

DATA NEEDS FOR AGRICULTURAL DEVELOPMENT
IN
GHANA.

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ABSTRACT

The main purpose of this study is to examine the data needs for agricultural development in Ghana. The study presupposes that while it is possible to plan the development of an economy without facts (depending on the experience of the planners), a better and less costly planning of the growth processes of an economy can be achieved when adequate data on the various sectors of the economy are available.

Some of the economic problems that face the Ghanaian economy are discussed in an attempt to show the magnitude and scope of the subject areas about which data are required in order to direct efficiently the growth of the Ghanaian economy.

The study analyses the present attempts to collect the necessary data. The organizational setup and the types of jobs performed by the two statistical institutions, are discussed. This is viewed against the essentials of an adequate statistical service. Problems that confront any attempt to collect data are discussed, indicating gaps in the present system of data collection.

Attention is then focused on methods of collection that will suit present conditions in Ghana. In this connection, capital is selected as a representative factor involved in the development problems of Ghana. The methods selected as

suitable for present Ghanaian conditions are:

- i) Multiple Sample Census;
- ii) Sample Surveys, or Area Surveys, and
- iii) Special Studies.

No attempt is made to discuss the theoretical adequacy of those methods selected - they are selected on their suitability under present conditions in Ghana.

The study demonstrates that there are significant gaps in the presently available data. These gaps have resulted in complete absence of some very important data, e.g., yields, costs, acreages, etc., that are needed for proper planning of the agricultural development of Ghana.

The ultimate conclusion of the study is that the gaps in the present system of collection of data should be bridged. This could be accomplished through better organization of present institutions and facilities. This would require the cooperation and proper co-ordination of all related disciplines of the Ministry of Agriculture in Ghana.

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CHAPTER I

INTRODUCTION

The viewpoint of the author of this study is that while it is possible to plan the growth processes of an economy without facts; a developing country like Ghana, which aspires to benefit from the experiences of advanced countries should have some basic facts (data) about her agriculture in order to plan its development effectively. By this means she will be able to avoid some of the mistakes and failures of advanced countries committed through the 'trial and error' methods which they had to use because they never had another country to emulate. Ghana is fortunate in this respect because she has the experiences of several advanced countries as a guide in her development.

The above does not mean that it is not possible to plan an economy without facts. As stated by Stolper in his book "Planning Without Facts", it is possible to plan the development of an economy without facts when "time and information are limited".¹ He contends that while "per capita income is an operational concept in the sense that it is potentially measurable, yet a development economist often cannot wait until population or income data are sufficiently full and accurate to be useful to him, and that a theory in

¹ Stolper W. F., Planning Without Facts, (Harvard University Press 1966) p. 1

which such data become curical policy variables does not help him very much".² He argues further that decisions in development planning are based on other factors besides statistical data. He cites information from social sciences legal and social surroundings; executive abilities, etc., as some of the requirements. As economic development refers to a specific country in specific circumstances of time and place, policy prescriptions according to him should start from the recognition of the historic uniqueness of that particular society.

While the argument by Stolper is accepted to be applicable in the initial stages of planning an economy, this study is conducted on the basic assumption that it is less costly to plan a development program with facts than it is to plan it without facts. Here the aim of the study is to indicate which data are necessary for development planning and how to collect them.

Ever since man became conscious of his capabilities and began an organized and communal life three discernible forms of organization could be recognized in his endeavours to survive, namely traditional, command and market forms of economy. The traditional society or economy pivots around tradition, by handing down the varied and necessary skills and tasks from generation to generation according to custom and usage. Examples of such organization are ancient Egypt where, says Adam Smith, "every man was bound by a principle of religion to follow the

occupation of his father, and was supposed to commit the most horrible sacrilege if he changed it for another." In India until recently certain types of occupations were assigned traditionally through the caste system. In Ghana certain cultural duties are still handed down from father to son or from an uncle to a nephew as the case may be. State linguists, drummers, carriers of chiefs, etc., are some examples of occupations or duties that are performed on those lines in Ghana.

Under the command type of organization a central authoritarian rule sees that tasks and duties of the society are performed. Again the pyramids of Ancient Egypt are monuments of that kind of rule. The Five Year Plans of Soviet Union are not executed through hand-me-down custom or through individual self-interest but rather through the machinery and power of a central authoritarian rule.

The market forms of organization resort to subtle means appealing to individual interests and allowing individuals to follow occupations of their own choice for their survival, being guided in their pursuances by a ruling body elected through the secret-ballot. The guidance is in the form of directives, taxation and legislation.

The primitive modes of existence consisted mostly of individualistic endeavours, each clan leading a nomadic type of life, producing his own food and meat and whatever clothing they used, and defending their interests and welfare as the occasion demanded with whatever resources they had at their disposal. As

the mode of living became more communalistic some of these purely individualistic endeavours to get food, clothing, shelter as well as health needs changed, giving way to specialization in production for exchange. The change took various forms of the above mentioned three main systems of organization singly or in combination. With the development of a social system it became apparent that if the society was to grow then those public interests which could not be covered through individual efforts should be taken care of by some agency. If people were to go about their jobs in peace without being harassed there was need for some body or organization that would be responsible for law and order. Needs of the public that could not be satisfied individually should be performed by the government, at the same time allowing each person to exert himself in whatever vocation or activities he had the best aptitude and interest. This work of creating the necessary atmosphere and public utilities of the society has devolved on various kinds of governments under the above named main types of systems of organization.

To be able to perform their jobs effectively some planning and principles are necessary. The idea of laissez-faire³ as practiced by some old societies are things of the past. Both under communist or socialist and capitalist societies some planning is done by the ruling party. It is really difficult if

³ Laissez-faire--no interference in economic activity by government, whose functions would be limited to that of a "night watchman" i.e. a mere protector of life and property and enforcer of contracts.

not impossible to find an economy or society today that operates purely on the principle of laissez-faire. There have been some theories to describe or explain the growth processes of societies. Mention could be made of Rostow's Doctrine which recognises five main stages:

- a) Traditional Society Stage which is characterized by limited production functions, based on pre-Newtonian³ science and technology and on pre-Newtonian attitudes towards the physical world. The concept however is not static and during this period expansion of holding and introduction of innovations into agriculture, industry and trade could occur.
- b) The Pre-condition for take-off stage--that is a transitional period in which conditions for take-off are developed--transformation of a traditional society in ways necessary to benefit from modern science, to fend off diminishing returns, etc.
- c) The Take-off Stages--the stage when the old ideas and resistances to change or steady growth are overcome.
- d) The Drive to Maturity Stage--characterized by a long interval of sustained progress with extension of modern

⁴ Newton is here used to characterize that period in history when men came to believe that the external world was subject to a few known laws, and was systematically capable of productive manipulation.

technology over the whole economic activities. Some 10-20 per cent⁵ of the GNP is steadily invested, with output-stripping the population growth.

- e) The Age of High Mass-consumption Stage--characterized by a shift of the leading sectors towards durable consumer's goods and services as is now obtained in North America.

On the other extreme is the Marxian Theory of modern history which also recognizes five main stages⁶-- The Feudal, Borgeois, Capitalism, Socialism and finally Communism in that order.

In this study the pros and cons of the various theories of development and growth will not be discussed. The theories will be used so long as they help to indicate the problems associated with the growth process and the role agriculture plays in the process and hence the type of data required for the planning and policy decisions of those who plan the development of Ghana, i.e., the government as well as those whose activities promote economic growth. This includes the farmer, the businessman, and other institutions. That is, the study is concerned with the practical aspects of development, the role of agricultural statistics, and how statistics are collected, indicating gaps in the present system of collection in Ghana. Suggestions will be made as to how adequate agricultural data for development planning and decision-making could be collected.

⁵ Rostow W. W., The Stages of Economic Growth, (Cambridge University Press 1968) p. 9

⁶ Meier G. M., Leading Issues in Development Economics, (New York/Oxford University Press 1964) p. 23

The world has been variously grouped into developed and developing/under-underdeveloped; civilized and primitive; industrialized and non-industrialized countries, based on the per capita income definition. The classification of the world into developed and developing countries will be accepted as it is now defined despite the fact that the question of what one really means by developed and underdeveloped is debatable whether the per capita income method of classification is valid as values are different from country to country. No one country can claim to be both materially and morally equally developed. The underfed Asians or African may be more spiritually developed than somebody in affluent countries like Canada and United States of America. The study will accept the per capita definition⁷ and its implications as at present, and on that premise examine the characteristics of Ghana and her data requirements for agricultural development and growth.

Ghana, like most developing countries, is generally characterized by a high level of illiteracy, subsistence production in agriculture which offers employment for about 70% or more of the working population; underemployment; a lack of industries and factories, or what has been described as "Stationary Technology", that is, producing with simple techniques and implements which have not gone through changes over the years. Specialization is almost negligible, even though areas of specialized activity in non-agricultural activities can be found, e.g., handicrafts. Production being purely subsistence does not leave any appreciable surplus for regular sales.

⁷ Per capita income definition is accepted because it is more representative of the growth process. It comprises population and the GNP.

Irregular sales are, however, made whenever production is in excess of what the family needs, or whenever cash is needed for purchasing such items as clothes, ornamental wares, etc.

Ghana has come into contact with some developed countries, either through mutual trade or through colonization. This association has given a character to the Ghanaian economy which has been described as dualism--social and technological. Boeke has suggested the following formal definition of dual society in his book of Economics, "Social dualism is the clashing of an imported social system with an indigenous social system of another style. Most frequently the imported social system is high capitalism. But it may be socialism or communism just as well, or a blending of them."⁸

As indicated from the beginning, as society becomes more complex by coming together, it becomes necessary to plan the growth and development of the economy. The above described characteristics, together with the avowed aim of Ghanains to catch up with the developed countries, make planning of development processes of Ghana necessary as well as obligatory. In this planning process, emphasis has been laid generally on agriculture and industrialization. They often receive preferential treatment, sufficient to justify the contention that they are the coddled favourites of governments. Reasons for agriculture to occupy such an important position in the development

⁸ Culled from Meier, G. M., op. cit., p. 55.

process are commonplace. It is the food producer; it is heavily dependent on bountiful or niggardly nature; it involves natural resources which need to be conserved for future national welfare; it is "a way of life" and initially commands a large block of votes. Because a large section of the population is engaged in farming, it forms something like a reservoir of labour which could be transferred to non-agricultural sectors. Again, agriculture and rural production can be raised quickly and with little capital; it could be mechanized to free labour for industrial development. Development of other sectors involve capital, technical know-how, (managerial and entrepreneurial), institutional arrangements, social overhead and a host of pre-requisites which can be ignored in the early stages of agricultural development. Indeed, agriculture could be made to yield rapid and large returns quickly if good government policies were followed.

Evidence for above claims include doubling crop production, raising crops in uncultivated areas by irrigation with such low capital techniques as diversion dams, simple pumps and wells, use of improved seeds, local construction of improved fishing vessels, pottery and the use of under-employed labour for building of roads and schools in the initial stages. Rural development is also capital-saving because it does not involve such overhead costs as housing, social and health facilities. It also does not involve movement of people as is the case with urban development.

The above unique characteristics of agriculture have influence in adopting the following development objectives for agricultural programmes in Ghana:

- 1) An increase in production to provide for home consumption as well as exports.
- 2) Improvements in marketing, roads, storage facilities, etc.
- 3) Changes in land tenure system.
- 4) Redistribution of income among the rural population towards equality of income and opportunity.
- 5) Using part of surplus production to raise the standard of living of the rural population.
- 6) Encouraging shift of population from agricultural sector to industry or other non-agricultural sectors.
- 7) Promotion of investment and reinvestments.
- 8) Education of the farming or rural population.

To be able to achieve the above objectives and hence promote quick economic growth as well as social prosperity, it is imperative that the planners, and for that matter the government, should know or understand thoroughly agricultural activities that will help the objectives to be realized. In order to understand the economy or society and hence be in a position to plan its growth there is great need for facts (data) or information about the society as it operates now. It is here that the need for accurate and up-to-date data on the various aspects of the society arises. Data are needed to help planning and decision-making of

both governments and individuals--choice of alternative occupations or business; choice of which section of agriculture to support, etc. Data are needed on potential resources of the economy, man-power requirements, capital sources, levels or income and income distribution, crops grown (acreage yields, consumption, sales); livestock raised (ages, sex distribution, etc.) Data are needed on facilities, conditions and institutions of farming, farming business that will help analysis, for administration and planning, to formulate agricultural policies and to help advisory, educational and extension services, etc. Data are also required for studies on management; marketing and pricing; employment opportunities, international trade policies, and growth of the farm economy as a whole.

Scope of the Study:

The central purpose of this study is to survey the existing statistical information basic to agricultural planning in Ghana and to discover those gaps or points of weakness that are likely to inhibit sound formulation and implementation of effective agricultural and related programs. In consecutive publications of the Government Statistician's Economic Survey of Ghana attention has been drawn to the inadequacy of data on the country's agriculture. For example, the following is the opening statement of the section on Agriculture in the 1963 Republic of Ghana Economy Survey: "As has been mentioned in previous Economic Surveys a study of the structure of the agricultural

in Ghana is seriously handicapped through lack of sufficient statistical data."⁹ The 1966 publication of the same bulletin starts thus, "statistics on Ghana's agriculture are still meagre. This has hindered the assessment of the structure and developments in this important sector of the economy. Attempts to remedy this have been rather disappointing and it will take some time before any useful data become available."¹⁰

It is not easy to locate gaps in information or weaknesses in statistical institutions by looking for gaps and weaknesses directly. This study therefore starts by discussing the problems of agricultural development in Ghana -- education, low income of farmers, land tenure, fragmentation of holdings, scarcity of capital, employment and the like in Chapter Two.

This is followed in Chapter Three by a discussion of the present statistical setup and the methods of collection by the two main government agencies concerned with collection of data. Some frame of reference and some indication of what would be satisfactory body of knowledge are given. These are then compared with the existing situation exposing gaps and discussing the problems associated with data collection in Ghana. A discussion of the statistical schedules that are in use in the Ministry of Agriculture is given. The Chapter ends with essentials of statistical service.

⁹ Republic of Ghana Economic Survey 1963 (Ghana Government bulletin 1963) p. 64

¹⁰ Republic of Ghana Economic Survey 1966 (Ghana Government bulletin 1966) p. 46

Chapter four contains a discussion on types and methods of collection that will help collect the necessary data, keeping in mind the problems enumerated in Chapter Three. The above follows a theoretical discussion of various capital for agricultural development.

The last chapter is made up of conclusions drawn from the preceding chapters, and recommendations or suggestions as to how the present level of data on agriculture could be improved. The chapter concludes with suggestions about further studies.

CHAPTER II
PROBLEMS OF AGRICULTURAL DEVELOPMENT
IN
GHANA

General:

Ghana as a developing country is characterized by a shift from what has been described as subsistence production to production for the market. Along with this change is a change of the mode of government from that of being ruled by a foreign power to being self-governed. The change of the way in which she was governed has typically resulted in awakening of national consciousness and a desire by the indigenous government to promote rapid economic growth and progress of their people so that they could enjoy some of the benefits of civilization. In this connection let me quote the former president of the Republic of Ghana to show the determination of newly independent governments to develop their countries at a faster pace than that of their former colonial powers. When he was launching the first development plan of Ghana, he stated in Parliament, "Mr. Speaker, when the Convention People's Party¹ came to power in 1951, the

¹

The then ruling party of Ghana (1951-1966)

pace of development was so SLOW² and confused that we decided to SPEED³ it up by attempting to implement in five years the program of reconstruction which was designed by the colonial administration to take place over a period of ten years.⁴ The desire to move fast in the economic reconstruction, economic growth and progress of the country imposed on the government, the need for planning of the development of the country. The idea of planning is not exclusive to Ghana alone, even countries that have claimed to be capitalist do some planning. As S. M. Makings said, "the idea of laissez-faire is now, a very old chapter in economic history and private enterprise is now largely guided, conditioned and controlled, with the state acting as an arbiter and regulator."⁵ In playing the role of an arbiter and regulator to the country, the government of Ghana had placed emphasis on agriculture and industrialization.

Before the changeover in the way Ghana was governed, agriculture had been on the level of subsistence production-that is production for the immediate needs of the family. Indeed, the object had been to guard against famine. In its new role as the bedrock of development agriculture has to shed most of its subsistence characteristics and change its structure to suit that of commercial production. This has given rise to several problems.

²⁺³ Capitalization done by author of this study.

