NIGERIAN AGRICULTURE ON THE RUN: REFUSES TO MOVE

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The Vice-Chancellor,
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Other Heads of Departments,
Fellow Colleagues in the Teaching and Non Teaching sectors of the University,
My Lords Spiritual and Temporal,
Friends of the University and special Guests,
Eminent Professional Colleagues,
Distinguished Ladies and Gentlemen,
Gentlemen of the Press,
Great UNAABITES

I *INTRODUCTION*

When I was a child, I behaved like a child. When I was younger, I behaved youthfully. The young is growing. During the process of growth, I learnt that Agriculture is the art of farming. It is also the science of carrying out those economic activities that are perhaps the most common, the most desired, the oldest and yet the most difficult to manage. It is perhaps the greatest single invention that made it possible for families to cluster in one area and live in settled communities. It ranges from hunting, planting, and rearing of animals (livestock, fish and games), forestry, processing and storage of the products to the marketing of output.

Almost everybody does and practises agriculture but many do it the wrong way. Most nations have an abundant level of natural resources to make agriculture moving but only a few have the capacity and the where withal to do so. Nearly all the countries of the south have good or potentially good environment to actualise the ascribed roles of agriculture to the nation However, the application of effective management approaches to the solution of social, economic and technical problems is the most important single factor that differentiates the developed countries from the developing nations and countries in transition to market economies.

Today, we have records that agriculture is practised in various ways throughout the world ranging from a replica of the activities of the pre-historic man, peasant farming, small-scale farming and medium scale to large-scale farming. Other forms include sole cropping, mixed farming, animal rearing or livestock keeping and fishing. Various types of production or ownership are, individual, family or household farms, contract farms, tenant farms, co-operative farms, group farm, plantation farms, corporate farms and state farms, among others. The various types, ways and forms of agriculture have their different levels of productivity, efficiencies or effectiveness as governed by some social and economic factors inherent in them and in their areas of operation.

These social and economic factors may vary in magnitude and dimension from one continent to another, one country to another, one region (state) to another and at times from one community to another. The edaphic, biotic and a-biotic elements of each area influence the level of impact on agriculture of the social and economic variables prevalent in each area.

Furthermore, the social and economic variables, in turn, influence the levels of technological development, exposure of farmers, priorities of governments, exports, imports and the intertwining relationship between agriculture and other sectors, e.t.c. Consequently, certain countries have been identified as self-sufficient in agricultural production whereas some scavenge for food aid. Some nations compete with one another in terms of how much food assistance they can dump on, or to, one country and the other. Some nations have over 70% of their population in agriculture and yet could not meet their agricultural needs. Mr Vice-Chancellor, they eat to live. Only 3 or maximum of 10% of the populace of certain nations are in agriculture and yet almost always export and dump agricultural products to some other countries. They live to eat.

What are these social and economic variables? They include the culture of the producers and consumers, traditional and other social institutions, the norms, sanctions, beliefs and taboos of the societies, tastes and preferences, group interactions, and decisions, political motives and goals, bias, favouritism, nepotism, policies, programmes and varying priorities of the government, e.t.c. Others are, the quality and quantity of productive resources including knowledge and the purchasing power of the people, the supply and demand forces, the terms of trade, population and its distribution gender issues, facilities and services, international politics, trade agreements, e.t.c. Even though, this list of variables may not be deterministic of all social

and economic factors, it surely determines not only the immediate and ultimate fate of an economy, but also those of the individuals.

How far have these parameters affected the production levels of agriculture, world-wide and in Nigeria in particular? It should be noted that even though these social and economic variables constitute problems by themselves, they also provide some respite in terms of serving as avenues for improving agricultural production, if well controlled and utilised. Substantial evidence abounds in many countries that their agricultural success arose from these and the opposite is also true for other countries particularly the least developed countries.

While presenting the first Inaugural Lecture of this University, UNAAB, titled "Once Upon a Forest: A Masterpiece of Creation", Professor J. A. Okojie highlighted issues of relevance in Forestry in Nigeria and some other countries. Forestry is a sub-sector of Agriculture. As an Agricultural Economist, it behoves me to cover as much as possible, if not all, most parts of the Agricultural Sector. In this inaugural address therefore, the focus will be on the following:

(i) The All Time Economic and Management Issues
(ii) The Ramifying Problems of the Agricultural Sector
(iii) The Management of Resources in Nigeria
(iv) The Nigerian Agriculture in Perspective
(v) Agricultural Economics and Farm Management in Nigeria with Special reference to UNAAB
(vi) Prescriptive Measures for the Modernisation and Desirable Movement of Agriculture in Nigeria

With this target, I hope to accomplish three of the objectives that are usually required in Inaugural Lecture. The first is to demonstrate in a modest and simple manner, the professorship in me by presenting my contribution to knowledge. The second is to show the relevance of my work to the development of the people and the third is to contribute to the ever on-going debate on how to get agriculture moving in Nigeria and elsewhere. In other words, an Inaugural Lecture is a TOWN and GOWN affair, which sensitises the minds of the people that the IVORY TOWER identifies with the problems of the MASSES and it continually attempts to proffer appropriate solutions to these problems.

It is therefore with a high degree of humility and responsibility that I invite the Vice-Chancellor and this august body to join me in exploring the circumstances why the Nigerian Agriculture is on the run, but "Refuses to Move".

II THE ALL TIME ECONOMIC AND MANAGEMENT ISSUES

Given its ascribed roles, agriculture remains an important sector in any economy. This is more so in a developing country where most of the populace rely on agriculture and agro-related activities for their livelihood. Due to the diverse nature of the problems of the rural areas where agriculture is mainly practised and because they are generally silent, development planners have often advocated deliberate and fast industrialisation as a passport towards national development. Thus gigantic industries were usually proposed and often established in the urban areas and their suburbs. However, experience has shown the shortcomings of over-emphasising industrialisation and it is now increasingly recognised that agricultural progress must have a vital role in the course of economic development.

Consequently, the earlier dilemma of choosing between agricultural development and industrialisation has been proved to be false, "and the concern now is rather with the inter-relationships between industry and agriculture, and the contribution that each can make to the other" (Meier, 1976). This scenario has often been buttressed by either lack of effective demand for such industrial products due to low purchasing power of the people and or lack of adequate raw materials. In each situation, such industrial efforts become unsustainable.

Even within the agricultural setting, the controversy has always been whether to encourage large scale farms, i.e, the Structural Transformation Approach or small scale farms i.e. Improvement and Evolutionary Approach (Okuneye, 1985). What are the opportunity costs involved and in which one does Nigeria have a comparative advantage? Moreover, which extension system is the most economical and effective in reaching the farmers? Should we use the individual contact or the co-operative/group approach? Similarly, alternatives exist as to how inputs can get to the farmers as and when necessary in the most efficient and effective manner. Also, the marketing of agricultural products can either be handled co-operatively or individually with the attendant consequences.

