of Holders Growing Maize and Rice	18-19
4.3.2 Number of Holders Growing Millet and Guinea Corn	20

List of Tables (contd)

4.3.3	Number of Holders Growing Cassava, Yam and Cocoyam	21-22
4.3.4	Number of Holders Growing Plantain, Tomatoes and Pepper	23-24
4.4.1	Size Distribution of Holdings in Ghana	25
4.4.2	Size Distribution of Holdings - Western Region	26
4.4.3	Size Distribution of Holdings - Central Region	26
4.4.4	Size Distribution of Holdings - Greater Accra Region	27
4.4.5	Size Distribution of Holdings - Eastern Region	27
4.4.6	Size Distribution of Holdings - Volta Region	27-28
4.4.7	Size Distribution of Holdings - Ashanti Region	28
4.4.8	Size Distribution of Holdings - Brong Ahafo Region	28
4.4.9	Size Distribution of Holdings - Northern Region	29
4.4.10	Size Distribution of Holdings - Upper West Region	29
4.4.11	Size Distribution of Holdings - Upper East Region	29-30
4.4.12	Percentage Size Distribution of Holdings by Region	30
4.4.13	Size of Holdings by Number of Farms in Holding by Region	31
4.5.1	Number of Farms by District	32-34
4.5.2	Percentage Distribution of No. of Holders with Different No. of Farms	34
5.2.1	Area of Maize by District and by Type of Planting	36-38
5.2.2	Total Maize Area by Region	39
5.2.3	Percentage of Holders Growing Maize and Area per Holder by District	39-40

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Content (contd)

Page

List of Tables (contd)

5.2.4	Area of Rice by District and Type of Planting	41-4
5.2.5	Percentage of Holders Growing Rice and Area per Holder by District	42-4
5.2.6	Area of Guinea Corn by District and by Type of Planting	43-4
5.2.7	Percentage of Holders Growing Guinea Corn and Area Per Holder by District	44-4
5.2.8	Area of Millet by District and by Planting Type	45-4
5.2.9	Percentage of Holders Growing millet and Area per Holder by District	46
5.3.1	Area under Cassava by District and by Planting Type	47-4
5.3.2	Total Cassava Area by Region	49
5.3.3	Percentage of Holders Growing Cassava and Area Per Holder	49-5
5.3.4	Area Under Yam by District and by Planting Type	51-5
5.3.5	Percentage of Holders Growing Yam and Area per Holder	53-5
5.3.6	Area Under Cocoyam by District and by Planting Type	55
5.3.7	Percentage of Holders Growing Cocoyam and Area Per Holder	56-5
5.4.1	Area Under Groundnuts by District and by Planting Type	57-5
5.4.2	Holders Growing Groundnuts and Area per Holder	58-5
5.4.3	Area Under Beans by District and by Planting Type	59
5.4.4	Holders Growing Beans and Area per Holder	60
5.4.5	Area Under Bambara Beans by District and by Planting Type	61
5.4.6	Holders Growing Bambara Beans and Area per Holder	61
5.5.1	Area Under Tomatoes by Region and by Planting Type	62
5.5.2	Holders Growing Tomatoes and Area Per Holder	62

## INTRODUCTION

### 1.1. Background

It is thought desirable to give a brief outline of the history of the collection, analysis and publication of agricultural statistics in Ghana in as far as it is relevant to the planning and objectives of the 1984/85 Sample Census of Agriculture.

In 1950, Ghana (then the Gold Coast and British Togoland) was among 23 African Countries that participated in the World Census of Agriculture, but this merely involved formulation of regional estimates on acreage and production of food crops.

In early 1960's, many surveys on specific aspects of the country's agricultural economy were undertaken, <sup>but</sup> the national estimates of areas and yields of crops were derived from reports submitted by Agricultural Officers in the districts.

In 1964, however, there was a complete enumeration of the large and specialized holdings. From 1965 to 1969, annual sample surveys of small holdings were conducted, and the sample size for the survey rose from 2,000 holdings in 1965 to 5,000 in 1969.