⁴ Ghana Seven Year Development Plan 1963/64 - 1969/70 p. 9

⁵ Makings S. M., Agricultural Problems of Developing Countries. (Oxford University Press 1967) p. 1

The first major problem to overcome is to change from the traditional and primitive methods of production to commercial production while at the same time ensuring a continuous supply of food and fibre to feed the nation and a surplus to earn foreign exchange. During the colonial days the emphasis was on improving subsistence effort through extension services and building up background knowledge and techniques that would help improve indigenous agriculture practice within the existing structural patterns. Whereas Ghana has the same basic objective, the aim now is to improve and change as far as possible the existing structural patterns to tie in with the general goal of rapid economic development. This change of agriculture from being "a way of life" to an economic industry is fraught with several pitfalls which will be discussed in detail below.

At the root of this change is the difficulty of changing primitive forms of land use and land tenure system. Traditionally the holdings are small and scattered. With mechanization one of the tools of industrialization of agriculture which Ghana had seized on tenaciously, the need for properly defined ownership of holdings and boundaries as well as expansion of areas which one cultivates becomes necessary. The amount of capital necessary to carry out such practices as irrigation and conservation schemes are not within the meagre means of peasant farmers. It has therefore become necessary to have some land reform schemes which

inevitably will break traditional boundaries leading to social and political reactions which are often distasteful to politicians.

Most of the changes politicians make are often misconceived since they are often more intuitively taken rather than a well considered decision based on facts. Hence there have been several rash decisions that have tended to undermine rather than promote the progress of the country. The Gonja Development Corporation in Ghana could be cited as examples of such changes. The project was based on merchanzation involving resettling of some farmers.

Lastly, the problem of population growth may be cited. It is rather ironical that the rate of population growth of underdeveloped countries is higher than that of developed countries whose economic rate of growth measured on the per capita income basis is by far greater than that of the underdeveloped. Ghana is no exception to the above. It is estimated that the population growth per annum is about 2.6 per cent. At that rate of growth, in order to raise the living standard by say 2.5 per cent per annum, the economy has to grow at a rate of just over 5 per cent. This rapid rate of growth of the economy to accommodate the rapid population expansion makes the planning of Ghanaian economy a formidable task which needs adequate information on available resources and potentialities. Resettlement schemes to relieve population pressure, location of agricultural as well as other related industries to alleviate unemployment, public utilities

and a host of other amenities need be considered on the basis of adequate knowledge of the situation by the planners.

The list could be added to ad infinitum, but difficulties of planning will be clearer through a detailed discussion of some of the problems.

OUTSTANDING PROBLEMS OF GHANA AGRICULTURE

Facts and figures have but little significance in themselves. Their importance is based on the problems which they help to define. We could enumerate a long list of problems of agriculture in Ghana, and these differ from region to region. Climatic conditions, soil types topography vary among regions. The mode of transportation and distant markets determine to some extent what produce can be cultivated economically. Tribal associations and their taboos confer some restrictions on what is grown, and what is not grown. The types of agriculture are therefore numerous, each type having an optimum size and form of organization depending on natural conditions, prices of products, prices and availability of supplies and equipment; the labour force and alternative employment in the area. Like many other developing countries, Ghana can be divided into two on the basis of the size of the farms--large scale farms, generally owned by the government, and small size farms operated by individuals. All of these conditions must be borne in mind by planning commissions or other governmental units that try to development for Ghana.

Nonetheless there are some problems that are more or less common to all the regions of Ghana: land tenure; fragmentation of holdings; education; low income of farmers; poor integration between the agricultural sector of the economy and industry of commerce; low levels of agricultural technology; scarcity of agricultural capital; unused or under-employed resources; poor distribution of land; and last but not the least, the absence of good facilities for marketing and transportation together with low prices for exportable agricultural products.

Land Tenure:

Land in Ghana is generally communally held, property in it is acquired by bringing it under cultivation or into the hunting grounds of a tribe. The man who first cuts down the bush and plants some crops is regarded as the proprietor of the portion thus occupied. The land is held in common by families, each member of the family having the right to select a portion to cultivate but not to acquire an exclusive right of possession of it. No one individual can alienate part of the land thus acquired except through the unanimous consent of the family. This is done when a member of the family, especially the head, incurs a debt which cannot be settled otherwise by the family. Members of the family, apart from using the land for food production, can grow such permanent crops as cocoa, oranges, avacoda pears and other fruit trees which confer some right of permanent possession to that parcel of land on him so long as he is alive. The title of land thus acquired is not wholly transferable on his death;

part of it is given to his immediate family, that is to his sons and daughters, as the head of the family with the consent of the rest of the family may agree. The rest of the land reverts to the family -- either the paternal or maternal side depending on which type of inheritance he observes. The powers of the head of the family vary from area to area but to him belong the right of allowing strangers to cultivate. Permission for strangers to cultivate family lands is contracted by making the stranger pay some customary "drinks" in the form of "rum, a leaf of tobacco, and one shilling in money."⁶ Right of the use of land thus acquired does not allow the stranger to grow any permanent or industrial crops. Boundaries between estates are marked by natural objects like rocks, evergreen trees, rivers, etc. Such identification which hinges strongly on memory of the oldest member of the family lead to constant disputes and litigation. Leasing of land is not practised but occasionally part of it could be pawned or mortgaged, the mortgagee acquiring the right of use of the land until the loan has been paid off. Should the pawner or mortgagee die with the debt still unsettled the right to the land passes on to his successor but the latter is bound by custom to honour all the conditions of the mortgage. This has given rise to a class of people, money lenders, who have become tyrants over their neighbours. Performance of customary rites at death, at marriage and on festivals are the main causes of families mortgaging their lands.

⁶ Anyane L. A., Ghana Agriculture, (Oxford University Press 1963) p. 64

This is a general picture of land tenure in Ghana but there are shades of difference from tribe to tribe and region to region.

With development and introduction of economic crops like cocoa, coffee, coconut, etc., into the economy there have been some minor changes. Commercial agriculture which implies conscious production of a surplus above subsistence needs for the market has brought about the need to modify the traditional system of land holding. For instance, the cropping of cocoa which is a permanent crop implies a near complete right of the use of the land by the farmer. Hence, allowing strangers access of land to cultivate cocoa means in a way a limit on the reversionary land rights of the community. The rapid growth of the population has also affected traditional concepts regarding land holding. The population of Ghana appears to have almost doubled between 1930 and 1960.⁷ This sudden upsurge of population has reduced the man-land ratio thus reducing the fallow period and leading to fragmentation of holdings which will be discussed under the next heading. But suffice it to say that it has led in a way to a semi-individualistic type of tenure as opposed to the family type.

Besides the population pressure on land, the introduction of central government by the "Western" powers has had considerable effect on the land tenure of Ghana. In 1895-96 a bill entitled "The Crown Land Ordinance" was projected by the then Governor

⁷ Figures should be taken with caution because the 1930 census was not properly enumerated.

of the Gold Coast (Ghana) intending to invest the management of Ghana lands in the Government. This was resisted. A close study of the tenure system shows the democratic and political genius of Ghanaians. Land ownership was vested in the native state or stools controlled by the Paramount Chief or Village Chief and elders and families. "The effect of the native genius for democracy is to give the chief no more land than any other individual and to distribute land rights more or less equally, resulting in democratic communities consisting of multitudes of small farmers or peasant proprietors of much the same social and economic status.⁸ The concept of a landlord is completely absent.

In time the government acquired some land through legislation for the state. Though permanent alienation of land is generally not allowed, in the Southern part of Ghana land has frequently been owned by individuals and conveyance lease or sale followed the English Law.

A slightly different system of tenure prevails in the Northern part of Ghana. Here the "retention of land is intimately bound up with the religion of the people"⁹, land is recognized as having a spirit and the head of the tribe known as, "Tindana" or "Nankani", is duly bound to placate the spirit in order to

⁸ Anyane L.A., op. cit. p. 65.

⁹ Ibid., p. 65.

deliver of its goodness. Requisition of land by strangers are made to the tindana on the recommendation of a native. The arrangements are as previously described.

Besides the economic in roads mentioned above into the traditional land tenure system, social forces are also playing their part. A new generation which derives its power and prestige from western education has had a considerable effect on the authority of the clan heads on land matters. This has led to instances where some people have alienated portions of the family land without regard to other members and often in complete defiance of customary usage and authority. Educated chiefs have often side-stepped tradition and acquired into private ownership some communal property. These are all indicators of unplanned evolution of private ownership of land which has led to frequent litigation about lands. The land tenure system is one of the major hindrances to progress in Ghana. Politicians tend to have a lukewarm attitude towards any change of the system because it is fraught with political risks which cannot be taken lightly in a country without a settled political history.

Fragmentation of Holdings:

As indicated under land tenure systems the mode of tenure has given rise to multiplication of holdings in an attempt to equalise economic opportunities for each member of the family. According to a sample census of farms in 1963, comprising cultivated land

areas, the average number of farms held by each farmer was 2.34, each farm comprising a single field. The total average holding of each farmer was 6.2 acres, with an average size of 2.7 acres per farm.

TABLE I
SIZE OF PEASANT HOLDINGS, 1963

REGION	NO. OF HOLD- ING	AVER- AGE NO. OF FARMS PER HOLDING	AVERAGE NO. OF FIELDS PER HOLDING	AVERAGE NO. OF ACRES PER HOLDING	AVERAGE NO. OF ACRES PER FARM
Western	90	2.92	3.04	11.1	3.8
Central	120	2.43	2.58	4.5	1.9
Accra	20	1.20	1.45	1.3	1.0
Eastern	160	2.34	2.43	3.8	1.6
Volta	130	2.13	2.25	3.1	1.5
Ashanti	170	2.63	2.76	8.7	3.3
Brong Ahafo	110	2.61	2.72	7.1	2.7
Northern	80	1.61	2.09	7.2	4.4
Upper	120	2.05	2.33	6.7	3.3
Whole Country	1000	2.34	2.51	6.2	2.7

Source: Central Bureau of Statistics, Agricultural Census Office.

Culled from Birmingham, W., Neustadt, I., Omaboe, N. E.,
The Economy of Ghana, (Northwestern University Press, 1966),
p. 224.

It can be seen that the size of holdings is very small indeed. The dispersion around the average in each region is not known and a larger sample size would be necessary to get detailed data of this nature. These figures are from the 1963 Agricultural Census whose reliability is very questionable. "The best available figures of acreage under cultivation are those produced by the Bureau of Statistics from the 1963 phase of the Agricultural Census. While these are the best, indeed almost the only estimates, they are nevertheless subject to extremely wide margins of error. This will be appreciated from the fact that national estimates are obtained by inflating a sample survey of farms throughout the country and the sample was 1,000 for 600,000 to 700,000 primary units, a sample not larger than 0.17% of the total."¹⁰ Most of the figures quoted were arrived at through estimation based on experience of officers in the field and their reliability is in question. "The reliability of the estimates of production is even less than those of acreages, for the former are derived from the acreage estimate and estimate average yields per acre. Accru-¹¹rate estimates of yields are extremely difficult to make."

Besides fragmentation of holdings, some Ghana farmers practise what has been described as "Shifting Cultivation."

¹⁰ Birmingham, W., Neustadt, I., Omaboe, N. E., The Economy of Ghana, (Northwestern University Press, 1966), p. 219.

¹¹ Ibid., p. 65

That is a system in which the farmer and his family move to new areas of land, farm it for a length of time and then move on. This system is not customary in Ghana. Indeed, farmers' settlements are generally permanent. The practice is that he farms a parcel of land for sometime, and then leaves it fallow to return to bush, turning for the time being to farm another area in the vicinity. The period of fallow varies from a period of seven years or more, and the basic objective of the fallow is to allow the land to recuperate in fertility. As usual, reliable data on the practice are lacking, and the only one available to show the population expansion effects on the system is that of the census which has been described as hopelessly inadequate by the only authoritative agency in Ghana -- the Central Bureau of Statistics.

TABLE II

DISTRIBUTION OF ACREAGE BY YEAR OF FIRST
CULTIVATION, 1963

Region	1963	1962	1961	1960	1958-9	1956-7	1954-5	Total
Western	45	35	14	2	4	-	-	100
Central	57	32	11	-	-	-	-	100
Accra	20	12	8	20	8	24	8	100
Eastern	40	27	21	5	5	1	-	100
Volta	43	39	18	-	-	-	-	100
Ashanti	27	30	17	11	12	2	2	100
Brong Ahafo	68	18	3	-	3	4	4	100
Northern	8	27	29	13	2	8	12	100
Upper	2	20	11	13	36	8	10	100
Whole Country	28	26	16	8	11	2	6	100

Source: Central Bureau of Statistics; Agriculture Census Office, Accra, 1963.

Culled from Birmingham, W., Neustadt, I., Omaboe, N. E., The Economy of Ghana, (Northwestern University Press, 1966), p. 223.

More reliable data on this system are necessary to help plan the rotation system, as well as soil conservation practices to be recommended. It would also help in the planning of fertilizer industries besides giving detailed information on the amount of soil nutrients used by each crop.

Education:

The level of education in Ghana is comparatively low. Education provides a sound foundation on which extension can be built and tends to be the most appropriate counter to traditional barriers and forms that impede progress. It helps to create the necessary awareness of habits of discipline on which good agricultural practices depend. Most of the disappointments and waste of needed resources associated with lack of technical know-how and limited capacities of those who are to operate the new system could be avoided by proper basic education.

The low level of education among the Ghanaian people, of whom about seventy per cent are employed in agriculture, impedes agricultural development and progress. A further deterrent to agricultural progress is the tendency for those with a little education to look down on agriculture as a career. This situation has been described as "urban urge" -- the wish to be where conditions are modern, strange and exciting; or the belief that the place of the educated man is in an office.

Because of this tendency, the educational system in the country does not contribute to agricultural progress. Teaching of agriculture in schools has been desultory - pupils who are not able to do their assignments are punished by making them work in the school garden or farm. This creates bad psychological impressions on school children with respect to agriculture. Where agriculture is taught at all, there is no definite syllabus, and it is often non-credit earning. Hence, the attitude which the pupil gets in his formative stages towards agriculture is that of failure in life, the last resort when all other avenues have failed. There is an apparent attitude that agriculture is not something to be learned in school, and that the art of tilling the land could better be acquired on the farm. This attitude appears to be shared by administrators who plan educational programs. Indeed, the proportion of agricultural educational institutions to the total educational institutions at the pre-University level is negligible, as shown in Table III.

As against 198 institutions of post-primary education,
we have only four¹² that are agricultural schools. There are 105 secondary schools, and there is only one school devoted to post-secondary education for agriculture. Until recently, agriculture as a subject was not offered for the school certificate.

¹² Personal knowledge of writer. This might have been included under technical institutions in Table Three.

TABLE III

DISTRIBUTION OF HIGHER INSTITUTIONS OF LEARNING BY REGION

	GREATER ACCRA					BRONG AHAFO			
	DAY	BOARDING	EASTERN	CENTRAL	WESTERN	VOLTA	ASHANTI	NORTH	UPPER
SECONDARY SCHOOLS	12	7	4	1	4	6	6	7	3
TRAINING COLLEGES	1	1	18	11	5	10	20	7	5
TECHNICAL INSTITUTIONS	1	-	1	1	1	1	2	1	-
TOTAL	22	33	25	21	27	41	14	7	8

Source: Ministry of Education, Accra.

Culled from Report of the Commission on the Structure and Recommendation of the Public Services in Ghana, 1967, p. 12.

All these indicate that the government is not giving much direction as far as agriculture is concerned. Birmingham, Neustadt and Omaboe emphasize this in their book "The Economy of Ghana;" "In Ghana, as in many developing countries, there is a growing drift of labour from the rural areas to the urban centres. Unfortunately, the drift has been largely of the educated sections of the rural population. These have not found agricultural employment attractive either economically or socially, and they have swarmed to the few urban centres to seek employment in white-collar jobs. This is the problem of the primary school leavers. Quite apart from the economic and social problems which this raises in the urban centres, it has very serious repercussions on the general development of agriculture. The developing countries need an agricultural revolution which will raise productivity in the industry. This can be achieved partly through the adoption of new farming techniques and the enlargement of land holdings - the educated children of farmers who could be of great assistance in the introduction of new ideas are not staying in the rural areas to introduce and practise modern forms of farming." This dearth of attention to the problem of educating Ghanaian farmers has resulted in a complete lack of information on the turnout of farmers' children from school, the vocation they follow and hence failure to institute a program to attract them into agriculture.

The indifferent attitude adopted by the government towards agricultural education has resulted in lack of trained personnel to man the rapid agricultural development envisaged by the government. This situation partly explains the prevailing low level of agricultural technology in the country.

Coupled with the lack of technicians is almost one hundred per cent illiteracy of the Ghanaian farmers. Ghana has about 56 dialects, of which eight main ones are taught in schools. Hence, in order to communicate effectively with the farmers the technician should either be able speak the tongue of the farmer or the farmer should be able to speak the technicians dialect otherwise the technical advice has to be given through an interpreter. The effectiveness of such a mode of communication, especially when one is trying to convince somebody to change what has virtually been his way of life is slight. By the 1960 census of population, 3,730,309 persons were above 15 years of age but only 612,910 of them (16.4 per cent) had any formal education. Hence, 83.6 per cent of working population relied on informal ways of acquiring skills.