The all time issue that continues to stare policy makers in the face, is how to achieve self-sufficiency in agricultural production, particularly so, in food production, in the most cost-effective manner. A twin objective in most Less Developed Countries (LDCs) is that efforts are simultaneously made to improve the living standards of the farmers. Should the policy makers and technocrats make access to productive inputs within the reach of the masses? How can we eliminate the distortions in the market? Closely related to imperfections in the market is the priority being given to one sector as against the other. How and when can agriculture receive sufficient favours from the power that be?

The last but not the least is the issue of how resources are utilised. Countries use the resources at their disposal in a manner depicting their levels of priority and knowledge. Given the fact that resources are limited in nature, countries and particularly so, individuals must use resources in an efficient and productive manner. In fact, certain wastes are indeed productive resources, which must be recycled to generate optimum profit and create employment opportunities in an environmentally sustainable manner. Mr. Vice-Chancellor, this is the kernel of the inaugural address.

III THE RAMIFYING PROBLEMS OF THE AGRICULTURAL SECTOR

World-wide, the problems of agriculture are multifarious and in some countries daunting. The discussion on the problems confronting agriculture in a community can be made the subject of several books. For a country, therefore, such discussion can fill a whole standard University Library (I do not intend to bore my Vice-Chancellor and this distinguished audience with such details).

However, certain constraints befall many countries to the extent that the ascribed roles of agriculture are not met. To start with, what are the roles that agriculture is expected to play in a nation? These can be summarised as follows:

a) Agriculture is expected to provide food for a growing population of the country. The performance of agriculture in this context is usually measured in terms of its level of self-sufficiency in food production; the volume of available food as reflected in the prices of food items is a major indicator of the performance of the sector.
b) Agriculture is expected to provide raw materials for the growing agro-allied industries in a country. The volume of agricultural raw material

imported is usually a measure of the performance of the sector not withstanding the comparative advantage in doing so.

c) The sector should generate some savings and tax revenue to support its development.

d) The agricultural sector should earn some foreign exchange or save on consumption of foreign exchange through import substitution or both.

e) It is also expected that agriculture should provide a growing market for domestic manufacturers either through employment opportunities or by improving on the purchasing power of the populace directly or indirectly.

In many developing countries, particularly the Sub-Saharan African Nations (SSANs) including Nigeria, all these roles have not been met to date. The reasons often adduced especially in Nigeria include the following:

1 Domination of the Sector by Resource Poor Farmers

Farming activities are dominated in Nigeria and other Sub-Saharan African Countries by resource poor farmers. In Nigeria, these farmers often called peasant farmers represent over 90% of the farming populace and produce as much as 85% of the total agricultural production but below 75% of the marketable output. The resource limitation in form of small farm sizes due to restrictive land tenural arrangements, unskilled labour, low knowledge or exposure, and in particular capital constraints, etc, all combine to suppress to prosecute their potential farming businesses adequately. Resource poor farmers are generally risk averse in nature and hence feel reluctant to use new or external inputs. It should be noted that the dwindling able bodied labour force partly due to rural-urban migration further caused constraints to farm expansion by resource poor farmers because of the need to employ more labour potentials. Even the medium scale farmers lack financial resources to prosecute their farming business.

2 Poor Level of Technology

In many developing countries, most farmers use traditional inputs mainly hand tools in form of cutlasses, hoes, axes, etc. The seeds planted are largely part of those harvested during the previous production season(s). Thus there are not many, changes in productivity of the crops and livestock. The hand tools, which are heavily relied upon by most farmers inevitably, imply dispensation of a lot of energy. When viewed along the fact that most farming activities are carried out in the sun, this poses a big constraint to Nigerian

agriculture. Even those who have adopted and can afford to buy improved inputs can not get them as and when required. Seeds, fertilisers, day-old chicks, fingerlings, livestock feed, are very rare and expensive to come by.

3 Lack of Adequate Extension Services

Before the advent of the Agricultural Development Project (ADP), the farmers/ extension agent ration was about 2,000 to 1 in most part of Nigeria. Even with the ADPs in place, the ratio is still as high as 1,500 to 1 (OGADEP 1994). This places a lot of restrictions on technical changes, which should take place. Even the Village Extension Agents under the World Bank assisted project face some problems of mobility and low co-operation from farmers. All these further account for the low level of adoption of improved inputs and farm practices particularly when the farmers are illiterate and unable to read the new messages.

4 Infrastructural Inadequacies

Good roads, storage facilities, markets and market structures communication facilities etc, are rare to come by in the rural areas of Nigeria. In particular, the distribution network is very poor when viewed along with the bad roads, old and over used vehicles plying our rural areas and evacuating the agricultural produce. Due to lack of effective storage and processing facilities over, 20% of grains and 40% of tubers are spoilt in Nigeria annually. In the case of fruits e.g. tomatoes, okra, and leafy vegetables as much as 50% is lost between the farm and the tables (NSPRI, 1982).

5 Environmental Problems

This group of problems borders on climate, types of land, vegetation, industrial and other economic activities. In many parts of the country, the climate cannot be easily predicted. Suffice to say that rainfall and light intensity influence the level of production of crops (Adetunji, 1994). Often times, drought and flood destroy the farms. The vegetation limits the crops to produce and livestock to rear. For instance, cattle cannot be economically produced in the South. Similarly, tubers and some tree crops, e.g. cocoa, oil palm, rubber, etc cannot also be profitably produced in many parts of the North.

Mr Vice Chancellor Sir, poor lands are numerous in Nigeria just as erosion, oil spillage, air pollution by industries, etc, are not supportive to agricultural

production. Nigeria has its full taste of marginal land and other environmental problems. These limit the quantity and quality of food and fibre produced in Nigeria. Even when efforts are made to increase agricultural production through extensive farming, the pressures on the natural resources without adequate rejuvenating inputs further worsen the land capacity.

6 Government Policies and Programmes

As it is customary in countries where the private sector is not well developed, much depends on the government particularly its policies, programmes and priorities. It is the government that creates the enabling environment for the success of any business particularly agriculture in a developing country. The inability of the Nigerian government to come up with appropriate policies and programmes that can stimulate farmers for increased production is a major constraint to Nigerian agricultural production. In many African countries, especially Nigeria, agricultural policies and programmes are so numerous, so competitive and conflicting with themselves that farmers were and are still confused as to the intent of the government and which of the policies to trust. Arising from this, cost of production has gone up, many farmers have dropped by the way side, hopes have been raised and dashed, rural areas have been opened up and later on closed and exports have expanded and contracted. This oscillating and sometimes retrogressive situation constitutes a bane to increased agricultural production and productivity in Nigeria.