In 1970, Ghana participated fully in the World Census of Agriculture Programme and this involved collection of data from a sample of over 58,000 holders spread over 702 sample Enumeration Areas. The Census was successfully carried out; and by March 1972, Volume I of the Census Report giving inter alia, the results on land use, crops and livestock was published; with Volume II coming out the following year with the rest of the results.

### 1.2. Administrative Responsibility

A Government circular dated 2nd November, 1979 established a National Agricultural Census Committee which was inaugurated in March 1980. The Committee was to plan, execute and see to the implementation of the Census Programme. This Committee later broke into sub-committees to see to the various facets of the census.

The parent Committee was however folded up in 1982 and thereafter, the planning and execution of the census programme fell solely upon the Director of Agricultural Economy, Ministry of Agriculture who was helped by the National Agricultural Census Co-ordinator, Senior Officers of the Crop Statistics Section and an FAO statistician.

### 1.3. Objectives

It was decided by the National Agricultural Census Committee that the Census Programme should be split into two phases; the first to take place in 1984 and the second in 1985. It was also agreed to follow the main objectives set out for the 1970 Census of Agriculture Programme which were:

- (i) To conduct a Sample Census of Agriculture based on an adequate frame of sufficient size to enable district, regional and national estimates to be produced for the main items to be included in the census;
- (ii) to give enough training in the methodology required in the field to the staff to be engaged in the collection of the census data and to ensure that they were brought to a high-level of efficiency in carrying out their duties; and
- (iii) to produce from the sample census, a master sample of holders about whom certain basic information could be collected.

It was also generally agreed among members of the committee to follow broadly the guidelines laid down in the 1980 World Census of Agriculture Regional Programme for Africa as published by FAO.

### 1.4. Census Organization

The Sample Census of Agriculture was basically the responsibility of the Economic Research and Planning Service (ERPS) of the Ministry of Agriculture; and the section whose resources were utilised in carrying out the Census was the Statistics Section.

Apart from Headquarters staff including Senior Officers working with the Section, the Department has permanent officers in each

of the ten regions of Ghana headed by a Regional Agricultural Economist who is normally a graduate. Each Regional Agricultural Economist has at his disposal a Regional Supervisor, District Supervisor and a number of field enumerators. These were the staff that were utilised for the collection of the data; no extra staff were recruited specifically for the census.

Table 1.1 below gives the breakdown of the field force available for the census enumeration.

Table 1.1 - REGIONAL STAFF USED FOR CENSUS ENUMERATION

Region	Senior, Professional and Supervisory Staff	Field Enumerators	Total
Western	10	56	66
Central	12	63	75
Greater Accra	6	37	43
Eastern	16	85	101
Volta	11	59	70
Ashanti	15	70	85
Brong Ahafo	12	95	107
Northern	9	37	46
Upper East	13	64	77
Upper West	10	50	60
Total	114	616	730

It must however be stated that between the period when the sample size for the first-stage units (Enumeration Areas) was decided (based on the number of field staff at post then) and when the field work was actually commenced, the Department had lost about 112 field enumerators.

#### 1.5. Publicity

A series of activities were planned to publicise the Agricultural Census Programme. These were to be organised at the national, regional, district and enumeration area levels. In March 1984, the Secretary for Agriculture held a press conference to brief the media on the Census Programme. A radio and television broadcast



By the Secretary for Agriculture on the eve of the Agricultural Census night i.e. 1st April 1986, was also planned. However, for various reasons, the TV and Radio Programmes were cancelled at the last minute. Other publicity programmes planned were also cancelled. The regions were therefore asked to organize their publicity and this was carried out between the 2nd and 30th April 1984. The publicity proved successful, but in a few cases the results were not encouraging because of land and chieftancy disputes.

## CHAPTER II

### PLANNING AND ORGANIZATION OF PHASE I OF THE CENSUS

#### 2.1. Introduction

This part of the report concerns the planning and execution of the first phase of the Census Programme extending over the entire 1984 calendar year.