Scarcity of Capital:

There is an acute shortage of both physical and human capital. Whatever capital has been accumulated has been by conversion of human manual labour and capital accruing from the mining industry. The human capital assets are very meagre indeed. Out of 612,910 persons quoted as having some education 556,720 reached

primary and middle schools. Only 7,730 persons aged fifteen and above had ever attended commercial or technical institutes 13,440 persons had had some teacher training education, 30,330 had higher level of general education and only 4,690 persons had enjoyed university education as indicated by the 1960 Population Census.¹³ This reflects in the great lack of technical know-how as stressed in discussion on education.

With respect to physical capital there are no empirical data to show its size but it is generally known to be scarce. The great bulk of the capital of the nation has come from agriculture through the introduction of Cocoa. But because of the fragmentary nature of holdings and heavy taxation by governments, the capital accumulates only in the coffers of the state. The small size holdings again limits capital accumulation because of the narrow margins between income and the requirements for family living. At the same time the small farmer does not usually have much basis for offering security for loans except his personal character and this is not often acceptable to commercial banks. He is therefore exposed to money lenders and relatives who may claim exorbitant interest. The economy of Ghana is characterized by constant inflation -- "The implicit price indices with 1960 as base were 124.0, 145.5 and 160.4 for the years 1964, 1965 and 1966, respectively. This shows that the rise in 1966 prices

¹³ Above figures are likely to have changed considerably since they are almost ten years old. Revised figures are yet to be published.

over 1965 was 10.2 per cent as against a rise of 17.3 per cent over 1964.¹⁴ Because of this inflationary condition of the economy people tend to hold their accumulated funds in cash for lending purposes or invest them in such properties as land or urban buildings.

Nominal interest rates under these conditions are poor indicators of returns to savings since they include some rough compensation for the expected increase in price levels plus the use of the capital as well as the administrative costs of the loans.

Government assistance by providing agricultural credit institutions with necessary funds has been very meagre. It is only recently that an Agricultural Development and Co-operative Bank has been established to take care of loans to farmers. Farmers, however, do compete with the general public for loans from commercial banks. But here the manufacturer or merchant stands a better chance of getting the loan because of their credit worthiness acquired through the nature of their occupation. The merchant has an added advantage of a higher rate of not return on the capital, especially as there has been rapid growth in demand for urban products in recent years.

There is some conversion of labour during slack periods or seasons into needed capital. This is done by using unoccupied labour for such activities as improvements of fences, drainage

¹⁴ Republic of Ghana Economic Survey 1966 (Ghana Government Bulletin) p. 12.

systems, farm buildings, building of sheds for storage, brushing of growing plantations of tree crops mainly cocoa, engaging in some craft work like making baskets, carving stools, etc.

Credit needs of Ghanain farmers can be grouped into three main categories:

- a) the need of emergent producers, people who are seeking to make a progressive living from the land,
- b) commercial farmers, offering scope for individual credit use with less cost, difficulty and risk than the first category,
- c) group needs, largely for the provision of infrastructure.

The first category constitutes the biggest problem. They are not creditworthy in the orthodox sense, their locations are often inaccessible making it difficult for lenders to keep in touch with the borrowers; many of the borrowers have little appreciation of credit principles; their needs, though urgent, are small making the cost of assessing, placing supervising and recovering the loan greater than the service the loan provides. There is also the tendency for such people to regard the loans as handouts. The type of credit required is usually seasonal and tends to be based on crops. This makes such loans very risky ventures. There is need for up-to-date knowledge about the operations and requirements of these borrowers if schemes to help them are to be successful.

Commercial farmers, such as poultry keepers, are less difficult to deal with but still there is lack of information about their needs. The last category represents a problem because of the absence of group organization. The necessity for structural changes involving ecological, economic and social factors cannot be over-emphasized. Means should also be found to make infrastructure capital available to responsible local groups. This involves the ability to assess the potential productivity of loans and in this respect the cash income of farmers as well as cash sales of agricultural industries are prerequisite information that is lacking at the moment. Evidence of a lack of capital for the Ghanaian farmer is given in Table IV, which shows the means and methods of tilling among these farmers.

Low Income:

Income of people engaged in agriculture is generally low, except for a few cocoa farmers whose incomes are higher than the average for all farmers.¹⁵ Low farm income has been partly a result of the small size of holdings and partly of low levels of production. The cause of the small holdings has been explained under the heading of Fragmentation of Holdings. The low productivity can be explained by lack of technical know-how and the use of traditional methods of farming, which is "destructive" in a way. Apart from the fallow, there is no attempt to replace some of the nutrients extracted from the land through cropping; no attempt is made to

¹⁵

There are no documents to support this claim, but it is generally accepted that income of farmers is low. This is another indication of the need for collecting data on the agriculture of Ghana.

TABLE IV
MEANS AND METHODS OF TILLAGE, GHANA, 1963¹⁶

REGION	ACRES CULTIVATED & SOURCE OF POWER			ACRES CULTIVATED & TOOLS & IMPLEMENTS USED			
	Man- power Only	Ani- mal Power	Mechani- cal Power	Hoe & Cut- lass	Pick- axe & Fell- ing Axe	Plough	Other Small Tools
Western	998	-	-	998	996	-	103
Central	542	-	-	542	519	-	148
Accra	3	-	22	25	2	20	-
Eastern	612	-	-	612	469	-	120
Volta	409	-	-	409	146	-	53
Ashanti	1482	-	-	1482	1012	-	574
Brong-Ahafo	776	-	-	776	404	-	425
Northern	570	4	-	574	171	18	53
Upper	802	5	-	807	575	5	84
Whole Country	6194	9	22	6225	4294	43	1560

Source: Central Bureau of Statistics, Agricultural Census Office.

The above figures, even though not very reliable because of how they were compiled, do show or support the contention that the peasant food farmer in Ghana cultivates his land with his own manual power, together with only hoe and axe, cutlass and the pruning knife and spade.

improve the soil structure, no conservation practices are carried out. Besides these, the number of people on family size holdings is quite great though no accurate statistical data are available.

Added to this low income of farmers there is relatively poor integration between the agricultural sector of the economy and the industrial or commercial sectors. This is especially true of the northern part of the country where there are large numbers of people who live almost entirely by farming. This situation prevails because there are no industries to absorb the increasing population. (The northern part of Ghana is not well opened up economically -- poor transportation, communication, savanna vegetation.) The aggressive persons who tend to be young and uneducated migrate south into the forest area where they are employed as unskilled labourers on cocoa farms, others as potters on trains, in offices and in institutions, leaving the old and the weaklings to cultivate the land. Urban industries are expanding less rapidly than population or are virtually non-existent. At the same time, the population grows at the high rate of 2.6 per cent per annum. Added to this is the lack of skills of rural inhabitants or lack of knowledge about employment opportunities, the high cost and the risks involved in leaving the farm for the urban areas in search of employment. Like most underdeveloped countries, the level of underemployment is very high. The magnitude of this as admitted by the Government Statisticians is not known because of the absence of a good statistical technique for its measurement!

In the wake of all these problems there are large amounts of unused or under-utilized resources. There are large tracts of land that have not been used. Some of this land is of low productivity but most of it is potentially good for cultivation. Some is not being fully used because it is located far away from urban centres and therefore lacks marketing services or lacks good transportation systems to carry its product to the distant markets. Ignorance of soil management and the large capital necessary to bring some of the land under cultivation, e.g., areas good for growing rice, sugar cane, etc., are some of the handicaps. Ghana can be safely described as land-surplus despite the high population growth rate. The estimated population of Ghana at the end of 1963 was about 7,400,000, giving a population density of 31 per cent square kilometer. There is therefore a great wastage of potential labour which is apparent in the seasonal variation of farm employment. The greatest idleness occurs among the peasant farmers. Especially in the North, periods of idleness are long and excess manpower, generally female, is often engaged on such tasks as collection of sheabutter nuts which yield little return. Most of the works undertaken on farms and around compounds could be mechanized. Here the problems is how to make productive use of the excess agricultural labour. To be able to do this successfully, there is need to have adequate information about all available resources, their distribution etc. In considering distribution, the poor distribution of land with all

the social, economic, and political problems should be borne in mind. Poor distribution of land helps to perpetuate conditions of poverty among the rural population. For example, the shortage of land in the North-Eastern section of the country has led to very intensive cultivation of small holdings and low incomes whereas in the Western part of the North there are large tracts of land which could be cultivated. Economically, poor land distribution limits rural markets for products of other industries and ferments constant political agitation.

Marketing:

During colonial rule existing organized trading institutions were geared to satisfying the needs and requirements of the markets of the colonial rulers. Hence price and market guarantees and the growth and power of statutory bodies were the result of government concern for the interests of foreign traders and not a result of efforts of the local producers to improve their incomes. Consequently, all well organized marketing institutions, like the Cocoa Marketing Board, were established for those crops that the colonial powers¹⁷ and rulers were interested in. There was no attempt to improve the marketing of such indigenous food crops as maize, yams, plantain, and a host of other food crops grown locally for local use. Even those other crops which could

¹⁷ Ghana was ruled by three colonial powers: Portuguese, Danes and British.

have had external markets were ignored if there were other good sources available. Examples of these could be fruits and vegetables which grow profusely in Ghana. This may have been done consciously to guard against possible competition with the already established supply sources. Pineapples, mangoes, avocado pears, oranges, etc., could have been improved through establishing a board similar to the Cocoa Marketing Board. In a nutshell, the aim was not so much to help improve the agricultural status of the country as to help extract those products that were not available in the markets of the United Kingdom.

Two main problems are common to all regions of Ghana:

- a) the lack of good facilities for storage, packaging, grading, marketing and transportation. This lack of marketing facilities exposes the farmer to unscrupulous middlemen; and
- b) serious difficulties encountered in the sale of products on the international market reflected in low prices (far below production costs), and surpluses brought about by the seasonality of the crops.

Mention should also be made of low levels of production and the scattered nature of production, both of which make collection a real problem. All these factors have a negative effect, not only on progress of agriculture, but on the economic development of the whole country. Here, as in the discussion on capital, in searching for solutions, the problem can be divided into four overlapping groups. Group one is made up of emergent crops by which subsistence producers enter the market economy. There is

urgent need to stabilize and guarantee prices to avoid the discouragement of fluctuating prices. In the second group is that of staple food stuffs for which consumer and national interests both require emphasis. Cash crops grown by newly established farmers in the market often carry a heavy commitment of indebtedness in relation to their operations and capacity. This makes up the third group. There is need for stable prices to help them consolidate their initial gains. Lastly, crops of special interest to the government because of their use as raw materials, e.g. rubber, fibre crops, bamboo, etc., need some special attention. In order for the government to give the necessary advice as outlined above, data on the present status of the various sections indicated are of paramount importance.

So much for the discussion of some of the outstanding problems of agriculture. Deficiencies in public administration and in the attention given by the State to agriculture and related activities should not be lost sight of. The very act of planning to solve the above listed and discussed problems poses another problem, since misconceived plans can cause more harm than good.

CHAPTER III

PRESENT POSITION OF STATISTICS IN GHANA

The chapter of Agriculture and Forestry in the most up to date book on the Ghana Economy starts like this, "We enter now the Great Unknown of Ghana's economy and also by far the largest sector for Ghana remains a predominantly agricultural country."¹ Agriculture in the economy of Ghana is statistically unknown because there has not been any deliberate attempt by the governing bodies to get acquainted with what has generally been recognized as the mainstay of the economy. Whatever data have been gathered to date are those that suited the requirements of the colonial rulers and their commercial aspirations or the wishes of their local commercial counterparts.

Hence, the institutional setup or organization of gathering information as well as the type of data are mostly administrative; i.e., data necessary to write monthly reports on their districts and activities but not the type to probe the causes of cultural practices in agriculture and to help solve agricultural problems. Whatever data Ghana has regarding agricultural problems can generally be safely described as informed guessess. There is a considerable volume of descriptive statistics which are often

¹ Birmingham, W., Neustadt, I., Omaboe, N. E., The Economy of Ghana, (Northwestern University Press, 1966), p. 215.

blown up by reporting officers to create the impression that conscientious work is being done.²

To describe the present level of agricultural statistics in Ghana, it is worth while to spend some time discussing the major collecting agencies. There are two government departments that are concerned with the collection of data; -- The Central Bureau of Statistics and the Division of Economics and Statistics of the Ministry of Agriculture.

The Central Bureau of Statistics is a statutory body concerned with all aspects of the economy of Ghana. Whereas the Division of Economics and Statistics of the Ministry of Agriculture is concerned only with data pertaining to agricultural problems.

THE STATISTIC ACT 1961:

The legal authority for conducting agricultural statistics is contained in the Statistical Act No. 37 of 1961. The act empowers the Government Statistician to collect agricultural data. The duties of the Government Statistician prescribed in the Act include the following:³

- 1.1 "To collect, compile, analyse, abstract and publish statistical information relating to the commercial, industrial, agricultural, social, financial, economic and general activities and conditions of inhabitants of Ghana."

² Experience of the author of this review. The author worked for six years as administrator in the Ministry of Agriculture of Ghana.

³ Manual for Field Work 1968, (Ghana Ministry of Agriculture Division of Economics and Statistics) p. 7.

- 1.2 To conduct general purpose statistical surveys including censuses in Ghana. The Government Statistician has delegated his functions under this Act, dealing with agriculture, to the Chief Agricultural Economist.
2. This law lays down that:
 - 2.1 Farmers and persons having the custody of any public records on farming shall furnish all information requested for agricultural statistics.
 - 2.2 This information has to be accurate.
 - 2.3 Any employee of the Chief Agricultural Economist, on production of his indentivity Card, is empowered to enter houses, offices and farms and to have access to records or documents between the hours of 7 a.m. and 6 p.m. for purpose of collecting agricultural data.
 - 2.4 All information related to single farms or enterprises received must be kept confidential. Under no circumstances must any employee reveal such data to anyone who is not authorized by the Chief Agricultural Economist, especially not for the purpose of taxation.
 - 2.5 Numerical tables summaries and general conclusions drawn from these data shall be released only with authorization of the Chief Agricultural Economist.
 - 2.6 It is forbidden to destroy forms or other documents containing these data without lawful authority.

4

CENTRAL BUREAU OF STATISTICS:

The Central Bureau of Statistics was established in 1948 to act as the storehouse of all information on the economy of Ghana. Strangely enough, however, the information collected so far by the Bureau cover all the sectors of the Ghanaian Economy, except agriculture. The Central Bureau of Statistics is made up of the following sections:

- a) National Income Section
- b) Industrial Statistic Section
- c) External Trade Section
- d) Transport and Communication Section
- e) Price Section
- f) Distributive Trade Section
- h) Demography and Social States Section
- i) Research and Sampling Section
- j) Others like Printing, Administration, etc.
- k) Computer Department in the Head Office

There are other sections including agriculture which are still in the planning stages.

Besides these it has regional offices all over the country.

These are:

- 1) Accra, East and Volta Regional Office
- 2) Ashanti and Brong Ahafo Regional Office
- 3) Northern and Upper Regional Office

⁴ This section is based on a letter dated 26/6/69 received from the Government Statistician of the Central Bureau of Statistics.

4) Western and Central Regional Office

There are 27 rural offices based on the geographical conditions of Ghana. These locations are very representative of the country. They are distributed as follows:

<u>Region</u>	<u>Rural Centre</u>
Eastern and Volta	Agogo, Akroso, Frankadua, Kraboa, Coalter, Kwahu Prasu. Anfoega, Akatsi, Denu, Wudoaba
Ashanti and Brong Ahafo	Adomfe, Lofiaso, New Edubiase, Hoaso, Sampa, Yeji
Northern and Upper	Bole, Bimbilla, Walewale, Nandem, Tumu, Zebilla
Central and Western	Bawjesi, Komenda, Mankesim, Half Assini, Enchi, Sefwi Bekwai

There are generally three grades of officers; professional, those that have degrees in the field of Statistics as a discipline; non-professionals, or technical officers who might hold diplomas or might have had some training in statistics plus some field experiences; and lastly, the administrative officers who do the clerical work. At present all the professional officers are posted at the Head office in Accra where almost all the analysis, publication and release of information are done. The Regional offices are manned by either Chief or Senior Statistical Assistants who have diplomas or long service and experience to their credit. Each Regional Office has some Junior Statistical Assistants who control or supervise work at the Rural Centres. Each Junior Statistical Assistant may have a number of enumerators

under him depending on the size of his centre. At the Head office, besides the professionals, who are automatically sectional heads, there are technical officers of the type mentioned above.