7 Lack of Adequate Research

Many sub-Saharan African nations are faced with pests and diseases in their agricultural endeavours. Many farmers produce some enterprises which are not suitable to their areas, soils have almost "dried" up, knowledge of appropriate enterprise combination is lacking, farmers do not have adequate market information, while government has not been properly advised based on empirical data. Basic and applied agricultural research in Nigeria has been narrow and shallow. For the limited research studies carried out, research and extension linkages have been as poor as extension-farmer linkages.

There are other problems, but the ones mentioned above are perhaps the most common. In other words, four categories of organisation or people contribute to the problems of Nigerian agriculture. These are: (a) the producers, (b) the consumers, (c) the government, and (d) the researchers\extensionists.

The level of contributions varies but we are all involved. What then are the efforts made so far towards agricultural advancement in Nigeria?

IV THE MANAGEMENT OF RESOURCES IN NIGERIA

Efforts towards the effective management of the Nigerian agriculture have been in various forms reflecting the anxiety on agriculture. Such efforts have often covered the need for increases in the levels of food and fibre production, increased productivity, improvement of living standards and social welfare of the farmers and all Nigerians.

The discussion focuses on the well known four factors of production namely: LAND, LABOUR, CAPITAL and ENRERPRENEURSHIP. It should be noted that, there is none of these factors which the governments at the Centre, State and Local levels have not influenced (their demand and supply patterns,) either directly or indirectly, through their agencies. The organisation and control of agriculture have always been through ministerial organs and supportive parastatals in Nigeria. To achieve intended goals and targets, governments had put in place since independence, numerous policies and programmes, which include the following:

- 1960 Farm Settlement Schemes
- 1960 Cocoa Development Programme
- 1961 The Eastern Nigeria small-holder Oil Palm Programme
- All time Co-operative Group Farm Development Scheme
- 1973 The National Accelerated Food Production Programme (NAPPP)
- 1972 Nigerian Agricultural and Co-operative Bank
- 1974 Agricultural Development Project
- 1975 River Basin Development Authority
- 1976 The Guaranteed Minimum Price Scheme
- 1977 The Promotion of Rural Banking Scheme
- 1977\78 The Nigerian Credit Guarantee Scheme
- 1978 Operation Feed the Nation
- 1978 Land Use Decree
- 1978 The Marketing Board and later on Commodity Marketing Board
- 1979 Optimum Community Programme (OPTICOM)
- 1980 Green Revolution
- 1984 Back to Land Programme
- 1984 School to Land Scheme (first started in River State)

- 1984 National Accelerated Fish Production Programme
- 1986 Directorate of Food, Roads and Rural Infrastructure
- 1986 National Directorate of Employment
- 1987\88 The Nigerian Agricultural Insurance Scheme
- 1988 Agricultural Policy of Nigeria
- 1991 National Agricultural Land Development Authority

With all these policies and programmes on agriculture and the rural sector alone, it will be appreciated that the Nigerian agriculture is really on the run. Available literature shows that there is no country among SSANs that has successfully competed with Nigeria in terms of invention and proliferation of ideas, ingenuity, rapidity of changes, experiments, modification and abortion of programmes. Related to this proliferation, is that some of the policies are confusing and conflicting to the extent that farmers particularly the big time farmers and the foreign investors, are unsure of which to follow. It becomes difficult for farmers and agro-industrialists to plan because of the rapidity of changes of these policies. In order words, the only thing that is constant in the Nigerian agriculture is rapid changes in policies and programmes. These have made the management of agriculture very difficult in Nigeria.

A quick look at the base of decision making process in Nigeria indicates that since 1960, we have had 20 Ministers of Agriculture – including Chief C. O. Komolafe in 1966, Dr. J. E. Adetoro, in 1971 up to Malam Adamu Ciroma between November 1993 and February, 1995 and now in 1995, Alhaji Gambo Jimeta. (See Table 1). This apart, we have had over seven Ministers of Water Resources, when it pleases Nigeria to call water resources, a non-natural resource. It is necessary to state that this rapidity of changes of the No. 1 farmer in Nigeria, indicates that solution to agricultural problems in Nigeria will be viewed from different or varying perspectives. Hence, sustainability of policies and programmes cannot be achieved.

Furthermore, most of these policy makers have had little or no background knowledge in agriculture. Arguably, it is not a sufficient condition to have an agriculturist at the helm of affairs but Essang (1975) stated that it should be a necessary condition. At least Ministers/Commissioners for Agriculture should have practised farming before. What about Ogun State? Since its inception in 1976 (19 years ago), we have had 13 Commissioners for Agriculture. Also to date, Nigeria has had 17 Ministers of Finance with wide different levels of bias or sympathy for agriculture and consequent release of funds. Nigerian Agriculture on the run. Even the No 1-man position in

Nigeria has changed 10 times since the birth of Nigeria about 34 years ago. The point being made is not that this is particularly unique to Nigeria alone, given the Italian experience, but that ours is a fragile economy with little or no checks and balances to cushion the adverse effects of rapid negative changes in governments and polices.

The mismanagement of the Nigerian agricultural resources is due to those leaders who have little or no vision of what agriculture should be. To date, the records of the late Chief Obafemi Awolowo, in terms of agricultural transformation, remain impeccable. Substantial financial and material resources were devoted to agricultural development and hence the Western regional agriculture did not only provide food for us to eat, it provided employment opportunities for school leavers, raw materials for industries and foreign exchange for the country.

TABLE 1: LIST OF MINISTERS OF AGRICULTURE, FEDERAL GOVERNMENT OF NIGERIA 1960 - 1995

	NAMES	YEAR
1	Not Yet Supplied >	
2.	Not Yet Supplied >	1960 - 1965
3.	C. O. Komolafe	1966
4.	Dr. J. E. Adetoro	1971
5.	Dr. J. O. J. Okezie	1971
6.	Maj. Gen. E. O. Ekpo	1975
7.	Mr. B. O. W. Mafeni	1975 - 1979
8.	Alh. Ibrahim Gusau	1979 - 1982
9.	Mr. Ken Green	1982
10.	Alh. Bala Sokoto	1983
11.	Dr. Bukar Shaib	1984
12.	Gen. Alani Akinrinde	1985 - 1986
13.	Maj. Gen. M. G. Nasko	1986 - 1989
14.	Alh. Samaila Mamman	Jan. 1990 - Aug. 1990
15.	Dr. Shettima Mustafa	Sept. 1990 - Jan. 1992
16.	Abubakar Habu Hashidu	Jan. 1992 - Jan. 1993
17.	Dr. Garba Ja Abdulkadir	Jan. 1993 - Aug. 1993
18	Prof. Jerry Gana	Aug. 1993 - Nov. 1993
19.	Mallam Adamu Ciroma	Nov. 1993 - Feb. 1995
20.	Alh. G. Jimeta	1995