It was decided to collect information on the following items during the first phase:

- (a) Holders and Holdings,
- (b) Inventory of Crops on Holdings
- (c) Livestock and Poultry, and
- (d) Crop Areas.

The second phase of the Programme covering crop yields, farm population and labour and household activities on holdings was organized and conducted in 1985; and this phase will be covered in a second volume of this Report.

#### 2.2. Preparatory Activities

Over the past years, the field, supervisory and professional staff of Economic Research and Planning Service (ERPS) have acquired much experience in handling problems that arise in the collection of agricultural statistics in Ghana. The methodology for area measurement by use of tape and compass and the techniques for interviewing holders are well known to most of the staff. For various reasons including that of minimising cost, no pilot surveys were undertaken to test the questionnaires. This was <sup>also</sup> because a set of questionnaires using similar concepts had been used the previous year to collect data for the 1983 Annual Agricultural Production Sample Survey.

#### 2.3. Sampling Plan and Sample Selection

The advantages of a complete census are well known. A major advantage is its ability to provide estimates for smaller administrative and planning units or areas which a sample census cannot provide but which are needed for formulating and executing plans

for regional development or development of small selected areas. However, these advantages are, in most cases, far from being important to justify the enormous cost of a complete enumeration in a country such as Ghana where objective methods of direct area measurement of farms are required to obtain data on farm sizes and crop areas. The country neither has the resources and trained manpower nor the infrastructure to embark on any feasible programme of complete measurement of all farms. Hence a sample census appears the only possibility, as it can be conducted by using a smaller and therefore better qualified and trained force. The size and design of the sample census have to be such as can produce reliable national and regional and if possible also district estimates.

The country has been divided into Enumeration Areas (EAs) all of which had been previously mapped by the Population Census Office. In early 1979, the boundaries of the existing EAs were revised and a new list of 12,996 EAs prepared. This revised list of EAs formed the frame for the selection of the new sample of Enumeration Areas for the 1984/85 Agricultural Census.

The 12,996 EAs were first stratified into the following forty-three Agricultural Census Districts according to agro-ecological conditions.

Table 2.1 - LIST OF RESULTING STRATA

Region	District
Western	1. Axim-Takeradi
	2. Tarkwa
	3. Asankragwa
	4. Wiawso
Central	5. Cape Coast
	6. Essiam
	7. Dunkwa
	8. Swedru
Greater Accra	9. Greater Accra
Eastern	10. Oda
	11. Asamankese
	12. Koforidua
	13. Akosombo
	14. Kibi
	15. Mpraese

Table 2.1 (contd)

Region	Districts
Volta	16. Sogakope
	17. Keta
	18. Ho
	19. Kpando
	20. Jasikan Kete-Krachi
Ashanti	21. Kumasi West
	22. Kumasi East
	23. Bekwai
	24. Obuasi
	25. Juaso Mampong East
	26. Mampong West
	27. Offinso-Teppa
	28. Goase
Brong Ahafo	29. Sunyani
	30. Dormaa
	31. Wenchi West
	32. Wenchi East
	33. Atebubu
	34. Damongo-Salaga
Northern	35. Yendi-East
	36. Yendi-West
	37. Tamale
	38. Gambaga
Upper West	39. Wa
	40. Laura
Upper East	41. Navrongo
	42. Bolgatanga
	43. Bawku

In order to ensure adequate representation of the different types of Enumeration Areas, all EAs within a census district were further stratified into Urban, Semi-Urban and Rural categories. Enumeration Areas with a population of less than 1,500 were classified as Rural; Semi-Urban EAs were those with more than 1,500 but less than 5,000 population.

#### First Stage Sampling Units

Within each category of EAs in an agricultural district, a sample of EAs, the first stage sampling units, was selected using varying sampling fractions of 1:10, 1:15 and 1:20 in the rural, semi-urban and urban categories respectively. Systematic sampling procedure was used to select the sample of EAs and they were selected with probability proportional to their population which determined their size. For some semi-urban and urban categories where the number of EAs in each category in the frame could not permit adequate sample size to be selected, the two categories were

combined and a sampling fraction of 1:15 used to select the sample of EAs. The strength of field staff available for the census programme in each region was also considered in determining the number of EAs to be selected in the different categories. All in all, 1,008 EAs were selected as shown in Table 2.2 below.