As already mentioned all the professional officers are graduates who usually have specialized in some field of statistics as a discipline or have a general training in statistics to the graduate level, the technical officers have either diplomas or certificates in statistics. They are usually trained at statistical institutions outside the country, often in Britain or the United States of America.

The Central Bureau of Statistics has training facilities for enumerators. The prerequisite qualification is Middle School Leaving Certificate, equivalent to Grade 6 in Canada. They take a year's training in statistics. Besides this, there is an institution sponsored by the Ghana Government and United Nations Organization where the Junior Statistical Assistants are trained. These facilities for improving the caliber of the technical officers are augmented through in-service training organized occasionally by the Bureau. There is no facility for training computer operators and those that operate the only IBM 1401 are trained in the sister country, Nigeria, at the University of Ibadan. There is, however, a diploma course in Statistics at the University of Ghana Legon.

KIND OF DATA COLLECTED:

The Central Bureau of Statistics collects a large spectrum of statistics covering the world economic conditions like economic activities in industrial countries; international trade; overseas sterling area trade; commodity markets; etc., in addition to statistics that pertain to Ghana economy. Information on such aspects of the economy as Central Government revenue, expenditure, debt; external trade; imports; exports; African trade; industrial production -- mining and quarrying, manufacturing, construction, electricity, water supplies, transport and communications, employment, wages and earnings, prices, etc., are collected.⁵ There are persistent warnings and queries about the nature of agricultural statistics in the Ghana Economic Survey published by the Government Statistician. "Statistics on Ghana's agriculture are still meagre." "The deficiency in statistical information relating to Ghana's agriculture has in the past made impossible any precise assessment of the structure and developments of this very important sector of the economy."⁶ But the Government Statistician has not as yet done anything directly about it.

⁵ Culled from Ghana Economic Survey 1966, (Government Bulletin) p. 5 - 6

⁶ Ghana Economic Survey 1964, (Government Bulletin) p. 161

METHOD OF COLLECTION OF INFORMATION: 7

The methods used in the collection of information or statistics can be grouped under three main headings:

- a) Interview Method -- Direct or Indirect
- b) Decennial Census Method
- c) Administrative Records Method

In the interviewer type there are two methods:

- a) The direct method where statistical officers go to offices or market places to interview the respondents, and themselves fill out the designed forms, and
- b) the indirect method which could be fairly called the Mail Questionnaire method. The latter is generally used for literate and cooperative respondents, whereas the former is used for illiterate respondents and uncooperative literate officers or businessmen. Special forms designed to suit various industries, institutions, etc., are available for the purpose.

The Central Bureau of Statistics carries out a ten-year census to gather the basic data that from the benchmarks of other studies. The first census was carried out in 1948 and the second in 1960 to coincide with the United Nations Population Census. Within six months of each major census, a Post Enumeration Survey

⁷ This section is based on interviews with Messrs. J. W. Ampiah and R. K. Amoh, Assistant Government Statisticians of the Bureau of Government Statistics, Ghana. Both of them are now on study-leave at the University of Manitoba Department of Statistics.

is done as a check on the census, or as a source of quick data for use while the whole census information is being analyzed, and also to gather more important data left out by the census - i.e., calculate demographic characteristics plus vital statistics like births, deaths, etc.—37 compulsory centres are chosen at random for registration of births and deaths. In between the ten-year census periods a survey of population is carried annually to keep close track of the rate of growth of the population.

Lastly, data are gathered from Administrative records like the Immigration and Customs records for records about immigrants, revenues, etc. Indeed, all Government departments are expected to furnish the Government Statistician with accurate and up-to-date statistics on their activities. These are then compiled into the various statistic groups as indicated previously.

The amount of data collected, the quality of the data, and the personnel employed to collect the statistics as well as whatever statistical bulletins are published, are determined wholly by the amount of funds available to the Central Bureau of Statistics. The value the Government attaches to the work performed by the Bureau can be assessed to some extent by the amount of money made available by the Government in budget allocations. A study of the Budget of Ghana shows generous allocations for the work of the Bureau. In the 1963-64 Budget

of C432,051,000.⁸, C860,860.00 was allocated to the Government Statistician. In the 1966-67 Budget the Bureau of Statistics had C1,781,960.00 out of a total budget of C401,200.00.

NATURE OF STATISTICS

National accounting in Ghana is based on expenditure method of calculation, that is adding up the value of all goods and services produced in the economy. Another approach is to add together all the incomes earned in the production of goods and services in the economy. The former approach is adopted because of lack of production figures for many items such as local field crops, distributive activities, small scale manufacturing, handicrafts and personal services. Data on the income flows for much of the economy is almost non-existent; the little that are available are greatly suspect, because of reluctance on the part of persons to disclose their incomes least it be used against them in taxation. The low literacy level of the Ghanaian society may be given as another excuse. Generally, people do not keep any records about their activities as understood in commercial circles. Whatever data are available tend to depend heavily on the memories of persons. When it is realized that agriculture provides employment for about seventy per cent of the population and these are often illiterate, the problems involved in any attempt to compile national income based on the flow of incomes, are obvious.

⁸ C1 = one cedi = 6s 8d sterling.

⁹ Birmingham, Neustadt, Omaboe, op. cit., p. 39

It would appear that this mode of computing the national accounts was handed down by the foreign rulers whose main interest was to extract or exploit the Ghanaian economy for their home governments or enterprises. Hence, there was no attempt to collect data that will help them understand how the economy operated, its shortcomings, problems, etc., in order to improve it.

To help plan the development of the economy, these data, even though reliable, are not very useful. For example, private consumption data are computed from import statistics and estimates of consumption of domestically produced goods and services derived from household expenditure surveys carried out in 1953 by the Government Statistician. The results of these surveys are projected for the national income using the population figures as inflators. The most recent of the household surveys was carried out in 1961-1962. This covered the incomes of people earning 1200 new cedis, (about \$1200.00) per annum and below. To use data from these surveys, together with import statistics to compute the private consumption of an economy having about 5% of its working population above the 1200 new cedis per annum ceiling¹⁰ is highly questionable. "Figures for capital formation are based on imports of capital equipment and building materials supplemented by estimates of construction of non-permanent

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Amoh R. K., "Purchasing Power and Cost of Living",
(Paper at Adult Education Conference 1967) p. 26

buildings and earthworks."¹¹ It is highly doubtful if one can lay any store by such a figure if it is realized that seventy per cent of the people are in agriculture where the main inputs, apart from the axe, cutlass and hoe, is the manual power and the inherent potentialities of the land and forest trees. For example, cocoa, which is the backbone of the Ghana economy, does not use to any appreciable extent any imported inputs. Indeed, the only capital inputs are axe, cutlass and manual power. Hence, one can safely contend that whatever figures on capital formation the Bureau publishes pertain more to the capital formation of Government and Private Industries and urban activities which contribute less than half of the capital of the nation. It is not representative of the rural economy or, for that matter, of agriculture.

One would conclude from the above discussion that even though there are some figures on such topics as private consumption, capital formation, public consumption and the rest, they do not give the necessary information to help plan the development of the economy.

Division of Economics and Statistics

The Division of Economics and Statistics of the Ministry of Agriculture was established in 1959 to provide economic appraisal of agricultural plans and projects proposed by the

¹¹

Birmingham, Neustadt, Omaboe, op. cit. p. 39

other Divisions of the Ministry of Agriculture; this occurred about seventy years after the origination of the Department of Agriculture (1890). The long lapse of time between the establishment of the Department of Agriculture and the inception of a Division of Economics and Statistics shows, to some extent, the importance the Government attaches to statistics and their collection. One would have thought that the Division of Economics and Statistics would have been one of the first, if not the first division to be created in an agricultural country like Ghana.

It shows a misplace of emphasis on the basic needs of that sector of the economy. Up to 1946-47 there was only the Department of Agriculture. This was broken up into three divisions, "1) Agriculture; 2) Produce Inspection and Grading; 3) Cocoa Disease Control and Rehabilitation."¹² The divisions reflect the object of the then government which was heavily inclined towards external trade rather than the development of Ghana agriculture.

The Division of Economics and Statistics is subdivided into three main sections:

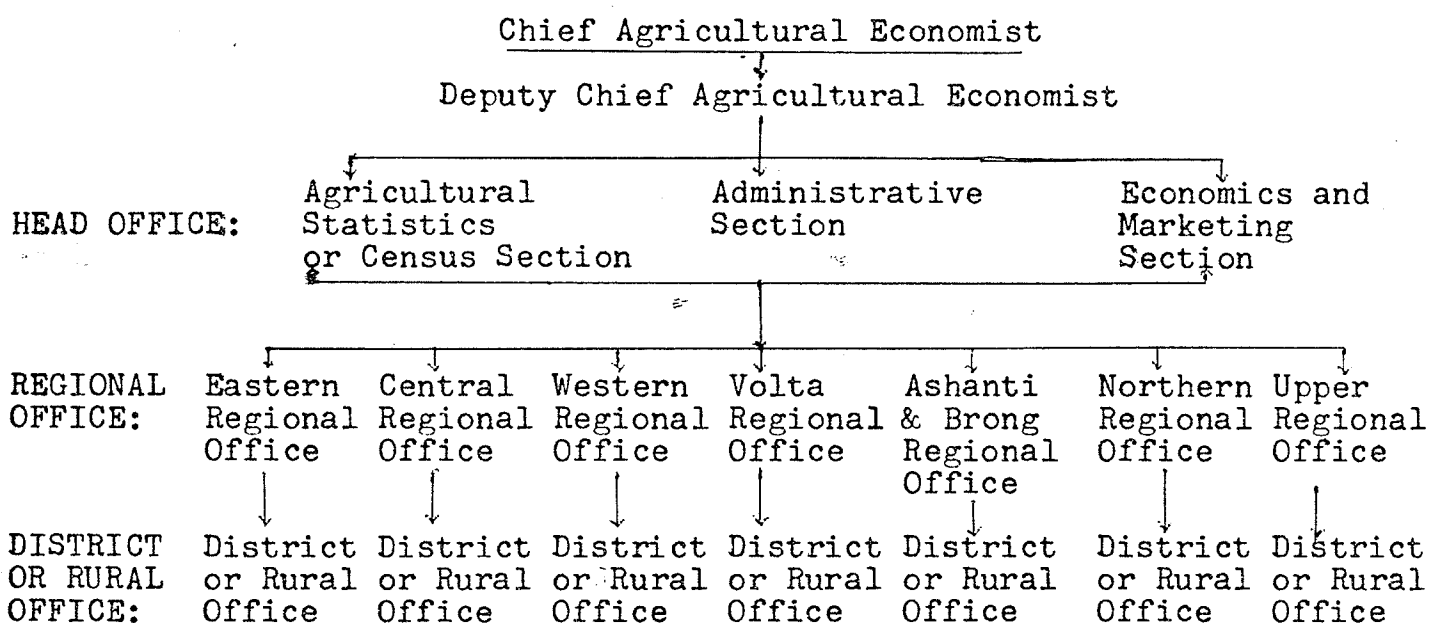
- a) Agricultural Census Section
- b) Economics and Marketing Section
- c) Administrative Section.

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Anyane L. A., Ghana Agriculture, (Oxford University Press 1963) p. 161

It is headed by a Chief, an Agricultural Economist who holds a postgraduate degree in agricultural economics. The agricultural statistics or census section is headed by an expatriate with a doctorate degree. With him are three Ghanaians with postgraduate degrees in agricultural economics who are understudying him. The Economics and Marketing section has as its sectional head, the Deputy Chief Agricultural Economist, who holds a graduate degree and more than 15 years' experience in Ghanaian agriculture. Under him in the head office are four other graduates. Working with these senior officers are technical officers who are mostly secondary school graduates, with three years' training at the Agricultural Training Institute in Kwadaso, and those with long experience in practical agriculture. At least one is required to have the Middle School leaving certificate. Some of these technical officers may have passed through the United Nations-Ghana Institute for Statistical Studies. Among the technical staff may be included enumerators who hold Middle School certificate. They are given a crash training in agricultural economics and statistics after they have been taken on. These are posted mainly to the rural centres where their only job is to collect prices on locally produced food crops offered for sale on the rural markets by the roadside, and in kiosks. Most of these are females. Besides technical staff are administrative personnel who see to the day-to-day administration of the Division.

Below is a flow-chart of the organization of the Division.



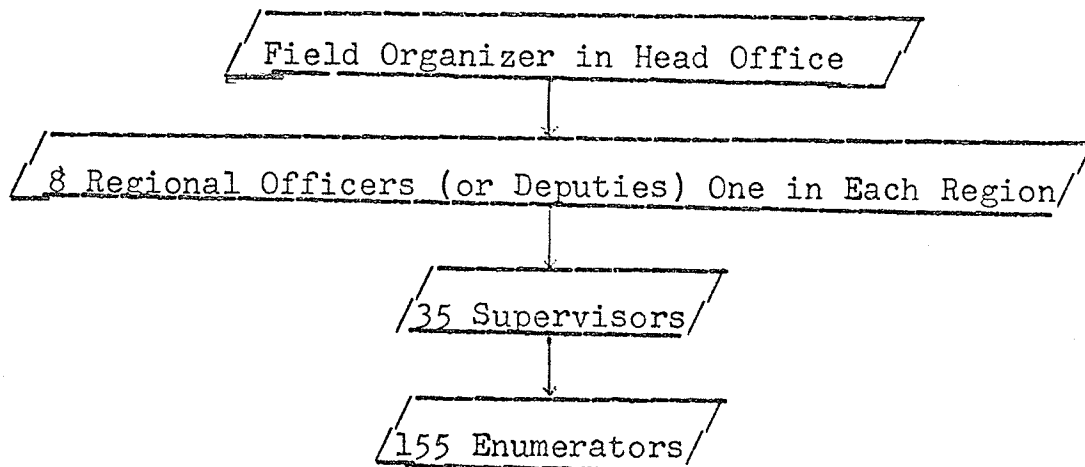
The Regional Officers are all graduates from either the University of Ghana, Legon, Faculty of Agriculture, or the Faculty of Agriculture of the University of Science and Technology in Kumasi. Some of these officers have had either three months or six months post-graduate training in some field of agricultural economics. The technical officers, designated Agricultural Assistants, man the district or rural offices. Under them are the enumerators.

FIELD ORGANIZATION:¹³

The Regional Officer is responsible to the Field Organizer

¹³ Culled from "Manual for Field Work 1968", (Ghana Ministry of Agriculture, Division of Economics and Statistics), p. 8.

in the Head Office, in all matters connected with field operations. The order of responsibility of the field staff is as follows:



The Enumerator is the most important figure upon whom the success or failure to achieve the objectives of the whole process depends. It is imperative that he executes his duties efficiently and produces accurate information in time in order to achieve good results.

Channel of correspondence is from the Enumerator to the Supervisor; from the Supervisor to the Regional Officer, (or his Deputy); from the Regional Officer to the Field Organizer and vice versa.

Posting of Enumerators and Supervisors:

This is the responsibility of the Regional Officers and Field Organizers. Attention is given to the vernacular language of the Enumerator, and of his district; accommodation; distances and transport facilities as well as the burden of the different objects to be investigated.

Publicity:

Two methods of approach:

- a) "Hand-Outs"
- b) "Methods of approach" -- Press Release through Daily Papers and Broadcasts in English and the vernacular languages; personal contacts with Regional Administrative officers; correspondence, etc.

Responsibilities and Duties of the Field Staff:

1. Enumerator: Allocation of work is done by the Supervisors. He is the headman of the casual workers. He collects the data directly from the source, takes whatever measurements are necessary, completes the questionnaire and write weekly reports on the units under him. He is responsible for all the equipment used by his team.
2. Supervisor: He controls a district. Sees that the surveys and data to be collected are properly done. He is required to submit weekly reports on his activities as well as those of the enumerators under him. He maintains all equipment used in the district and makes sure that each Enumerator has the requisite equipment. He is in charge of all stores. He is expected to conduct sample checks in the field over areas covered by Enumerators.
3. Regional Officer or his Deputy: He is responsible for overall charge of the administration of the region, including finance, stores and maintenance of transport. He is responsible for the efficient organization of the region, together

with proper use of facilities and manpower. He assigns Field Supervisors and Enumerators to their posts, conducts publicity; in-service training for field staff; coordinates with other departments, etc. Has to submit a monthly report on activities in the region. He is responsible for all the equipment used in the region, and has to see to it that each officer has the appropriate field equipment, stationery, etc.

STATISTICAL SCHEDULES IN USE BY THE ECONOMICS AND STATISTICS DIVISION: 14

The various types of forms used in collecting data and writing reports are shown as Appendix 1 -. 4

Means of Reporting:

- a) Notebooks kept by each member of the field staff.
- b) Enumerator's Weekly Report.
- c) Supervisor's Weekly Report.
- d) Monthly Regional Reports.
- e) Clearance and Termination Reports.
- f) Special Reports (monthly appendices to Monthly Regional Reports.)
- g) Annual Report.