WATER RESOURCES

1.	Prof. I. U. W. Osigiogu	1975 - 1976
2.	Alh. Ibrahim El-Yakubu	1976 - 1979
3.	Alh. Ndagi Mamudu	1979 - 1982
4	Dr. Emma Y. Aranu	1983
5.	Engr. Bunn Sherif Musa	1989 - 1990
6.	Alh. Abubakar Heshidu	1990 - 1993
7.	Alh. Isa Mohammed	1994

TABLE 2: LIST OF FINANCE MINISTERS, FEDERAL GOVERNMENT OF NIGERIA 1960 - 1995

	NAMES	YEAR
1.	Chief Festus Okotie - Eboh	1960 - 1966
2.	Chief Obafemi Awolowo	1966 - 1972
3.	Alh. Shehu Shagari	1972 - 1975
4.	Mr. A. E Ekukinam	1975 - 1976
5.	Maj. Gen. L. L. Oluleye	1976 - 1979
6.	Prof. S. M. Nzang	1979 - 1982
7.	Mr. Victor L. Masi	1982 - 1983
8.	Alh. Adamu Ciroma	1983 - 1984
9.	Dr. O. Soleye	1984 - 1985
10.	Dr Kalu I. Kalu	1985 - 1986
11.	Dr. Chu S. P. Okongwu	1986 - 1990
12.	Alh. Abubakar Alhaji	1990 - 1992
13	Alh. Ahmadu Abubakar	June 1992 - Dec. 1992
14.	Prince Olasere	Dec. 1992 - Aug. 1993
15.	Alh. Aminu Saleh	Aug. 1993 - Nov. 1993
16.	Dr. Kalu I. Kalu	1993 - 1994
17.	Chief Anthony Ani	1995

TABLE 3: VALUE OF ESTIMATED LOANS TO AGRICULTURE AND RATES OF INFLATION IN NIGERIA

YEAR	ACGSF	NACB	TOTAL (N) m	GROWTH RATE%	INFLATION %
1984	24.65	112.92	137.57	-	39.6
1985	44.23	392.62	436.85	217.1	5.5
1986	68.42	1,015.21	1,083.63	148.4	5.4
1987	102.15	789.49	891.64	17.7	10.2
1988	118.61	1,634.60	1,753.24	96.7	38.3
1989	129.30	1,306.22	1,435.52	-81.1	40.9
1990	98.49	2,086.15	2,184.64	52.2	7.5
1991	82.11	1,072.73	1,154.84	-47.2	13.0
1992	91.95	1,480.48	1,572.43	36.2	44.5
1993	80.85	2,564.32	2,645.17	68.3	57.2
1994	94.56*	1,448.87	1,543.43	-41.6	70.0

Source: Survey data, 1995
* Tentative

TABLE 4: FEDERAL GOVERNMENT CAPITAL EXPENDITURE ON AGRICULTURE AS A PERCENTAGE OF TOTAL FEDERAL BUDGET (1975-1993)

YEAR	AGRICULTURAL CAPITAL EXPENDITURE (1)	TOTAL FEDERAL CAPITAL EXPENDITURE (2)	1 AS % OF (2)
1975	211.2	3,578.2	6.0
1976	129.2	4,219.5	3.1
1977	113.7	5,442.3	2.1
1978	125.0	5,197.0	2.4
1979	98.3	4,837.4	2.0
1980	467.3	8,395.6	5.6
1981	400.4	5,696.9	7.0
1982	278.9	7,950.2	3.5
1983	291.1	5,868.6	5.0
1984	160.9	3,812.2	4.2
1985	87.9	1,707.4	5.1
1986	60.3	8,473.9	0.7
1987	232.4	16,458.0	1.4
1988	213.0	6,179.7	3.4
1989	173.2	15,034.1	1.2
1990	1,598.2	24,429.6	6.4
1991	1,219.0	29,286.2	4.2
1992	941.3	38,453.0	2.4
1993	1824.4	42,354.6	4.3

Source: Central Bank of Nigeria. Annual Report and Statement of Accounts (Several Issues).

When resources were abundant in the 1970s, rather than developing agriculture and other economic sectors, when "money was not our problem," agriculture was jettisoned. Hence we had gigantic projects of relatively poor economic importance. We killed the goose that laid the golden eggs.

Agriculture was pushed to the rear with not only low budgets but also considerable underspending in this sector relative to others. In the 1970s, please recall, we had FESTAC '77 (FESTAC 77, 77 was here twice). We spent over N1 Billion directly or indirectly when N 1 = $1.6. Agriculture was forgotten and imported goods were heavily demanded partly because of the then oil boom. The goose that was laying the golden egg was put in the morgue.

It must be stated that since 1994 when Abacha regime came into power, there has been a degree of sanity in the system in that no additional policy or programme has been added to the confused situation. However, the previous ones before the birth of this regime have created some concomitant effects leading to the use of resource as discussed below.

Management of Land Resources

Nigeria's total land area is 98.3 million hectares. Of this, cultivable area is 73 million hectares i.e. 74% and crop coverage is 34% (25 million ha) (Pradham, 1994). Available data show that about 100,000ha were under modern irrigation, while traditional irrigation covers over 900,000ha (Federal Ministry of Water Resources, 1991). These represent just 4% of the total cultivated land in Nigeria. The River Basin Development Authority, which was formally 2, increased to 10 in 1976, 18 in 1984 and now 11 since 1986 (Federal Ministry of Water Resources, 1991). They undertake schemes for the control of flood and erosion and for watershed management. They also undertake comprehensive development of underground water resources for multiple use, among other functions. Fertilisers were generously imported into the country but dropping in value from US$82.3 million in 1980 to US$6.05 million in 1993 due to sanity of US $ and the increased local production of fertilisers. The consumption of fertiliser in Nigeria was estimated to be 6.5kg/ha in 1982 and increased to 8.2kg/ha as against the World's 86kg/ha in 1982 and Western Germany's 359kg/ha in 1989 (Adamu, 1990).

The Land Tenure Systems, Forest Reserves and later the Land Use Decree influenced tremendously the area and the quality of land resources farmers have been cropping over the years (Okuneye, *et al*, 1995; Famonyo, 1987). Peasant or the resource poor farmers depend on the natural fertility of the soil and their scale of operation is partly constrained by the land tenure systems and poor financial resources. In many parts of the country, women are mainly constrained to have access to land, thus limiting their contribution to agricultural production. The age of shifting cultivation has perhaps almost completely disappeared in Nigeria.