Table 2.2 - NUMBER OF SAMPLE ENUMERATION AREAS BY REGION

Region	No. of Sample Areas			
	Total	Urban	Semi-Urban	Rural
Western	103	16	15	72
Central	109	16	30	63
Greater Accra	43	20	3	20
Eastern	141	18	33	90
Volta	114	13	21	80
Ashanti	153	9	42	102
Brong Ahafo	103	6	32	65
Northern	115	8	17	90
Upper West	50	1	9	40
Upper East	77	3	1	73
<b>Total</b>	<b>1,008</b>	<b>110</b>	<b>203</b>	<b>695</b>

The frequency distribution of the number of districts (strata) according to the number of sample EAs they had is given below.

TABLE 2.3 DISTRIBUTION OF NO. OF DISTRICTS BY NO. OF EAs CONTAINED

Number of Sample Areas	Number of Districts
Less than 14	1
14 - 17	3
18 - 21	14
22 - 25	12
26 - 29	6
30 - 35	6
36 - 40	1
41 or more	-
<b>Total</b>	<b>43</b>

Once the 1,008 areas had been selected from the list of Population Census Enumeration Areas, the task ahead was that of

Identifying the selected areas on the ground with the help of maps of these EAs and their boundary descriptions. It was not however, possible to have photo copies of the EA maps made because of the shortage of chemicals needed for the purpose. However, boundary descriptions of the selected EAs were made available by the Population Census Office and copies were typed out and handed over to the enumerators.

Second Stage Units

Within a selected EA, all the compounds/houses, households and agricultural holders were first listed. A sample of 10 holders was then selected by systematic sampling and with equal probability. All fields (farms) in the holdings of the 10 selected holders were then enumerated and measured and so were their livestock and poultry

Third Stage Units

Two to three EAs were allocated to each field enumerator. The allocation of EAs to each enumerator was done with consideration to their proximity to the location of the enumerator. One of these EAs, usually a rural one, was then designated as the "Base EA" in which only yield studies were carried out. On identification of the "Base EA", all fields (farms) of each selected holder in it were listed. For each crop, one field per holder was randomly selected by the enumerator for the yield studies and on each selected field, two yield plots were laid. The plot size varied from crop to crop.

2.4. Area Measurement Methodology

Previous agricultural statistics surveys in Ghana had shown that for estimation of areas under crops, it is necessary to carry out objective measurement of the areas of fields (farms) planted with crops. Very few holders in the country are able to give even rough figures as to the size of their farms. The need for such objective measurements of farms is the major reason why a sample of holders listed in each EA was selected for the estimation of areas under the various crops.

For some years, all the staff involved in agricultural statistics surveys have been using the "tape and compass" method of measuring fields and holdings. This method involves plotting the shape

of the field by taking compass bearings from one corner to the next and measuring the length of each side.

## 2.5. The Census Questionnaires

The Questionnaires used during phase I of the census programme are given in Appendix I and the Instructions Manual is in Appendix II. However, only Forms 1, 2 and 3 which were used during phase I of the census will be discussed in this volume of the report.

### 2.5.1. Form 1 - Listing of Agricultural Households and Holders

This form was used at the beginning of the census to compile a complete and up-to-date list of all agricultural holders in the selected Enumeration Areas for the selection of the second stage sampling units, i.e. agricultural holders.

### 2.5.2. Form 2 - Inventory of Crops, Livestock and Poultry

This form was used to compile an inventory of crops on the holdings of the sampled holders and of livestock and poultry kept thereon. The livestock and poultry recorded included those kept at the holder's residence and holdings irrespective of ownership as well as those belonging to him and non-holder members of his household but kept elsewhere.

For the crops that were listed on this form, information was also collected on the planting and harvesting periods of the crops.