Note Books:

Each member of the field staff has a notebook in which he records his day-to-day activities on the spot.

Enumerator's Weekly Report:

This covers a daily record of the enumerators' activities

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The Following is culled from the Ghana Ministry of Agriculture, Division of Economics and Statistics:
 "Manual for Field Work, 1968." op. cit. p. 10.

like work done by type and operation, travelling indicating means of transport, etc. It includes sections on his problems and suggestions as to how problems can be solved. Two copies are usually made, the original to the Supervisor and the duplicate for local records. Copy of form used is as shown in Appendix I.

Supervisor's Weekly Report:

Specimen copy as in Appendix II. This report covers the activities of Supervisor in addition to a summary of the reports received from enumerators under him. A minimum of two copies of this report is submitted to the regional officer. One copy of this report is determined for Head Office, and must be counter-signed by the Regional Officer.

Monthly Regional Report:

Each Regional Officer submits a monthly report covering his region. It should reach Head Office by the 10th of the preceding month. The report is submitted in three parts:

- a) General Agricultural Statistics (two copies)
- b) Cocoa Statistics (one copy)
- c) Marketing (one copy)

Refer to appendices III and IV for the form the report takes, and its coverage. Summaries of the various topics are all that are needed.

Clearing (C) and Termination (T) Reports:

This is the last report on each field operation, before processing of the data starts. Reports cover only one field

operation at a time, hence separate C and T reports have to be submitted for the following operations:

- 1) Listing, peasant farming
- 2) Interrogation, peasant farming
- 3) Field Measurement, peasant farming
- 4) Interrogation, large scale, etc., farming and service stations

The Clearance Report is made up of a summary of all returns submitted to Head office, a review of all major problems and proposal for future work as well as a list of all units that disappeared (defunct closed down, converted, merged up, etc.) which could not be reported. It shows a list of outstanding questionnaires with details why they are delayed, expected date of delivery. etc.

Termination Report covers all those units reported as outstanding in the Clearance Report. It covers some topics as described before.

The Flow of the Data:

As has been indicated above, data emanate from two main sources (a) those collected by the staff of the Division of Economics and Statistics directly and (b) Administrative data furnished by the various government departments. There is some overlapping in the collection. In addition to data collected by the Division as indicated previously, the other divisions of the Ministry of Agriculture do furnish the Economics and Statistics

Division with information in the form of quarterly reports. These, together with those collected by the Division itself, are compiled into the Annual Report of the Ministry of Agriculture. Apart from this annual report, the Division publishes monthly and quarterly reports on prices of the various local food stuffs.

THE NEED FOR BASIC DATA FOR AGRICULTURE¹⁵

The reasons why the various basic data are needed were indicated in Chapter Two in a general form. Here the users of the data collected would be discussed. Data collected by the various agencies enumerated above are used by the following:

- a) The Ministry of Agriculture
- b) The Economist
- c) The Administrator
- d) Educational Institutions
- e) Businessmen
- f) International Agencies
- g) Farmer

The Ministry of Agriculture needs data on the various aspects of agriculture to help her make her policy decisions. The data are required at the time of occurrence, or as soon as possible. They should be as complete and accurate as possible, bearing in mind the conditions under which they are collected. The data

¹⁵ It was not possible to interview directly any of the users discussed under this section. The writer of this study feels strongly that initially the farmers will have little use for the data, as they generally are illiterate. But as the literacy level of farmers rises, they will use the data as indicated.

are needed for planning purposes, hence they should be consistent and continuous.

The Economist needs the data to help him analyze the performance of the agricultural industry as a whole; the viability of various agricultural enterprises; trend of the economy, etc. He is interested in the computation of indices, calculation of income from agriculture; farm population; studies in the employment levels in the agricultural sector, etc.

The Administrator uses the data to assess how much the country produces; what crops it grows or what livestock it raises; how this changes from year to year. Administrators in Ghana are specifically interested to watch how her Seven Year Development Plan is achieved. Permanent and comprehensive data of the facilities, conditions and outlets of farming are needed to provide material for statistical and cartographical analysis, for planning and for agricultural policies. He depends more on the conclusions that flow from the analyses of statistical data, not so much on the data themselves.

Educational Institutions - universities, research institutions and other agencies like the Extension Services, use the data to teach students, farmers, and give advice to businessmen. They are historical documents that help them to trace the development of agriculture and plan their researches accordingly.

The Businessman and the farmer use the statistics that come out of economic analyses. They use them as reference in planning

their businesses, in deciding which field of agriculture to invest in, which enterprise to discontinue, etc.

With respect to international agencies like Food and Agricultural Organization (F.A.O.), International Monetary Fund (I.M.F.), United States Agency for International Development (U.S.A.I.D.), etc., they use the data to determine which areas of agriculture they can be of most help. They help them to plan their technical and financial aid programmes. To the extent that F.A.O. is concerned in the problems of increased food production and distribution, it is interested in the conditions prevailing in the agriculture of the world. The needs of the international agencies are similar to the needs of economists and research fellows working in Ghana.

METHOD OF COLLECTION OF DATA:

There are two main methods of collection of data:

- a) Interviewer Method: (i) Continuous
(ii) Periodic
- b) Administrative Records Method.

The Continuous Method:

The Continuous Method used mainly by the enumerators are carried on specific days of the week -- market days. Usually the market day that falls in the middle of the week is taken for markets that operate throughout the week, i.e., Wednesday or Thursday. At the rural centres, market days generally fall on one or two days of the week, or they follow a system of

rotation at intervals of five or six days. In such cases, prices are collected on both market days. If, however, there is only one market day, collection of prices is done on that day, whether it falls at the beginning or end of the week. The prices are recorded for predetermined units of sale like the cigarette tin for cereals and fingers of banana or plantain, which is later converted into pounds weight. These standards are fixed for all centres. Besides agricultural products, prices of other commodities that are generally used by farmers are collected. These are then compiled and published monthly for all regions as well as the national average.

Periodic Method:

Under the periodic method of collection of data comes the Agricultural Census. There has been only one agricultural census which was carried out in 1963. It consisted of the usual census questionnaires which enumerators fill. The respondents, being illiterate, depend greatly on their memories for the figures they give to these enumerators. For example, it is very difficult for a farmer to assess how much cereal he uses as food for the family, or the number of fingers of banana or plantain that the family uses daily. Records are rarely kept. The plan is to have the census every ten years. In addition to these data, the Division collects administrative figures that are furnished quarterly, half yearly and yearly to the Chief Agricultural Economist, by the other divisions of the Ministry of Agriculture.

Nature of Data Collected:

Apart from prices recorded by enumerators, which happen to be market prices, there are no records of prices at the farm level. Neither are there records of the margin between farm prices and the market prices charged by middlemen. The market prices collected are greatly suspect because of poor communication between the enumerator and the respondent. Except where the confidence of the respondent is won, prices given to enumerators tend to be biased downward. Dishonesty is quite rampant -- officers just report from their rooms or offices without making an actual survey.

Administrative Records:

The administrative records that form the major bulk of data are collected by the Division of administrative activities, and include data such as numerical strength of staff, number of farmers covered in the period, amount of gammalin (insecticide) sold, or quantity of seeds distributed to farmers. Apart from a few large scale farms operated by governments which do record their production data such as acreage under crops, yield per acre, output and labour force, there are no authoritative records on yields of crops grown by farmers. Whatever yield data that are available are those from experimental stations and state corporations. The first and only attempt to get any meaningful data such as size of holdings of farmers, farmers income, capital by farms, yields, costs, covered a negligible proportion of the farms -- 0.17 per cent of the farm population.

There are, however, up-to-date data on imports of agricultural products like rice, wheat, sugar, fruits and vegetables, maize, fish, meat, etc., as shown by Table V.

TABLE V
DEVELOPMENT TABLE OF SELECTED FOOD IMPORTS,
1951-1961

ITEM	VALUE OF IMPORTS IN £'s		% CHANGE IN 10 YEARS	
	1951	1961		
Meat	1195	1935	+	62
Fish	1422	4814	+	239
Dairy Products	633	1901	+	200
Rice	313	2514	+	706
Maize	207	35	-	89
Wheat	1539	3145	+	104
Sugar	1139	2690	+	136
Fruits & Vegetables	171	2068		1,108
TOTAL	6,618	19,102		198

Source: Ghana 7-Year Development Plan, 1963-64 & 1969-70, p. 55.

One would have thought that there would be a deliberate attempt to find out how and why these products are not produced locally. Apart from wheat, they can all be produced locally.

APPRAISAL OF THE IMPORTANCE GOVERNMENT ATTACHES TO STATISTICS WORK

It would be appropriate here to try to evaluate the importance the government attaches to the collection of data by examining the amount of funds that are made available by the government

in the yearly budget allocations.

In the 1960-61 Budget an amount of £59,580.00¹⁶ was allocated for the activities of the division. This covered such items as administration, office furniture and equipment, plus rent of offices, and transportation. This represented a net increase of £19,230.00 over the 1959-60 allocation. In the 1962-63 budget an amount of £300,000.00 was allocated to the Central Bureau of Statistics to conduct the most recent agricultural census in 1963. By then the Division of Economics and Statistics had been abolished. In 1963-64, out of a total budget of £432,051,000.00, the Central Bureau of Statistics received £21,866,760.00. In the same year, the Ministry of Agriculture received £23,511,000.00, including an amount of £6,044,460.00 for development. Out of this development allocation £5,362,170.00 went to the State farm corporation which were designed to boost up the agricultural enterprise through promoting commercial farming practices. Elsewhere in this paper the success of the corporation is discussed. Suffice it to say that one would have thought that a project that was allocated about one per cent of the national budget would have been based on adequate assessment of costs and returns; in short, a complete understanding of all aspects of the project -- social and economic, as well as political. As it turns out, the emphasis was on the political aspects.

¹⁶ £1 = 6s. 8d. Sterling = \$1.02 Canadian Dollars.

The \$300,000.00 allocated for the Agricultural Census in relation to the budget was adequate to bring out at least some benchmarks for further studies. Incidentally, the "benchmarks" are yet to be published as a start for further analysis of the agricultural industry. Perusal of subsequent budgets indicate that no other allocation was made in subsequent budgets to provide for further surveys. Maybe the government was satisfied with the results of the census and felt there was no need for further surveys.

The Division of Economics and Statistics was "resurrected" in the latter part of 1964, with the following specifications: The functions of the Division are elaborated as follows:¹⁷

- a) To collaborate with the Central Bureau of Statistics and other Divisions of the Ministry in collecting, analyzing and publishing all relevant facts affecting the food and agricultural situation, including fishery and forestry development.
- b) To collect structural data for the preparation of medium-term and annual plans and for the purpose of verifying plan progress as well as of plan revisions in the light of changing conditions.
- c) To act, in collaboration with offices of the co-ordinator and the Planning Commission as the planning secretariat of the Ministry of Agriculture.

¹⁷ "Ghana Annual Estimates for 1966," (Government Bulletin), p. 80.

- d) To assist the production agencies in drawing out annual programmes of work within the framework of national development plans.
- e) To conduct farm surveys with a view to ascertaining cost-return relationships, input requirements, land use patterns and farmer attitudes.
- f) To undertake market investigations, including price collection, for the purpose of providing and intelligence service and for the formulation of price policies.
- g) To provide annual forecasts and estimates of production of major staple crops, including cocoa.
- h) To act as a "clearing house" on economic matters originating from the Ministry, and intended for either the State Planning Committee or the Cabinet."

But so far the Division has been concerned with internal organization along with collection of data as discussed in this chapter. In the 1966-67 Budget of ₦401,200,000.00, the Ministry of Agriculture received ₦12,071,500.00; the Division of Economics and Statistics received ₦382,200.00. In addition to that, ₦38,000.00 was allocated from Development of Statistics Division from a Development fund of ₦21,299,000.00 voted for the Ministry of Agriculture. In the same year the Central Bureau of Statistics was allocated ₦1,686,969.00 for general administrative and other purposes, in addition to ₦95,000.00 for Development expenditure.

Despite the fact that the national budget was going into the red, a close examination of the above figures show that the

government has been generous in appropriating funds for statistical purposes. It is therefore incumbent on the officers concerned to produce the basic data needed by government for policy, planning and decision-making.

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ESSENTIALS OF AN ADEQUATE STATISTICAL SERVICE:

The purpose of a statistical service for agriculture is to compile all the data that measure the various activities occurring in the agricultural industry. These data should describe quantitatively and qualitatively agriculture in Ghana and to provide a basis upon which to establish relationships between the various action on it. The relationships are the guides for forecasting and a means of better business administration of all sections of agriculture -- i.e., they describe a condition, provide a basis of appraisal of the industry, indicate alternative methods of operation, and assess the efficiency of alternative methods of operations.

Professor Sinclair correctly asserts when he states:

"Statistics cannot be regarded as an end in themselves. They are the means, the tools, that technicians, businessman, research workers and administrators employ to discover the answers -- the end product - to problems of production and distribution. The oft-quoted expression 'figures don't lie, but liars can figure' implies that statistics can be produced out of nowhere. That this is ^{so} cannot be denied, and it is essential to recognize this danger. It is not suggested that

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This section draws heavily on Chapter VI of Professor Sol. Sinclair's, A Statistical Service for the Fisheries of the Maritime Provinces, (CBS publication 1954) In fact the sub-headings are the same as that of the chapter.

anyone in a responsible position will deliberately invent agricultural statistics, but if accepted statistical methods are not followed in the collection of statistics, such figures may be created unconsciously."¹⁹

It would have been desirable if it is possible to record the actions of agriculture as they actually occur. For example, if yields of crops are wanted, they must be measured as the crops are being harvested. Or, if the desire is to know the number of farmers that leave farming for non-farm enterprises, it would be necessary to record departures as they occur. But experience has shown that such recordings of activities are not always possible. Such barriers as time, space, human competence and costs often prevent recordings of events as they occur. Various statistical techniques have been developed to overcome some of these limitations, e.g., complete census, surveys, etc. Some of the methods will be discussed in the next chapter.

All the known and applicable methods and techniques should be employed in the collection and analysis of the required data. These methods should be applied in a uniform manner, but should be flexible enough to allow changes to suit the dynamic nature of agriculture.

1. THE METHOD OF STATISTICS:

To some extent, the purposes for, and the use of data as

¹⁹ Ibid., p. 49

well as the environment (social, educational, technical, etc.) determine the methods to be used in the collection and treatment of data. The desire, these days for efficiency in the use of the nation's resources requires that as complete knowledge as possible of the conditions that prevail in the agricultural industry is necessary. The economic development planner aspires to direct the economy so that the highest human welfare within the capabilities of the society could be attained. The entrepreneur (includes farmer) aims at maximization of his returns and the retention of his competitive position in the industry. These are situations that statistic measure -- the expectations of accurate data are great!

The statistical data to be collected can be divided into two main parts, based on the time factor:

- a) The inventory and
- b) the current operations.

"The inventory provides a record of conditions in agriculture at a point of time repeated for similar periods over time. Common usage has designated the inventory to be an annual enumeration of the state of affairs at a point of time."²⁰ By this means the progress of the agricultural industry is followed year by year.

Data on current operations, however, are designated to measure the short term activities within an enterprise and industry. This should cover all important aspects of agri-

²⁰ Ibid., p. 50.

culture, production and distribution processes. They cover the day to day activities on which the farmer and the businessman make daily decisions, e.g., prices. These data may be treated cumulatively for longer periods, e.g., weekly, monthly or quarterly.

The nature of the data and the use to which the data are put provide another type. Data may be required on a continuous flow basis, or may be needed to describe a single occurrence. Depending on the needs of data, the manner of collections may take one of the following forms:

a) Specialized Periodic Data:

These are done for specialized projects, like the effect of fertilizer on a special crop or the efficiency of a certain type of agricultural machinery. The economist may want to follow through the flow of type of produce from the farmer to the consumer. These data provide absolute data which can be got in one survey.

b) Specialized Continuing Data:

The purpose of such data is to establish trends and relationships than determining absolute levels. For example, it may be necessary to study the cost of production in various fields of agriculture like poultry, pig keeping, rice production, etc. This involves studies of the special conditions over a period.

c) Generalized Continuing Data:

Government agencies, administrators, manufacturers, buyers, sellers, consumers, educators, etc., are interested in the daily, weekly, monthly and annual performances within the industry. They want to know what is happening. They want to have an analysis of data so as to be able to observe movements and relationships in the economy that will guide them in decision-making. Under this category, the need is for general data that have full coverage of the industry. These data should be continuous and regular for each series.

d) Derived Data:

These are statistics derived from the basic data. For example, price and production indices, national income statistics, etc. It should be possible to compile such statistics as by-products of the basic data.