According to Faulkner and Mackie (1933), in "Nigeria especially in the provinces of the Southwest, which have a moderate population density say 100 or 200 to the square mile all high forest has already disappeared, and the shifting cultivation there, would be more accurately described as a system of rotational 'bush–fallow', in which the time in fallow exceeds the time that the land is cultivated". A fallow system as practised by the peasant farmers can be defined as a method by which cropping and fallowing of land are alternated but for unequal number of years.

The fallow period is determined by the population pressure and the land tenure system of the area. Available statistics indicate that the fallow period declined from 15–20 years in the 1930s to as low as 5 – 8 years in the 1980s, with attendant consequences on soil productivity. It becomes important to use fertiliser particularly for those crops (Falusi, 1989; 1990) identified as financially and economically profitable, namely, rice, yam, cowpea, vegetables, cotton, tobacco and groundnuts.

Management of Labour Resources

Labour is the most difficult resource to manage. A worker can decide to provide 60% or so of his potential level of productivity rather than in full. The main parameter determining the willingness to work is the wage rate. Other factors are motivation and mobilisation (if you like "egunje"). In Nigeria, it is more of the necessity to survive that made the resource poor farmers the largest proportion of farmers, to remain in farming business. In actual fact, mainly because the returns to the energies and other resources committed into agriculture are very low, rural urban migration had been increasing over the years. Hence, hired labour has assumed a higher proportion of the labour structure in Nigerian agriculture rising from an average of 5% in 1865 to about 28% in 1992, in general terms. Those farmers who cannot absorb the increased cost of production have resorted to managing small farm sizes, mainly to meet their family needs.

Mr Vice- chancellor, the old co-operative behaviours of our people have started to fade away. Nigerian farmers used to have confidence in forming co-operative/group farming activities such as Ebese, Aaro, and Owa in Yorubaland. Gaya in Hausaland, Nafir in Sudan and Aini in Sri Lanka. These used to provide alternatives to hired labour. To appreciate the importance of labour. Ruthenberg (1976) stated that, "in the majority of situations even when land is limited in supply and advanced material inputs such as mineral fertiliser and pesticides are not used, the most critical farming input is the labour of

the farmer and the family". Furthermore, the periods of cultivation, planting and weeding which demand high labour inputs coincide with the period when fresh high-quality food supplies are most scarce and low nutritional levels inhibit workers and draught animals from making as great exertions as they may wish. This season contrasts with the long period when little fieldwork is necessary. During such slack periods, labour cannot find productive work in the rural areas, hence the low average returns to labour and low farm incomes, by resource poor farmers.

Management of Capital Resources

Capital is a very important resource in any venture. It can be defined to cover assets, which are either in cash or liquid form or in a fixed form but serving as an intermediate input used generally in the production process. In most cases, particularly among the resource poor farmers, capital or finance is the most limiting resource to farm expansion or in deed improvement in the production practices and technology.

Farmers generally rely on their own financial resources or equity capital and the few sums they could borrow from relations and friends. In the rural areas the merchants, money lenders and co-operatives are still the most important sources that farmers do borrow from. The lending rates are, however, very high. To influence money supply to the agricultural sector, various governments put in place certain policies. Many state government established Agricultural Credit Corporations or similar agencies, which can disburse funds in cash or in kind to the farmers. The Federal Government through the Central Bank of Nigeria (CBN), put in place Agricultural Credit Guarantee Scheme fund (ACGSF) in 1977/78. This is a highly noteworthy effort of the CBN in ensuring that Nigerian agriculture moves forward. Under this scheme, commercial banks are expected to release fifteen percent (15%) of their annual loan portfolios to agriculture. Seventy five per cent (75%) of the total irrecoverable loans, which are guaranteed, under the ACGSF are paid to the bank by CBN. Table 5 shows the value of number of loans according to purpose. In all, the number of beneficiaries varied from 1,542 in 1984 to 15,514 in 1993 with the highest recorded as 34,518 in 1988.

Although there are various sources of credit to farmers, the bulk in terms of volume is from the Nigerian Agricultural and Co-operative Bank (NACB) and those obtained through ACGSF. Between 1989 and 1993, Merchant banks exceeded the prescribed percentage of 10% by between 4% and 5%. Commercial banks marginally exceeded the 15% minimum prescribed to them.

However, when the loan from the NACB and those obtained through ACGSF are added together, the rate of change in loan supplied to agriculture is far lower than the rate of inflation (see table 6).

TABLE 5: VALUE & NUMBER OF LOANS COVERED BY ACGSF

YEAR	PURPOSES (₦ MILLIONS)					
	LIVESTOCK	MIXED FARMING	FOOD CROPS	CASH CROPS	TOTAL	NUMBER
1984	11.82	1.41	3.61	0.28	24.85	1,642
1985	14.16	3.25	12.50	2.08	44.23	3,337
1986	25.80	3.90	33.41	2.11	68.42	5,203
1987	29.39	2.10	56.91	7.16	102.15	16,209
1988	18.48	3.20	77.95	12.15	118.61	24,538
1989	7.87	0.23	100.2	10.77	129.30	34,618
1990	4.97	1.00	79.87	4.09	98.49	30,704
1991	7.45	0.054	64.94	4.71	82.11	22,014
1992	6.06	0.40	76.26	4.98	91.95	22,454
1993	5.51	-	70.25	1.96	80.85	15,514

Source: CBN Annual Report and Statement of Accounts (various issues)

TABLE 6: VOLUME OF ESTIMATED LOANS TO AGRICULTURE AND RATES OF INFLATION IN NIGERIA

YEAR	ACGSF	NACB	TOTAL (₦ MILLION)	GROWTH RATE %	INFLATION
1984	24.65	112.92	137.57	-	39.6
1985	44.20	392.62	436.62	217.1	5.5
1986	68.42	1,015.21	1,083.63	148.4	5.4
1987	102.15	789.49	891.64	17.7	10.2
1988	118.61	1,634.60	1,753.24	96.7	38.3
1989	129.30	1,306.22	1,435.52	-81.1	40.9
1990	98.49	2,086.15	2,184.64	52.2	7.5
1991	82.11	1,072.73	1,154.84	- 47 2	13.0
1992	91.95	1,480.48	1,572.43	36.2	44.5
1993	80.85	2,564.32	2,645.17	68.3	58.4
1994	94.56*	1,448.87	1,543.43	-41.6	70.0

Source: Survey data, 1995
** Tentative*

Enterpreneurship

This is a very important factor of production, in that, it determines the types of resources, their quantities and qualities, when and how they are to be used and for which enterprise(s). Enterpreneurship or management is the crux of not only the production approaches that should be adopted but also the desirable post-production processes that should be followed for profit optimisation. It covers how resources can be efficiently utilised as well as the appropriate enterprise combination, which should be followed given the operating, socio-economic conditions.