### 2.5.3. Form 3 - Area Under Different Crops and Crop Mixtures

This Questionnaire was used to record the crops and their areas grown on each field (farm) within the holding of each selected holder.

This form was completed after the fields were objectively measured using the tape and compass method. Those farms that were found to be "far away" i.e., those which the holder could not visit and return to his normal residence the same day, were recorded separately.

### 2.5.4. Field Document A - Selection of Holders

This form which was not really a part of the set of questionnaires was used after the listing of holders in the selected Enumeration Areas was completed. It set out the steps to be

followed in the selection of the sample of 10 holders in each EA for subsequent census operations involving field area measurement and crop yield studies and enquiries relating to livestock, poultry, farm population and employment, etc.

## 2.6. Training of Field Enumerators

The training of all field staff (supervisors and enumerators) to be involved in the Census Programme was held on regional basis by the Regional Agricultural Economists with the assistance of the National Co-ordinator of the Census Programme.

It was completed before March 1984 for the field work to begin on time on 1st April 1984, the date chosen as the Agricultural Census Night. Emphasis was on explaining in detail to the field staff the various questionnaires, the techniques of interviewing the holders, field area measurements, crop yield studies and concepts and definitions involved. The tact and technique of canvassing the questionnaires with the holders was explained at some length to enable the enumerators to get the best of holders' co-operation and thus accurate information.

The performance of the staff during the training session was encouraging, and the trainees participated actively in practical fields demonstrations.

After the training, periodic on-the-job training was offered to the weaker enumerators to help them improve their performance.

## 2.7. Field Work

After the training sessions, publicity and distribution of census questionnaires and equipment to the regions and districts, the census enumeration was commenced.

The listing operation was started throughout the country on 2nd April 1984, the day following the Agricultural Census Night. The field enumerators were equipped with boundary descriptions of the areas assigned to them as well as copies of the questionnaires and the necessary equipment to conduct the enumeration.



Most enumerators had two to three enumeration areas to cover, but in rare cases in some districts where some of the field staff had resigned just before the commencement of the programme, some enumerators had to work in four enumeration areas.

The enumerators were asked to use the names of localities listed on the boundary description as a guide to include new localities that were found within the enumeration area but were not listed.

There was a lot of delay in the urban enumeration areas because of the difficulties encountered in identifying possible holders and locating them for interview. There were numerous "call-backs" due to the fact that most of these holders were also workers in the offices.

In a few instances in some regions, a few areas proved difficult for enumeration due to lack of co-operation from the chiefs and the people. Such cases were most prevalent in localities where there were land disputes or chieftancy troubles. No replacements were made in areas that refused to co-operate with the Census Programme and raising factors were accordingly adjusted at the time of tabulation assuming that areas that failed to co-operate were not different in type from the rest of the universe under study.

## CHAPTER III

### CONCEPTS AND DEFINITIONS

#### 3.1. Introduction

This chapter is devoted to a discussion of the concepts and definitions of the terms used on the census questionnaires such as Holder, Holding, Household, Farming Household, House, Compound, etc.

#### 3.2. Agricultural Holding and Holder

An agricultural holding is defined to include all the land that is used wholly or partially for agricultural production under one technical unit by one person alone or with others without regard to title, legal form, size or location. All units without land but producing livestock and poultry are also considered as holdings.

The person who is entrusted to exercise the operational or management control and responsibility over the holding is defined as the holder. In Ghana, one or more fields (farms) may be retained for permanent cultivation by a holder, whilst others are cultivated on a shifting cultivation basis. The total area of the holding in such cases was regarded as the sum total of :

- (i) The area under crops during the reference period of the census.
- (ii) The area prepared for cultivation but not sown or planted at the time of enumeration.

#### 3.3. Household

The concept of a household during the census was based on arrangements made by persons individually or in a group to provide themselves with essentials of living which mainly include food. A household therefore consists of one or several related or unrelated persons with a common food supply which implies a common kitchen. Persons constituting members of a household are normally expected to pool their kind and cash incomes and obtain their essential living requirements either by drawing from such a common pool or common stock of goods acquired through their joint efforts.