II. FLEXIBILITY IN STATISTICS:

It is very difficult to define clearly the needs for statistical data by type, quality and frequency. This is a consequent of continuous changes in human activities. Hence any statistical service should use methods of collection that are flexible and are able to be adopted to the changing conditions of the industry. This is particularly true in the case of agriculture which is a dynamic industry. The flow of the schedules should be such that frequency of tabulation and compilation, may be readily adjustable. This should not, however, ignore adherence to statistical design and method of collection of data. Too

rigid a system of collection soon renders the data obsolete and therefore of little use. It is therefore very necessary that attention should be given to building in maximum flexibility to provide for adjustment to the changing conditions avoiding at the same time a break in the continuity of the different series.

III; RESPONSIBILITY FOR STATISTICS:

Responsibility for the collection, compilation and publication of statistics is vested in the Bureau of Statistics by an Act of Parliament, The Statistics Act of 1961, cited at the beginning of this chapter. The Government Statistician has delegated his functions under this Act, dealing with agriculture, to the Chief Agricultural Economist as indicated previously. In addition to Economic Division, various divisions of the Ministry of Agriculture are expected to keep records of their activities, collect some information themselves for their individual works. These have led to some over-lapping. It might be said that these overlappings help, in a way, to check the authenticity of data gathered. Professor Sinclair drives the point home well in the statement, "It is perhaps not out of place to repeat that in the main, statistics are not an end in themselves. They are a means to the end of appraising the activities of individuals and society in their quest for maximum human welfare. The central concept of maximization deals with

proper allocation of resources and efficiency of their use. The collection and treatment of statistics involves human and material resources, and their proper use is desirable so as to produce the necessary results."²¹ Statistical agencies are obliged to collect, compile and publish statistics that can be used by educated farmers, researchers, businessmen, educators and administrators. This great responsibility requires that the staff involved in the data collection must have a knowledge of and interest in statistical methods. They must also be very conversant with agriculture as an industry. This knowledge is necessary if they are to produce data that are appropriate for the needs of agriculture. The necessary qualifications are clearly enumerated by Professor Sinclair:

- i) "A knowledge and understanding of the needs of the various users of statistics, (as previously indicated.)
- ii) Familiarity with the physical, technical and economic conditions prevailing in the industry (agriculture), to permit proper identification of the channels and flows of the processes to be recorded and with statistical methods. The extent and degree of such familiarity will differ with the location of the worker, in the industry. If he is at the extensive margin of statistical work, he will require a greater knowledge of the operations of the industry (agri-

²¹ Ibid., p. 52.

culture). If he is at the intensive margin of the work, he will be more concerned with the statistical techniques and needs.

- iii) Proximity to the industry and the people in it, so as to permit ready observation of events, and to facilitate discussions with the users of the statistics."²²
- iv) In the case of Ghana, ability to speak the local vernacular language, even though not obligatory, is desirable.

The use of existing personnel that meet above qualifications will greatly reduce costs and improve the quality of the data that are collected.

IV. TIMELINESS:

Apart from the historical needs of data, in order that they must be of use for decision-making and planning, the data must be recent. Agriculture is a dynamic industry, hence, if the data collected are not published immediately they become useless to the businessman, the farmer, the development planner, etc., who must plan for the future on the basis of what is happening now. This means that the data must be collected in a form that will make it possible to be analyzed, with the existing machinery and by personnel available, as quickly as possible.

The above discussed elements or essentials of a statistical service cannot be said to apply under the present statistical

²² Ibid., p. 53.

service of the Economics and Statistics Division of the Ministry of Agriculture in Ghana, except perhaps those data collected through the Administrative officers. Problems of achieving these elements of statistical service are discussed in the next section.

Problems associated with collection of agricultural data:

While we decry the apparent inadequacy of the necessary fundamental information for understanding the agriculture of Ghana, we cannot ignore the real problems that beset any attempt at collection of figures on agriculture in developing countries in general, and in Ghana in particular. These problems are not insurmountable, however, and can be overcome with a determined and well-considered scheme. Some of these problems will be discussed under this heading, and suggested means of solving them will be given in later chapters.

The most fundamental of the problems associated with collection of data for Agriculture in Ghana is illiteracy. The level of education is estimated at twenty-five per cent, as quoted in the Reader's Digest 1968 Almanac and Yearbook, p. 129. This means that seventy-five per cent of the population is illiterate. In Ghana, as in many underdeveloped countries, there is a growing drift of labour from the rural areas to the urban centres. The drift has been generally of the better-educated sections of the rural population who have found agricultural employment unattractive, either economically or

socially. Hence, they have moved to the few urban centres to seek employment in white-collar jobs. As a result, all the farmers are predominantly uneducated and tend to be very conservative. Any attempt to get figures or information on their activities are often construed to mean an (unwelcome) infringement on their privacy. The fear that such information would be used against them in taxation does prevent some from disclosing their income. There is ample justification for such a fear. In the days of the civilian government, which was ousted on February 24th, 1966, the cocoa farmer had to pay \$0.48 on every 60-lb. (current convention). This extremely high tax would have been sufficient to bring down a government in any Western country. Others refuse to disclose figures on their farming business purely out of modesty. Those who are cooperative in giving out information have to rely wholly on their memories for the purpose, as no record of their activities are kept. Again, measurement of holdings in acres is foreign to them. As indicated under land tenure, the size of holdings are marked by physical objects such as trees, rivers, etc. Holdings are often scattered and communally owned. Hence, it is difficult to measure individual holdings. Yield records are completely absent, as farmers generally measure their output in volumes. For example, a farmer would tell you that he harvested about three barns of maize. The size of these barns are not known as they are usually temporary sheds, and interviewers cannot measure their size and estimate the yield.

Another problem of measurement is brought about by the cropping practices of the farmers. Generally they practice mixed farming where they have almost all the food crops they would need on the same parcel of land. It is not uncommon to find a parcel of land on which there are yams, cocoyams, cassava and vegetables like eggplant, pepper, tomatoes, maize, etc. They are not planted in rows but staggered, making crop counts a tedious task. Some usually practise shifting cultivation system of farming, as described under economic problems. This system of farming makes any longitudinal study, that is choosing a sample area with a particular farming system and studying it over a period, very difficult, if not unattainable. Communal grazing makes any measurement of individual pasture land difficult, because there are no pastoral boundaries.

There is the problem of communication to contend with. Most of the farming communities are in the hinterlands which are not accessible by road except by footpaths. Having reached the farmers, there is a language barrier to overcome. Ghana has fifty-six dialects out of which eight are developed and taught in schools, as indicated previously in Chapter II. Hence, if the agricultural personnel happens to be in an area where the farmers do not speak the dialect he knows, the need for an interpreter arises. The problem of achieving effective communication aimed at persuading an uninterested respondent to divulge information about his activities is obvious. It often ends in impasse

because the interpreter may not be well informed technically himself. Misinterpretations that are commonplace often result in confusion, arguments, and to some extent, animosity because of the distrust that might have been generated.

Because of the lack of any formal education on the part of the farmers, the need for technical personnel to handle a district is very great. Compared to this need, the size of technical staff is small indeed. This has given rise to the problem of training more technical personnel. But educated persons would prefer to work in other fields of employment than agriculture. As a result, there is a shortage of technical staff. Coupled with this is the difficulty of getting the necessary funds to finance surveys. Indeed, there has been no occasion up to date where a private agricultural institution has financed a survey project to collect basic information for its use. This may be explained by the fact that all large-scale farming is done by the government. Holdings of individual farmers are small and fragmented, (Chapter II.)

Assuming that the necessary information is collected, there are scanty facilities to process the data. It should be recorded that, up to the time of this study, the only agricultural census, which was carried out in 1963, had not been fully analyzed. Hence, no official release has been made on it. One should not be surprised if the data collected are not yet fully analyzed before the next census which is scheduled for 1973. This situation has arisen partly because there are no facilities like computers to use in processing the data, and the calculating machines being used now are unwieldy and slow for such voluminous analysis.

Even if the required machinery were available, the problem of training the necessary staff to operate it would arise.

Lack of cooperation even within government agencies as well as lack of co-ordination among the various Divisions of the Ministry of Agriculture could be cited as one of the problems to overcome in any attempt to collect figures on agriculture. One could venture the excuse that the other divisions or departments lack the necessary data. Where the data are available, officers do not have sufficient confidence in them to release them to other agencies for fear that their weaknesses would be exposed.

Lastly, the problem of transportation could be discussed. Apart from the fact that most of the farms are inaccessible, there is an acute shortage of transport to carry the staff to and from farms. Landrovers which are often used, are a costly item and very often for a whole district office of more than 15,000 farmers, the district office has only one landrover, or none. Bicycles are usually used, but this reduces the area an officer can cover. The number of technical officers is inadequate even with appropriate transport.

Gaps in the Present Statistical Data:

The fundamental objective of collecting data on agriculture is to make available to persons in the agricultural industry information necessary to help them make decisions as to what crops to grow, or livestock to raise, and to help potential farm operators in the choice of occupations. To those that govern or rule, it shows the potentialities and possible natural line

of development so that they may be in a position to plan appropriate policies to assist the development of agriculture.

With this basic assumption in mind, an observation of the present state of agricultural statistics in Ghana will show several statistical gaps in the present data. The statistical gaps in agriculture can be grouped under three main headings:

- a) Gaps in the basic data
- b) Gaps in collection methodology
- c) Gaps in the quality and quantity of data presently collected.

Under gaps in the basic data should be included production data, figures on incomes, capital formation, credit facilities, data on the operations of the marketing systems, and data on labour inputs, and on the distribution and consumption of agricultural products. With respect to consumption, there is lack of data on variations of income as a function of production, of price and other factors that affect the level of demand in local markets.

Data on natural resources are almost adequate, except that there is need of collecting them from the various departments, and of organizing them into a readily available form. This is a lack of aerial photographs of areas used in agriculture; data on hydrological studies of streams, lakes and underground water are negligible, data on meteorology, especially on rainfall, rates of water evaporation and temperatures, are meagre.

Data are lacking on areas planted to crops, areas harvested in each crop, and quantity produced. Livestock numbers, the annual production of meat, milk, eggs and other livestock products are not available.

On human resources there is lack of data on farm population and its training; population living on farms in rural areas and urban centres; number of people actively engaged in agriculture; seasonal variations in agricultural employment; education level of the farm population, number of illiterates who need demonstration or visual instruction, and the proportion of farmers' children that go to school with grades attained, etc.

It is generally said that the income of farmers is low, but there is no information on agricultural income distribution among land-owners, tenants and labourers. There is complete lack of information on income-output relationships amongst specific types of farms, such as grain farms, cocoa farms, banana farms, dairy farms, poultry farms, etc. This information is necessary to help farmers choose their enterprises. Records on the uses to which income is put by farmers is completely absent. There is need for data on the disposition of income of farmers. Earnings from the non-farm sector are important in income classification. No data on non-farm earnings are available. Data on size of farms, acres planted in each crop, numbers and types of livestock kept, amounts of materials used, e.g., seeds, fertilizers, insecticides, etc., number of workers - permanent and seasonal, disposition of products, whether consumed by the farm family, sold or used

in farm operation; changes in inventories, gross and net income are unavailable. But this information is necessary before any planning to help raise the income of farmers can be properly done.

With respect to production data, the only information available at present have been collected from experimental farms. Except for the 1963 Census data which are yet to be released, there are no records on production costs of crops like maize, yams, banana, plantain, etc. Neither are there any data on such cash or industrial crops as fibre, oil palm, rubber, etc. Information regarding capital inputs, labour, employment and underemployment is unavailable.

With respect to capital and credit, no information is available on forms and amounts of capital used in agriculture, their source, repayment terms or interest rates. There is lack of information on how much capital is needed per farm worker to engage in any of the farming operations, e.g., cocoa farm, tobacco farm, rubber farm, oil palm farm, etc. Information covering the various needs of farmers for capital investment needed to: a) Acquire land; b) permanent improvements; c) machinery and equipment; d) livestock and circulating capital -- are not available.

There is a close correlation between farm income and prices

that farm products fetch, and prices paid for equipment, supplies, labour and interest. Data on prices at the farm level are very inadequate. There is lack of data on the margin between farm prices and market prices. Neither is there any information on transport costs or charges; inadequate records on storage facilities and food that rots in storage. Prices of livestock inputs like calves, piglets, bulls, etc., are not available.

Data on livestock-carrying capacity of grazing land; an annual series on acreage irrigated, water used for irrigation, water storage for agricultural use, on runoff, watersheds; on row spacing; number of plants per acre; fertilizer applications, (farm manure), are lacking completely.

Gaps in collection methodology can be blamed on limited funds, (figures are discussed later), illiteracy, accessibility and supervision. Because the respondents are illiterate, large staff numbers are required to do the same amount of work that fewer might have done in a society that is generally educated. Use of such cost-saving devices as the mail questionnaire is impossible. As remarked previously, the farmers live in the hinterland where they can be reached only by footpaths or on bicycles. All those make supervision difficult and collection very slow. This means that, in order to be reliably informed, more technical staff who do not require regular supervision, are needed, as well as funds to help statistics officers reach effectively into rural areas.

A great deal of costly experimental work will be required to develop effective data collection methods in these highly dynamic but underdeveloped areas. It may involve interdepartmental as well as interdisciplinary co-operation. There is lack of definitions on items for which figures are absent. For example, how do we define a farm, a farm holding, etc?

There is need to study and modify some of the surveying and sampling methods used in a literate society to suit Ghanaian cultures and an illiterate farming community. For example, is it possible to measure size of farm before land measurement is standardized? Most farmers do not know their farm sizes, and it is necessary to have some yardstick by which to measure land. Another problem is the need to define a farm operator or landlord.

The quality of the data presently available is lowered by lack of proper tabulations and classifications. For example, it may be necessary to have data reported separately for small-size farmers, large-scale farmers, and commercial farmers. Methods of recording, and the units in which items are recorded also lack proper definition.

CHAPTER IV
METHODS OF COLLECTION OF DATA
THAT WILL SUIT PREVAILING CONDITIONS

BACKGROUND:

Problems such as low productivity in agriculture; low income; scarcity of capital in agriculture; lack of technical know-how or illiteracy; land tenure; the mode of cultivation or agricultural cultural practices were enumerated as some of the problems the government of Ghana will have to grapple within her endeavour to develop the country generally and agriculture in particular. The core of the developmental changes envisaged is a structural change in the way agriculture is practised now. That is a change from subsistence agriculture to that of market agriculture or a combination of the two. Associated with this change are several problems some of which were mentioned above, but the basic and the most important obstacle to overcome is ensuring the farming population who are entrenched in their traditional, customary and tested methods of farming that the change would not be at the expense of their daily bread, and that failures and the loss of their regular flow of income would be guaranteed against, while they are going through this transformation.

The change of structure involves, to some extent, changes in the implements that they might have been using over a long time, e.g., replacing the cutlass and axe by the tractor; it may involve the use of improved seeds, fertilizers and insecticides. It may require the expansion of his present land holding; the need for extra hands at particular periods of the cropping season, improvements like drainage, irrigation, soil conservation, road building and a host of other activities discussed previously. All these involve capital expenditure in one way or the other. Hence the availability of capital plays an important role in the "new" agricultural development which Ghanaians envisage. In this chapter methods of collection of data that will bring out the desired data are discussed.

Before discussing the characteristics of agricultural capital and suggested ways by which its level and operations can be assessed, it would be appropriate ~~to~~ to define what we mean by capital in agriculture.

DEFINITION OF CAPITAL:

Capital has been variously defined as the aggregation of fixed assets, made or cultivated by man, used for the production of goods and services. These assets mediate between human labour and its environment determining the level of human activities in a given environment. This definition tends to confine capital to physical items like equipment, buildings, plantations, etc. Recently the concept of human

capital has been developed along with the phenomenon of economic growth i.e. the accumulation of skills, abilities and knowledge in society. Like the physical assets it mediates between man and his environment. Heady in his book "Economics of Agricultural Production and Resource Use, defines capital broadly to include all resources but labour and to include land."¹ He comments on voids that exist because human capital is often excluded in estimations of capital investments.

Types of Agricultural Capital:

Capital as used by farmers can be classified in to five main groups depending on the needs of farmers for funds:

- a) Investments needed to acquire land: (Even though land is not acquired in the orthodox sense — Ghana has evolved a new land tenure system that allows sales and purchases of land especially in the Southern part of Ghana and Ashanti.)
- b) Permanent improvements: These include buildings, often to house livestock; fences; plantations of cocoa, rubber, oilplam, etc;
- c) Machinery and Equipment, e.g., motoblows, tractors, tillage and harvesting implements, etc.
- d) Livestock: Work animals, breeding stock and fattening stock (pigs, cattle, sheep, goats, etc.)

¹ Heady E. O., Economics of Agricultural Production and Resource Use, (Prentice Hall Inc. Englewood Cliff N. J. 1965) p. 25.