However, the levels of management of our farmers, vary significantly from one to the other. The small-scale farmers, particularly the resource poor farmers, even though are efficient users of resources within the confines of family food survival strategies, are not efficient under profit maximisation objective. Arising from this, farmers over utilise their land resources, through overcropping and produce in most cases sub-optimal combination of enterprises. Even the medium and large-scale farmers face problems of sustainability due to lack of sufficient expertise in farm and business management. While on one hand, capital and exposure may account for this, on the other hand, effective management methods could enable the farmers to overcome some of the basic production and marketing problems.

V THE NIGERIAN AGRICULTURE IN PERSPECTIVE

The performance of the Nigerian agriculture has been assessed and is continuously assessed by researchers, technocrats, policy makers and other categories of people. The yardsticks for evaluation do at times vary depending on the purpose. Perhaps what is constant is that, they all aim at agricultural development. It is in recognition of this, that the following indices of agricultural development have been formulated and used as criteria for evaluating the Nigerian agriculture. They are based on the ascribed roles of agriculture earlier presented in this lecture.

a) Provision of Food and Raw Materials

The level of production of some food items and export crops are presented in table 7 for years 1989 to 1993. The table shows that for most staples and other crops, average growth rates ranged between 1.6% and 8.3% annually whereas some declined as much as 12.2%. Fisheries recorded an average negative rate of 13.2%. Similarly, poultry meat and goat meat declined while

beef only marginally increased by a mere 0.7%. Eggs, however, recorded a 4.0% increase. Given increases in population, however, food prices have been rising astronomically in Nigeria. Table 6 shows that even though consumer prices of all items have been increasing, food items increased more, rising from 100.0 in 1985, the base year, to 880.2 in 1993. Even in rural areas, the consumer price index of food increases more than that of all items. Nigerian agriculture has refused to move. Today, many Nigerians, particularly the children are dying in thousands because of malnutrition. Protein and other essential nutrients are lacking in the diets of even the small proportion of Nigerians, who can find food to eat. The British Medical Association recommends a minimum animal protein intake of 34g per capita per day. Also, the Food and Agriculture Organisation (FAO), recommends 20g of animal protein per capita per day as the minimum consumption rate for developing countries (Okuneye and Banwo, 1990). However, according to Olayemi, Titilola and Igben (1986), the average animal protein intake per capita per day in Nigeria was a mere 7.6g i.e. 38% of the FAO minimum requirement.

TABLE 7: NIGERIA: ESTIMATED OUTPUT OF MAJOR AGRICULTURAL COMMODITIES ('000 TONNES)

STAPLES	1989	1990	1991	1992	1993	AVERAGE GROWTH RATE
MAIZE	5,005	5,760	5,810	6,346	6,852	8.3
SORGUM	7,265	4,185	4,185	4,346	4,437	-8.5
RICE	3,303	2,500	3,185	3,500	3,400	2.5
WHEAT	554	554	445	423	400	-7.6
CASSAVA	17,404	19,043	20,339	21,437	22,31	6.4
BEANS	1,232	1,354	1,352	1,411	1,471	4.6
OTHER CROPS						
MELON	204	208	219	231	243	
GROUNDNUT	1,017	1.166	1,361	1,297	1,323	7.2
SOYABEANS	300	216	145	159	163	-12.2
PALM OIL	770	730	760	792	825	1.8
COCOA	256	244	268	292	306	4.7
LIVESTOCK PRODUCTS						
POULTRY MEAT	58	57	53	56	54 .	-1.7
GOAT MEAT	190	179	182	185	188	-0.2
BEEF	279	279	280	281	283	0.7
EGGS	343	337	311	301	391	4.0
FISHERIES	363	315	343	343	117	-13.2

SOURCE: CBN (1994) Annual Report and Statement of Account, Central Bank of Nigeria, Lagos.

Despite the dwindling power of the Naira (table 8) but sequel to the recognition that food is a wage good and to reduce the adverse effects of food shortages, Nigeria has been importing food and raw materials over the years. Table 9 shows that, food imports amounted to US $45.7 million in 1990 and rose to $78.7 million in 1993. This could have been more but for the low foreign exchange earnings of the country. Only recently, the Head of State announced that more food items would be imported. Nigerian Agriculture has Refused to Move

b) **Yield Per Ha and Area Cultivated**

Available statistics show that there had been very little increases in the yield of only a few crops. Some improvements were also recorded in the livestock subsector. However, majority of the increases in the total agricultural production recorded in Nigeria was due to farm expansion and favourable weather conditions.

TABLE 8: NIGERIA: CONSUMER PRICE INDEX (1985 - 100)

YEAR	COMPOSITE		URBA		RURAL	
	ALL ITEMS	FOOD	ALL ITEMS	FOOD	ALL ITEMS	FOOD
1984	94.8	96.2	97.1	101.7	94.4	95.3
1985	100.0	100.0	100.0	100.0	100.0	100 0
1986	105.4	100.1	110.1	107.6	104.7	98.9
1987	116.1	108.7	176.5	191.0	182.2	196.2
1988	181.2	195.3	270.2	293.8	273.3	299.0
1989	272.7	298 1	270.2	293.8	273.3	299.0
1990	293.2	308.0	291.9	03.9	293.4	308.7
1991	330.9	345.9	345.7	358.9	328.3	343.6
1992	478.4	506.8	514.7	546.4	471.4	499.4
1993	751.9	880.2	827.6	882.5	736.7	782.2

Source: CBN (1993) Statistical Bulletin CBN, Lagos

TABLE 9: NIGERIA: IMPORTATION OF FOOD AND RAW MATERIALS (US$ million)

Year	Food	Raw Materials
1980	1850.6	
1981	233.5	7.8
1982	191.8	7.8
1983	157.2	8.3
1984	113.1	9.8
1985	113.1	9.6
1986	104.6	5.6
1987	68.5	4.6
1988	39.8	4.3
1989	43.2	3.6
1990	45.7	9.8
1991	57.4	5.9
1992	76.8	5.9
1993	78.7	5.7

Source: FAO Trade Statistics FAO, Rome (Various Issues)

More areas of land are being cultivated by Nigerians in order to survive. Area cultivated increased from 24 mha in 1982 to 25mha in 1994. However, the number of tractors imported declined from 4,350 in 1984 to 1,330 in 1989 and in 1993 only 700 tractors were imported into the country (FAO, 1993). Some tractors are however assembled in Nigeria. Similarly, as shown in table 10, pesticides, herbicides and machinery are imported continuously in million of US$ annually.

TABLE 10: NIGERIA: IMPORTATION OF AGRICULTURAL REQUISITES (US$ MILLION)

Year	Fertilizer	Pesticides	Tractors	Machineries
1980	82.3	139.2	2,950	29.8
1981	14.8	87.3	3,300	13.6
1982	7.8	50.0	3,500	13.6
1983	2.6	19.5	3,950	6.8
1984	9.4	16.7	4,350	6.6
1985	13.5	32.5	3,190	8.9
1986	5.2	17.6	2,606	11.3
1987	6.5	13.4	830	5.2
1988	3.7	13.3	1250	7.8
1989	5.5	9.9	1330	8.0
1990	5.6	15.4	292	6.5
1991	6.1	14.0	870	7.0
1992	6.0	16.0	870	7.7
1993	6.0	15.0	700	7.6

c) Income of Farmers

Mainly because farmers generally sell produce in the rural areas to itinerant traders, farm incomes are low. The farm gate prices represent less than 60% of the market prices in urban and semi-urban areas. While in general, Nigerian income per head is about US$320 per year, the income of farmers are far lower depicting that agriculture, as it is currently being practised is not profitable. This apart, Nwosu (1984) argued that government capital expenditure pattern might have exacerbated the inequalities in income and employment opportunities between the urban and rural areas. Even among the farmers, there are observed inequalities (or disparities). Okuneye (1984) concluded that co-operative farmers had greater access to resources, a measure of wealth, and their mean farm income was significantly greater than those of non-co-operators. Similarly, Akande and Igben (1984) in an equally detailed analysis stated that, "intra-agricultural sex inequality manifests itself in various forms including unequal access to productive resource of

land, credit and technology, to rural institutions and to education and training and this ultimately translates into inequality in income between both sexes."

It must be stated that the Structural Agricultural Programme (SAP) really 'SAPPED' most of the Nigerian farmers, as reflected in their reduced incomes. At any rate, Nnana (1987) warned then that the experience of ten of the earlier countries that adopted SAP was that there was no improvement in their economies and that nearly all were actually worse off. The hike in prices of petroleum products has further worsened not only the relatively low farm incomes but also the disparity between the rural and urban incomes

d) Contribution to GDP and Exports

In 1963/64 agriculture contributed as much as 61.5% to the GDP. This fell to 47.4% in 1969/70 and by 1989 only 40.55% was contributed by agriculture. In 1993, this contribution declined to 38.10%. The case of exports presents a poorer performance. Whereas agriculture contributed 85.6% of total exports in 1960, this declined to 32.4% in 1970 and by 1990, only 2.2% of total exports was contributed by agriculture. In 1993 this further declined to a mere 1.5% (Table 11). Even this meagre contribution was due to the depreciation of the exchange rate, which suppressed the effect of the decline in the volume of agricultural exports.

Given the picture above, it can be concluded that the Nigerian agriculture has not been able to meet the basic needs and aspirations of the country. In other words, Nigerian agriculture, even though has been on the run in terms of number of policies and programmes, number of Ministers and Commissioners, number of farmers both the rural and urban farmers, the areas of land cultivated etc, it has not been able to perform its ascribed roles.

However, perhaps the problem is not with this sector alone and most probably other sectors could have accounted for the problems of the Nigerian agriculture. Let us have a peep at the World Bank Report of 1994. Nigeria went through a tumultuous period in both 1992 and 1993. Budgetary control deteriorated leading to fiscal deficits, which exceeded 10% of GDP. Similarly inflation rose to 40% in 1992, 58% in 1993 and 70% in 1994.

TABLE 11: NIGERIA: AGRICULTURE'S CONTRIBUTION TO GDP AND EXPORTS 1988 – 1993

YEAR	TOTAL (N BILLION)		% AGRICULTURE	
	GDP	EXPORTS	GDP	EXPORTS
1988	77.8	31.19	41.5	5.7
1989	83.48	57.97	40.55	3.7
1990	90.36	109.89	39.04	2.2
1991	94.61	121.53	38.60	2.8
1992	97.99	205.61	37.85	1.5
1993	100.84	218.77	38.10	1.5 S

SOURCE: CBN, Annual Report & Statement of Accounts. Various issues

* Data are at 1984 Factor Cost.

Conversely, the economy grew only by 4.1% in 1992 and a mere 1.9% in 1993 compared with an average of 5% in the preceding six (6) years. There was non-stabilisation of the exchange and interest rates. Nigeria did not achieve a higher economic growth in 1994 than even, in 1993, the previous year.

On the international plane, whereas efforts are being made worldwide to improve on the levels of production and productivity, not much has been achieved in the developing countries. For instance, according to ILCA (1993), volumes of output increased by 2.5% and 1.3% in industrialised countries in 1990 and 1991 respectively, there was a decline in output in the developing countries by –0.4% during the same period. Moreover whereas, output prices increased by 4.9% and 4.6% in corresponding years in the developed nations but increased by 90.9% and 58.9% in the developing nations for 1990 and 1991 respectively.

Coming back home, Nigerian agriculture recorded a poor growth rate of 1.6% in 1994, as against the projected rate of 3.5% and 2.5% achieved in 1993. When we consider the fact that population growth rate was between 2.1% and 3.0%, then change in agricultural growth per capita was negative in 1994. Agriculture has really wobbled and fumbled; it has refused to move.

VI AGRICULTURAL ECONOMICS AND FARM MANAGEMENT IN NIGERIA (WITH SPECIAL REFERENCE TO UNAAB)

The study of Agricultural Economics covers essential issues in agriculture using economic theories and principles. In many cases, Agricultural Economists are substitutes to pure Economists but very rarely are the pure Economists, substitutes to Agricultural Economists. In the past, one had to be a graduate of general Agriculture, first and foremost, and thereafter train as Agricultural Economist. At the sub-professional and technical levels, Schools and Colleges of Agriculture offer some rudimentary courses covering some areas of Agriculture. They include those in Ibadan, (IAR & T), Akure, Zaria, Bauchi, etc. American and British universities particularly Michigan, Iowa, Cornell, and California in the U.S.A, Oxford, Reading, Leeds, Manchester and Nottingham in Britain are the leading Universities offering Agricutural Economics in the World.

In Nigeria, Ibadan and Nsukka are the leading Universities offering specialised B.Sc. degree course in Agricultural Economics. Under the general Bachelor of Agriculture programme, some universities allow their students to be proud of being in the Department of Agricultural Economics (and Farm Management). Leading Universities include UNAAB, UNIAGRIC, Markurdi, Ilorin, Akure, Osu, Ife and Zaria.

Agricultural Economists in Nigeria have over the years assumed a leading role in Nigerian agricultural research, teaching and university administration. Of repute were Professors Oluwasanmin of Ife, Olayide of Ibadan, of blessed memory. Other Agricultural Economists have been playing their roles excellently well. The failure of the Nigerian agriculture is due to the fact that policy makers and some agriculturists have not heeded the professional suggestions and competent advice of Agricultural Economists.