- e) Circulating capital: Necessary for day to day operations but consumed the first time it is used. This could be subdivided into materials and liquid funds. Included in the materials are seeds, fertilizers, insecticides, feeds and the like. Employment of seasonal labour or the purchase of any material or service during the operating period is then done from liquid funds.

To help satisfy some or all of the above needs the government has to examine the entire capital structure of agriculture in order to determine total investment and the relative sizes of various sectors. Information of this type is lacking in Ghana. There is an acute shortage of information on the five types of assets enumerated above. But before any viable and useful credit system is instituted, information on volume of credit available in the economy is necessary. Such questions as what is the ratio of available volume of credit to the total value of farm capital; how much agricultural capital is used per acre for the country as a whole, for each different type of farming; how much capital is required per farm worker; the relationship between amount of capital and the earnings per acre or per farmer or per thousand new cedis² of investment.

²One New Cedis = \$1.02 Canadian Dollars

Information on other needs for capital is required in order to plan:

- a) The economic infrastructure in agricultural regions and districts or rural areas. Included in this are agricultural schools, experiment stations, irrigation works, access roads in new areas and farm-to-market roads in older areas, settlement schemes, development of co-operative farm enterprises, provision of water supplies for livestock, and the like.
- b) Investments in industries or commercial activities that have agriculture as its basis. Sugar mills, rice mills and vegetable oil mills are examples of such undertakings.

Capital By Type of Farming:

Capital requirements could be examined from another angle as well. That is by type of farming operations. There are four main categories as indicated previously in Chapter Two.

- a) Subsistence farmer Credit
- b) Commercial Farmer Credit
- c) Emergent Farmer Credit, (d) the Co-operative or Group Farmer Credit or Capital needs.

Up to date information about the capital needs of these categories is necessary if any government progress to help meet farm credit needs is to be effective and successful.

Data on the type of capital, the time that it is usually required by the various groups, sources and prevailing rates are some of the important data prerequisite to any government program to help improve the capital status of farmers.

To make the information on capital complete, some knowledge of agricultural credit as affected by inflation is necessary. Ghana has been experiencing some inflation during the last decade as shown in Chapter Two. This has some effect on the supply of funds for agricultural loans, especially with respect to private sources of capital. The availability of funds for agricultural loans from private sources is dependent strongly on alternative returns on capital from other enterprises. Inflation not only dries up the sources of credit for agriculture, it destroys confidence in the economic structure. Examples of governments lending funds at five to seven per cent to some farmers while the rate of inflation is 20 to 24 per cent and others are seeking in vain for capital from private sources for corresponding rates of gross interest are rife in Ghana. For example, in Ghana in 1965-66, while the Investment Bank, Bank of Ghana, The Ghana Commercial Bank, and the Agricultural and Co-operative Bank were making loans at the rate of 5-7³ per cent, private lenders were exacting rates of interest ranging from 25-50 per cent. There are instances where farmers have had to pay 100 per cent interest

³Official bank rate of the Bank of Ghana.

on loans.

So much about capital needs and their characteristics. How does any government gather the necessary information or data that will help it solve some of the problems that pertain to agricultural capital.

Methods for collecting necessary data:

Information on the capital needs of agriculture in Ghana can be gathered by the following means:

- a) Complete Enumeration Census
- b) Sample Census
- c) Sample Survey or Area Surveys
- d) Research Studies on some aspects of agriculture -- capital requirement in livestock raising, establishment of plantations, supply and demand of capital for agricultural purposes, etc.

Complete Enumeration Census:

The complete Enumeration Census is the ideal method of collection of data but presupposes the existence of certain minimum facilities, such as funds, professional personnel for planning the census and the supervision of field operations, qualified enumerators, mapping material, machine tabulation equipment together with an appreciable level of literacy on the part of the farming population which are lacking in Ghana. Hence the Sample Census is to be adopted in Ghana.

Sample Census Method:

The Sample Census is the procedure used to obtain information from a sample of units belonging to the population to be enumerated. Essentially they are sample surveys.

The only difference is definitional, that is, "only those sample surveys which are intended to give broad information on a large number of items similar to census programs will be referred to as a sample census and all other surveys on specialised fields such as areas, yields, livestock, farmer income, etc., will be called Sample Surveys."⁴ In Ghana the type of Sample Census that would be most appropriate is the Multiple Sample Census. It consists of dividing the process of enumeration into stages. The primary units may be selected on a regional basis using such units as towns, villages, cottages or holdings as may be appropriate. The primary units enumeration may be called the main sample census. It would enumerate such items as:

- a) general data on conditions of tenure
- b) the lands of the holding and data on land use
- c) livestock raising
- d) underground drainage, agricultural machinery
- e) fishing, handicraft, etc.

The primary units are then sampled again this time for certain specialized activities such as cocoa production, maize

⁴ Zarkovich S. S., Sampling Methods and Censuses,
(FAO publication 1965) p. 1

production, pig keeping, fishing. The experience and knowledge of the agricultural field officers would be used in full here. The stages of the survey could be spread so that a few qualified personnel are able to conduct all the survey operations. It is less costly than the Complete Enumeration Census and requires fewer qualified personnel; field operations are comparatively small, hence supervisory works, materials and machinery requirements are less. But it does not allow for sufficiently precise estimates for small units. As a national historical document, it does not give a complete picture of conditions that prevailed at a particular time in history which a Complete Enumeration Census does. Barring this shortcoming it is the best alternative in situations where acceptable accuracy of data cannot be obtained unless special precautionary measurements are taken before accurate data on areas, yields, animal production, water requirements, etc., are sought. To do a Complete Enumeration Census under these conditions will lead to difficulties of time, cost and equipment. Again, a Sample Census can be made flexible enough to suit diverse circumstances. For instance, it could be split into several surveys which could be taken at different periods of the year and devoted to various parts of the programs. This feature lends itself readily to the measurement of acres and yields in mixed cropping farms which exist in Ghana. It makes it possible to study different aspects of capital requirements of the several phases of crop production and

livestock raising. It serves the needs or requirements of planning which delve into the economic structure or change basic aspects of social and economic life, like attempts to introduce new agricultural practises or crops, to improve technology, projects for intensive use of fertilizers, irrigation and drainage works and construction of roads. Here the objective is not so much to obtain detailed data on individuals as to obtain averages or totals for relatively large areas. By splitting the census into several surveys, the quality of data can be improved. For example, in agriculture, where farmers produce for their own consumption and illiterate or semi-literate farmers are unaware of standardized units of measurement required for a statistically adequate complete enumeration census, a formal census procedure becomes a practical impossibility. An additional advantage from the use of a Sample Census is the ability to manipulate the method to suit the precision required or the magnitude of the sampling errors. This characteristic makes it possible to plan the census to fit the available staff and the funds. Illustration of the relationship between the size of sample and the precision required is as given in Table Six.

A small error of the order of one per cent could be secured for all the characteristics shown in the table from a sample of 50,000 holdings, or a 2 per cent sample would be needed.

TABLE VI
ILLUSTRATION OF THE RELATIONSHIP BETWEEN
THE SIZE OF

THE SAMPLE AND PRECISION DESIRED (a)

Characteristics	Average per holding	Variations	No. of holding to be enumerated for desired (precision per cent)				
			10	5	3	2	1
Horses	0.3618	0.5679	434	1735	4821	10846	43385
Cattle	1.6569	3.3907	124	494	1372	3088	12351
Sheep	3.2268	51.3406	493	1972	5479	12327	49308
Pigs	1.0520	2.8503	258	1207	2851	6416	25663

Source: 1951 Livestock, Belgrade Federal Statistics Office
1953, Statistical Bulletin No. 15
Culled from: Sampling Methods and Census by S. S. Zarkorich
FAO publication, p. 29.

(a) The size of the sample required is calculated for simplicity on the basis of the theory of simple random sampling. The number of holdings, in more realistic design, would be higher.

The Sample Census would give information about existing capital in the agricultural industry, types of capital used, sources, etc. The data thus collected would form the benchmarks of the Sample or Area Surveys.

Sample Surveys

Sample Surveys are based on the same principles as the

Sample Census except that the surveys^{are} comparatively smaller and more detailed. The census, by providing the frame permits considerable saving in the budget allotted for the purpose. Besides, the census data supplement the information gathered through the survey, thus increasing the efficiency of the surveys. The Sample Surveys would bring out information on such items as:

a) Relised Gross Farm Income---

- 1) Cash Income from sale of farm products;
- 2) Income in kind imputed at farm prices for all products consumed in farm houses and rental value of farm homes;
- 3) Other payments.

b) Operating Expenses and Depreciation Charges

c) Total Gross Farm Income, etc.

Area Surveys:

Area Surveys could be used to bring out more details on the composition of the farming communities, types of enterprises and levels of their operations. These area surveys, as well as the sample surveys, would help to get detailed information on the credit needs of the various groups of farmers and seasons for which they require operating capital.

Sample surveys have the advantage of being easy to handle; requiring use of few qualified personnel; being small in size it is easy to analyse the data. Because qualified personnel are employed, the margin of error is small; hence, the data

thus collected tends to be more accurate.

The Mail Questionnaire Method:

The Mail Questionnaire Method of collection of data would have been very appropriate for most of the data needed. This method consists of compiling a respondents list based on the main census. Questionnaires are mailed to people on such a list; they fill them and return them to the Bureau of Statistics or the Division of Economics and Statistics as the case may be. This method of enumeration does not involve a large capital outlay. The printing of questions and the postage for the questionnaires are the only expenses involved. A handful of technical staff are able to handle wide areas and it allows for centralization of the work of the statistical body. Costs of staff transportation and accommodation are minimal. Indeed, it would have been an ideal way of circumventing the problem of inaccessibility of farmers in Ghana. But this device is successful only where the level of education of the society, and particularly the respondents, is high and some confidence has been won in the purpose of the data by the respondents. A great deal of reliance is placed on the integrity of the respondents. But unfortunately, the prerequisite conditions do not obtain in Ghana now. It would definitely be the ideal method when literacy conditions improve. Indeed, advanced countries like Canada and United States use it a great deal to

supplement the results of objective surveys.

Special Studies:

The above two methods of collection of data, coupled with special research studies on specific areas like the capital needs of establishing rubber plantations, broiler business or rice irrigation schemes will provide needed data on capital. This special research would include studies of the factors which determine the supply of credit for agriculture, especially in those areas where the government wants to promote rapid progress. On the demand side, studies would answer questions like "How much capital is borrowed for land purchases and for permanent improvements, for machines and for current operations?"

This side of the collection of data has been assigned to the technical staff because of the greater need of knowledge of economics, statistics and farm management that are required in such studies. Moreover, facilities for carrying out such activities are presently available only on experimental stations and at the Universities. It would not entail any costly outlay because staff which are presently in the fields advising farmers could be used without any additional hands except perhaps expenditures towards transportation and accommodation. This would mean a slight increase in the work labour of present field personnel. In Ghana, University education

is completely free hence the students could be obliged to do something in return for their scholarships. At the same time it will improve their understanding of some of the problems of agriculture. Some of the studies could be assigned as thesis projects for postgraduate work in Agriculture, Economics, Town Planning, Geography, and other related disciplines. Indeed all that would be required would be transportation, accommodation and some pocket money. Professors who would supervise these studies would benefit by them because it would add to their teaching materials.

In conclusion, governments would profit a great deal from complete data on amounts invested in agriculture. Type of investments, such as that in land, buildings, machinery, soil conservation and irrigation and their sources are important and necessary information on the capital structure for the purposes for which capital is used in any capital program. Existing knowledge on agricultural capital in Ghana is meagre or wholly lacking. Most of the data available are based on conjecture rather than on well-considered studies as suggested above.

Information exists on amounts of credit given to farmers by government agencies and commercial banks. But there are no data on amounts furnished by private lenders such as buyers, storekeepers, friends or relatives, exporters of agriculture products, etc. There is need for a study of total

farm income and the uses to which farm credit is put and the interest rates charged for loans. Information on credit used by a sample of farmers grouped by size of farms, type of farms, and tenure is necessary. All this knowledge could be gained if a deliberate effort is made on the part of the government to finance schemes of collection involving Sample Census, Sample Surveys and Research Studies as indicated above.

The methods and systems of collection of data discussed above could be used in gathering information on all aspects of agriculture, particularly on the problems enumerated in Chapter Two.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

Even though the economic systems of the world have been divided generally into two -- the planned and the unplanned economics, the communist and socialist countries falling under the planned economics and the capitalist countries like United States of America, Canada, Britian and others falling under the unplanned section, in actuality almost every economy is planned or given some direction of growth by the ruling government. Differences occur only in the degree of planning and the methods that the various governments use to achieve the objectives of their plans. The communistic and socialistic economies or societies adopt direct methods culminating in the use of force to achieve their economic as well as political goals whereas the capitalist societies use as their tools persuasion, competition and appeal to the moral conscience of the people.

In between these major groups are societies that are neither communistic nor capitalist. Among these middle group could be classed the developing countries which Ghana belongs which are yet to attain the level of economic development

reached by countries like United States of America, Britian, Canada, France, Japan, Union of Soviet Socialist Republic and some European countries. Being a latecomer in organized government as well as western civilisation which Ghana aspires to emulate, she has been compelled somehow to plan her economic development rigidly to take advantage of the experience of the above mentioned countries -- adapting those conditions and practices that will suit her. Barring petty jealousies and the determination on the part of some advanced countries (indirectly) to keep Ghana underdeveloped so as to ensure a constant market for some of their manufactured goods and as a source of cheap raw materials for some of their factories, the rate of "copying" of Ghana is rapid because she tend to learn from the mistakes of the developed countries.

Agriculture, the main springboard of all economic development in Ghana is characterized by subsistence production. In fact, it is a way of life of the people rather than a business. Being a way of life of the people, any attempt to change it to suit the demands of a commercial enterprise is fraught with several problems. The resistance and suspicion with which the people approach new methods that are introduced in an attempt at changing the outlook of agriculture are some of the most difficult hurdles to overcome. Once these problems are partially or wholly overcome and the people are

receptive of change, there are many economic, political and social problems to be remedied if the change is to be successful.

Some of these problems have been discussed in more details under the Chapter on Problems of Agricultural Development in Ghana. But to recapitulate a little, mention should be made of lack of education among the farmers in particular and the whole population of Ghana in general. Literacy levels are very low compared with developed countries. In Ghana, the level of education is estimated at 25 per cent of the population. Most or almost all the educated are employed in white-collar jobs in the cities and towns, leaving the illiterate to till the land. Hence, records on farming activities as kept by western and other farmers are completely absent. Whatever records are available are those that agricultural officers have been able to compile for the submission of their monthly, quarterly and annual reports. In addition to these, there has been only one agricultural census conducted in 1963 as an attempt to get to know the Agriculture of Ghana which has been described by some statisticians as well as some economists as unknown. But the sample size of 0.17 per cent of the farming population is too small to lay any great store by its findings. Again it should be realised that the respondents were illiterate and relied only on their memories

¹Some Western farmers keep records of their acreages, yields, seed rates, amounts of insecticides and fertilizers used, dates of farrowing, hatching dates, etc.

for most of the data that they furnished the interviewer. Despite this great drawback on the quality of the data collected, the data have not been analyzed completely, due to lack of equipment for the purpose. One has serious doubts whether the officers will be able to analyse the data before the next agricultural census which falls in 1973.

As a result of the above there is no official reliable data on production acreages, yields, size of holdings and farms, agricultural population, employment, unemployment and under-employment in agriculture. The actual land under cultivation, uncultivated land, land that needs improvement, size of land holdings, number of tenants and farm operators, rents on land, distribution of the various crops on the land as well as other vital data such as rainfall, temperatures, runoff, rates, etc., are lacking or scantily available. It is generally accepted that there is scarcity of capital for agricultural purposes. But nothing is known about just what capital is needed, where it is most needed, source of capital to the farmers and information on the rate of interest paid by farmers, purposes for which capital is needed, when the capital is wanted, terms of payment, etc. Similarly, there is lack of information on the income of farmers as well as non-farm operators; the extent of indebtedness of farmers or people

in the rural areas; data on marketing operations like transportation costs, profit margins, farm prices, retail and wholesale prices, movement of agricultural commodities, storage facilities are either non-available or are scantily available.

The dangers of planning the progress or growth of an enterprise, the basic characteristics^{of} which are not known to the planners are obvious. Several examples of agricultural enterprises that have failed because it was ill-considered can be cited. The Gonja Development Plan in the Northern part of Ghana failed because not enough was known about vital statistics of the project. The government set up groundnut mills at various points of the country ostensibly to be fed by local farmers. These have become white elephants because farmers are not prepared to produce at the price the factory is offering. There are no production cost figures on groundnut and the State Marketing Board which purchases groundnuts for the factory arrived at their prices on the basis of what is being obtained in Nigeria, a sister country which produce groundnut on a higher yield level than Ghana.² A state meat processing company was formed, hoping to process meat. But it ran into operational problems after about eighteen months of operation because there was no livestock to supply the processing plant. A similar project was initiated by the

2

Personal knowledge of the author of this study.

government to process fruits and vegetables. The factory, for whatever reason was sited about 450 miles from the main vegetable production area. If Ghana has had a very reliable and good transport system the distance might have been ignored. But in this case the opposite situation prevails and the factory is not operating efficiently. Indeed, its products are dearer than those imported from outside Ghana. If there has been any data on production and costs of transportation and on the keeping qualities of the vegetables, the story might have been different. Two sugar factories were built by the government before it was realised that the anticipated raw sugarcane to supply the factories could not be obtained. There was practically no data on sugarcane production and the Food and Agricultural Organization expert who planned the factories used data from Cuba and other South American countries for his estimates.³ Last, but not least, mention should be made of the State Farms Corporation which was instituted to boost the Agriculture of Ghana by producing food and raw materials for the agricultural factories the government had planned to build. Within two years of its inception, the corporation had established 105⁴ farms to produce food, fibre, rubber and palm oil.

³ Estimates of the raw sugarcane requirements for the factory.

⁴ Writer acted as the Marketing Officer of this corporation before he left for present institution. No official document to quote from apart from personal knowledge of writer.

Most of these farms were ^{not} sited according to agricultural practices. Frankly, there was no information apart from informed guesses of agricultural personnel.

There are several other instances of projects that were planned without adequate information in non-agricultural industries, but the above should suffice to show the inherent problems and the high probability of failure of the projects which are set up without the benefit of relevant basic data on the materials and resources needed for the projects. Some of these changes could have been brought about through market forces without control planning. But, for the fast growth envisaged by the leaders of Ghana, there is need for planning based on understanding of the economy as it operates at present. This is a prerequisite for any planning for the future.

Whereas the present planners appear to appreciate this point, the present system and mode of data collection seem inadequate to help the planners understand, make decisions and plan the future growth of the economy.

Recommendations:

To help improve the situation these are some suggestions which would lead towards better planning and save the huge amounts of money that go down the drain as a result of planning without facts; help to gather basic data needed to make decision-

making easier and more certain than it is at the moment; help new entrants into farming in their choice of which branch of agriculture to follow; and help commercial organizations to decide which marketing operations to undertake. For example, is it worthwhile to install a fertilizer plant or to build a factory that uses agricultural products as raw materials? It will help agricultural extension officers to plan their education programs in farm management and institutions like the Agricultural Development Bank to determine which enterprises are to be financed, terms of loans and the rates of payment.

1. To help improve the amount and quality of data which is being collected, it is necessary to extend coverage to more farmers than those for which administrative figures are compiled at present. In this connection, as indicated in the previous chapter, the Sample Census which was done in 1963 is appropriate but there is need to increase the sample size from 0.17 per cent to about five or 10 per cent of the farming population.

2. The best sampling method that will suit the situation is that of Multiple Sampling incorporating cluster sampling methods initially, followed by stratified sampling of the primary units. This method, as discussed in the chapter on Methods of Collection of Data that would suit the needs and conditions of Ghana, would allow the few technical officers to cover the enumeration, making whatever measurements the questionnaire would demand

and at the same time reducing costs. The experience of agricultural personnel would be very useful in the cluster sampling because they have a general idea about areas in which the main crops are grown, the farmers' activities, size of holdings and mode of operations. The program would include general data on holdings, questions on land use, poultry and livestock raising, labour, agricultural machinery, income, etc.

3. From this general sample a stratified sample of farms would be taken to obtain information that would enlarge the scope of the basic census program. This would be followed by special study programs on specific areas of agricultural production. For example, the cattle or poultry industry could be studied more closely to develop such data as man-hours, cost of egg, chick, or calf production, etc. To check biases in the figures, selected farmers could be visited over a period of twelve months and the summaries of their activities drawn. The same method could be used on crop production to bring out figures like area harvested, total yield for each crop, quantities sold and quantities used for home consumption.

4. This would help alleviate some of the problems associated with collecting data from an illiterate population as most of the data would be collected by qualified personnel or people who are specifically trained for the purpose. Indeed, this was the practice adopted by Finland in its 1950 Census of Agriculture.⁴ This, coupled with the administrative records

⁴ Zarkovich, S. S., Sampling Methods and Censuses, (F.A.O. publication, 1965), p. 68.

which would provide almost all of the basic information on the agriculture of Ghana.

5. The figures that are available from administrative sources could be made more reliable by

- a) instilling into the minds of officers who compile them the need for greater honesty on their part; and
- b) assigning record officers to each agricultural enterprise.

The work of these officers would be solely to compile scientific data like man-hours, amount of fertilizer used, dates of planting, spacing, idle hours, etc. They would separate the politician from the statistical aspects in order to get an objective picture of operations that are carried out on agricultural stations.

6. In this task, University and Higher School students could be used to complement the agricultural and statistical personnel. The census of agriculture could be specifically planned to coincide with the school vacation. As all students are government-supported scholars, that would not be asking too much from them. What might be required in the form of extra costs would be transportation, accommodation and some pocket money. Apart from the direct benefits to the economy

of having the data collected, there is an indirect one of promoting an aptitude for analytical studies in the students. Postgraduate students as well as teachers of the universities could be given grants to conduct the special studies mentioned above. This, together with whatever objective surveys the statistical and agricultural officers might conduct, would give adequate basic information needed for the planning and operations of agriculture.

In developed countries like the United States of America and Canada the officers who deal directly with the collection of data can be relatively few in number because the farmers are at least educated enough to feed the various statistical agencies with data through the mail questionnaire method of collection. But this is not the case in Ghana with illiterate farmers. In this situation, the need for officers is very great. Hence the few that are available should be organized in such a way as to get the maximum out of them. It is here that the Ministry of Agriculture and Central Bureau of Statistics appear not to be using most effectively the facilities and the personnel that are available to them. For example, the Ministry of Agriculture has ten main Divisions all with the same organizational structure as shown for the Division of Economics and Statistics in Chapter Three. These divisions represent all aspects of agriculture. The Bureau of Statistics has a similar organization covering all

the regions of the country.

7. It could be so arranged as to use these officers together with personnel from other related organizations like the Ghana Academy of Sciences, Cocoa Marketing Board, Food Marketing Board, etc., to collect the basic agricultural data by the methods indicated above. This would not involve any extra costs to the government, and better and more reliable data would be collected, as those people are connected with agriculture in one way or the other. The need for proper organization of the present facilities and personnel and co-operation and co-ordination of the divisions in the collection of data cannot be over-emphasized.

8. The government has to adopt a policy, binding on all heads of agricultural agencies or bodies of having an annual meeting at which methods of collection, areas in which data are lacking, areas of development and improvement, are discussed, and action taken where necessary. For example, something on the lines of what is being done in Canada, the Federal-Provincial Conference on Agricultural Statistics which is held annually, would be very appropriate to help improve both the methods of data collection and the quality of data that are presently collected. Such conferences would help to improve the reliability of data or figures that officers give in their administrative reports, because faulty and blownup figures are likely to be challenged here. Such exposures would be sufficient deterrent for officers who are

inclined to give a better picture of their works by inflating their acreages, yields, etc. At these conferences, heads of the various bodies as well as specialists in Statistics and university lecturers would read papers indicating problem areas and suggesting how some of these problems could be tackled.

9. It would be very advisable that the Mass Education program of the Ministry of Social Welfare and Rural Development, initiated some time ago, be carried out properly and special attention given to farmers. Farmers should be taught to read and write in their own dialects so that they could keep records of their activities. Along with this, the necessity of keeping records of all the transactions on the farm should be impressed on the farmers. The classes could be conducted in evenings and on special days when people do not go to their farms. Advantage should be taken of the traditional taboo days in the various regions, districts and villages. The effect of the scheme may not be immediate, but it should definitely improve the data collected. The Ministries of Agriculture and Social Welfare could join forces in this respect. While talking about education of the adult farmers it should be realised that for any marked change to occur in the agriculture of Ghana it would be through the young farmers and those who are now in school, some of whom will be future farmers. They need proper agricultural education calculated to inculcate in them the dignity of farming

as an occupation as well as the art of farming that will make agriculture play its role as the bedrock of economic and social development.

10. Agriculture should be taught in all secondary schools as a credit-earning subject, at least for the next twenty-five years. Statistics should be taught in all agricultural institutions, along with farm management. The above devices would go a long way to help improve the calibre of agricultural personnel as well as promoting analytical aptitudes in both farmers and officers. Once the people who collect the data and the respondents appreciate the importance of the task, better and more reliable figures will be forthcoming.

11. The decennial agricultural census now appears outmoded in a way because the periods between censuses are too long for any information collected through the census to be of any real use to planners, administrators and would-be farmers. It is suggested that a five-yearly census would be advisable. The five-yearly census should be supplemented by annual or biennial censuses. The main five-yearly census should cover basic production and land use items, whereas the annual or biennial one would cover economic and social inquiries.

This system would not only reduce the load of the census, thus rendering it manageable for the technical personnel, but would also increase the accuracy of the enumeration and speed up tabulation and analysis of the data collected. The data

collected would also be representative of present trends and thus help decision-making and planning by those connected with agriculture. Because the load is less the present government officers plus a few assistants could be used for the purpose thus reducing costs. Even if the costs were the same, it would still be beneficial because the data thus collected would be up to date and representative of current conditions.

12. Ghana receives technical aid from friendly countries like United States of America, Canada, Britain, West Germany and some Asian and Eastern countries. Most of these aids are aimed at improving the agriculture of the country. Besides there are institutions like the F.A.O., I.M.F., U.S.D.A., World Bank, Overseas Development office of Britain, etc., who, in one way or the other, give aids and technical advice to the development of Ghana. If the Ghana Government could persuade these countries and institutions to come together to sponsor a project aimed at compiling an inventory of the information basic to the planning of Agricultural Development in Ghana, as was done for Latin American countries by the Inter-American Committee for Agricultural Development — CIDA, it would be of great help. Such a study would appraise the present methods of collection of data, suggest improvements where necessary and indicate areas that lack data. These countries and agencies are rich in specialists in the field of statistics. Again, they have had experience with

other developing countries and the stages they themselves have gone through in data collection. This sort of assistance would be more beneficial to the country rather than the usual dumping disguised in the form of food gifts. At least, it would indicate to these benefactors of the country those areas in which they can be of real help.

13. The last and perhaps the most important suggestion is that it be impressed upon government the very important role statistics should play in the planning of the development of the country. Whatever data are collected depend to a large extent on the funds available for the purpose. The government should make available sufficient funds to both the Ministry of Agriculture and the Bureau of Statistics to carry out studies on various aspects of agriculture and the economy as a whole. Something on the lines of the rural surveys carried out in the middle fifties should be vigorously encouraged. Funds should be made available for such studies as would help the government formulate its trade and tax policies. For example, there should be studies on the demand and supply elasticities of both agricultural and non-agricultural commodities; demand and supply elasticities of agricultural capital; and the cost of extending credit to agricultural producer and suppliers. In this connection, university lecturers as well as postgraduate students of the three universities could be used to great advantage. The Ghana Academy of Sciences which is staffed with specialists

in almost all sectors of the economy should be used in this respect too. All researches that purport to recommend improvements should start with an understanding of what already prevails in the locality.

14. The above recommendations do not claim to cover all the necessary aspects of data collection that will make the present level of information complete. There are several areas which this review does not cover that need further studies. For example studies aimed at evolving methods and systems of collection of data that will adequately suit the local conditions. While present methods of collection in advanced countries are esteemed conditions are such that any wholesale transfer of those methods into Ghana are bound to run into difficulties because the social backgrounds are different. This makes any wholesale transfer of methods impracticable if not impossible. Definitions and concepts should be modified to suit local conditions.

It has often been suggested and accepted by economists, administrators and politicians that co-operative effort is the answer to most of the developmental problems of agriculture. It has been suggested that the fragmentation of holdings, small income of farmers, the credit problems of farmers and people in agricultural business as well as the capital requirements of farmers could be solved through co-operative effort -- i.e. formation of co-operative societies. Even though there are co-operative societies in Ghana

today, the principles and practices of co-operation are absent. Studies into ownership practices, capital, etc., are needed as a basis of true family co-operative societies.

It might be worthwhile if some priorities of data collected could be established. Should data be collected on the whole economy or only sections of it. These priorities should be determined in relation to available funds. Further studies in this area will help reduce the cost of collection by dropping the compilation of some data which are ^{not} of immediate use. Further studies into inter-discipline and inter-departmental co-operation and co-ordination are necessary to make the best use of the present qualified personnel.

APPENDIX I *

ENUMERATOR'S WEEKLY REPORT

Enumerator's Name.....

Week of Report from.....to.....

Region.....

Date (1)	Place (PU, Station, Village.) (2)	Activity (Work done, travel, leave, sickness, absenteeism etc.) (3)	Work finished and submitted (4)	R E M A R K S O N Administrative & Organization problems only (5)

7/GI I/E Enumerator Supervisor Date Date

*Appendices 1 - 4 were culled from the Ghana Ministry of Agriculture Division of Economics & Statistics: Manual for Field Work 1968.

SUPERVISOR'S WEEKLY REPORT

Week of Report from.....to.....

Record of own Statistics		Summary of Enumerator's Work Done		Our Remarks & Summary of Enumerator's Remarks on doubts, difficulties, co-operations, progress, disciplinary administrative & organizational problems with comments of the Regional Officer
Date (PU, Station, village)	Activity (Work done, travel, leave, sickness, absenteeism, etc.)	Enumerator's Name	Work Received	
(1)	(2)	(4)	(5)	(6)
<div style="display: flex; justify-content: space-between;"> <div>7/GI/2/E</div> <div>Supervisor</div> <div>Date</div> <div>Regional Officer</div> <div>Date</div> </div>				

APPENDIX III

MONTHLY REGIONAL REPORTPart 1. General Agricultural StatisticsReview of Topics

A. Obligatory Topics: are the major headlines and some data on weather and food crop farming:

1. Weather
General report

Table:

Station	Rainfall inches	Wet Days number

2. Food Crop Farming
Activities of farmers

3. Administration

4. General Agricultural Statistics

B. Optional Topics

2. Food crop farming
Crop pests and diseases
Droughts, floods etc.

3. Administration

Finance

Estimates
Expenditure
Salaries and wages
Travelling claims (T & T)
Loans for vehicles

Financial Encumbrance
Payout
Vouchers
Imprest
Financial Returns
Local Purchase Orders

APPENDIX III ContinuedPersonnel Matters

Staff position	Personal files
Staff strength by grades	Identity cards
Office staff	
Field staff	Entrance examination
Enumerators	Training
Supervisors	Promotion
Casual labourers	Conduct
	Disciplinary action
	Rewards

Transport/Travelling

Departmental vehicles	Private vehicles	Local Transport
Maintenance	Cars	
Repair	Motorcycles	Itineraries
Fuel	Bicycles	
		Accidents

Supply, stock inventory

Furniture
Office Equipment
Stationery

Office accommodationOffice management

Office regulation
Filing

4. General Agricultural Statistics

<u>Operation</u>	<u>Questionnaire</u>	<u>Unit</u>
Publicity	--	--
Listing	List of Holdings	PU
Interrogation Peasant Farmers	Holding Q.	Holding
Interrogation Peasant Farmers	Farm Inventory	Holding
Field Measurement	Field Q	Farm/Field
Yield Studies	Yield Plot Selector	PU
Yield Studies	Yield Q	Yield Plot

APPENDIX IV

REPORTSReports

Enumerator's Weekly Report
 Supervisor's Weekly Report
 Monthly Regional Report
 Clearance Report
 Termination Report

Subdivisions

Agricultural Districts
 Supervisors Districts
 Enumeration Districts
 PUs

Supply, Request, Demand, Stock, Shortages

Survey Field Equipment
 Personal Field Equipment
 Forms, questionnaires, instructions, manuals
 Frame material, working tables, sheet maps etc.
 Publications

Timing

Time table
 Work done (cumulative summary up-to-date)
 Progress (work done per the last period)
 Work outstanding

Training

Seminars
 Initial Training Course
 Regional Training Course
 Internal Training Course
 Examinations

General Problems (Administrative problems, Administration)

Co-operation of farmers
 Co-operation of elders, chiefs, other agencies
 Obstacles

Remoteness of stations or PUs
 Unaccessibility of stations or PUs by flooded roads, heavy rains, broken down bridges, etc.

APPENDIX IV ContinuedSuggestions

Comments, Critics
Recommendations
Future prospects.

5. Other Matters

Special and Ad hoc surveys

6. Appendices.

Staff List
Postings (Field Staff)
Questionnaires submitted

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