Agricultural Economics comprise among others the following: Agricultural Development and Policy, Farm Management and Accounting, Resource Economics, Agricultural Finance, Agricultural Marketing and Co-operatives, Production Economics and Quantitative Analysis. It is to show the importance of Farm Management that some Universities emphasised it in the name of their Departments i.e. Department of Agricultural Economics and Farm Management. It should be stated that a specialist in Farm Management must know the basic principles of other areas of Agricultural Economics. That is, you can only manage the farm effectively if you know how to organ-

use and use judiciously the available farm resource and internalise to farm's benefits the external factors influencing its performance.

Mr Vice Chancellor, the Departments of Agricultural Economics and Farm Management nation-wide have not been given adequate attention and priorities in terms of funding and materials. Journals and latest textbooks are lacking apart from computer and necessary software. Most of the Departments have shortages because of the high demand for Agricultural Economists in lucrative areas; yet, nearly all the students of the B.Agric Programme want to be in the Department of Agricultural Economics and Farm Management. There is the need for equi-marginal returns to resources in terms of funding of programmes and sub-programmes in the B.Agric programme. From whom much is required and desired, much should be given.

Mr Vice-Chancellor, please be rest assured that our Department of Agricultural Economics and Farm Management is making tremendous impact in the areas of teaching, research and extension, within its available resources. In the area of teaching, about 20% of UNAAB students are in our Department. Available information shows that our graduates are doing well in Banks, Industries and other lucrative sectors of the economy. The Department continues to make significant contribution in extension through its linkages with the University's Agricultural Media Resources and Extension Centre (AMREC), OGADEP, IAR&T, NALDA and other Agencies, apart from competition at workshops and conferences.

Of equal significance is the third tripodal role, research. Before and after my assumption of duty here, in 1986, I have made some impact in terms of research and publication. A critical examination of the performance of peasant and co-operative farms in 1978/79 earned me my first monograph in that great reputable Institute, NISER, and a Journal article which were published in 1981. Using production function, I determined the levels of productivity of Group Farms in Nigeria, which were published in the reputable Israeli Journal of Rural Development, Okuneye (1985). Where else can you talk about co-operatives other than in Israel? Several other issues from me were found worthy of publication in Israeli Journals. Other tools of analysis such as gross margin analysis, simulation, input-output analysis, cost benefit analysis, value added technique were used in analysing Nigerian agricultural problems and prospects and they were published in Greek, Dutch, British, Australian, American and Nigerian Journals. These include Okuneye (1985) a, b, c, and d), Okuneye, Akande and Banwo (1986), Okuneye and Banwo (1990) and Omotesho, Okuneye and Ladele (1995).

More specifically, in analysing how Nigerian agriculture can move forward, my study, published in British Journal of Agricultural Economics becomes important. Using linear programming technique, ways of minimising costs and optimising the profits of the farmers were examined. Equilibrium was established between Government's objectives of increasing rice production and the primary desire of farmers to meet the family's food needs. Similarly, an analysis of the performance of Collective Farming Programmes in Africa using case studies from Zambia, Republic de Benin, Tanzania, Algeria and Nigeria was published in 1985 and it was specially demanded for by the United States Department of Agriculture in 1986.

Arising from these, I was appointed the first Professor of Agricultural Economics by two Universities almost simultaneously but independently. For this I am highly grateful to the two universities.

The studies on how to use livestock, crop and forestry wastes to make profit and provide employment opportunities, published in the Journal of Biological Wastes and Journal of Agricultural Wastes, among others, earned me a recognition as one of the best 20 Environmental Economists in the World by the United Nations Environment Programme of the United Nations based in Kenya.

PROFIT OPTIMIZATION

Max. or Min $Z = C_j X_j$

Subject to $\sum a_{ij} X_j \leq B_i$

and $X_j \geq 0$ for all $j = 1, 2, 3, \ldots\ldots\ldots\ldots, n$

$i = 1, 2, 3, \ldots\ldots\ldots\ldots, m$

Where C_j = the contribution per unit of activity e.g. gross margin/ha or per man-hour.

X_j = level of activity in the optimal plan

a_{ij} = technical coefficient or per unit requirements of activities

B = available resources or constraints

j = number of activities
i = number of constraints/resources

PRODUCTION FUNCTIONS

Three Functional forms and their uses

(a) Linear function

$Y = a_0 + \Sigma a_j x_i$; i= 1,2,3,.....,n

Marginal Product, $MP_i = dy / dx_i = a_i$

Marginal Value Product = $a_i x P_y$

Elasticity of Production, $\varepsilon_p = MP_i/AP_i = a_i$

(b) Semi-Log Function

$$Y = a_0 + \sum_{I=1}^{n} a_i \log x_i \quad i = 1,2,3, \ldots\ldots\ldots,n$$

Marginal Product, $MP_i = a_i / x_i$

Elasticity of Production, $\varepsilon_p = a_i / x_i \cdot x_i / y_i = a_i Y^{-1}$

(c) Double-Log or Power function

$Y = a_0 X_1^{a_1} X_2^{a_2}, \ldots\ldots\ldots\ldots X_n^{a_n}$

$Y = a_0 \pi X_i^{a_i}$ i = 1,2,3, ..., n

(i) $Ap_i = Y/X_i$

(ii) $MP_i = dy/dx_i = a_i Y/ X_i$

(iii) Elasticity of Production,

$\epsilon_{p_i} = dy/dx \ (X_i / Y)$

$= a_i Y / X_i (X_i / Y)$

Or $\epsilon_{p_i} = \ln Y / \ln X$

Where $X_i = 1,2,3, \ldots\ldots, n$

Y = Output

Marginal Factor Cost, MFC

$MFC_i = \delta TC / \delta X_i$
$= \delta(Px_i X_i)/\delta X_i$, when Px_i is constant
$= Px_i$

VII PRESCRIPTIVE MEASURES FOR THE MODERNISATION AND DESIRABLE MOVEMENT OF AGRICULTURE IN NIGERIA.

In concluding this address, I wish to make the following recommendations, which have the potential for moving agriculture forward, in Nigeria and other countries with similar characteristics

1. Farmers' First Approach

The lecture has shown the level of intervention of the government in agriculture. However, in nearly all these, the needs of the farmers were often assumed as the same as those of the ruling urban dwellers. There is the need to start charting agricultural development programme from the farmers themselves and the government assisting them in achieving their felt needs. In other words, government should only catalyse the achievement of the goals of farmers.

2. Revitalisation of Agricultural Research

There is not much research work being carried out in many universities and research institutes. This is mainly due to the highly limited funds being given to the universities to buy necessary research equipment and to conduct research. Without sufficient funds, meaningful research studies can-

not be carried out. It is therefore necessary for the Federal Government through the Federal Ministry of Agriculture and the NUC to increase the level of funding of research in the Universities and research institutes. Also agricultural problems are multi-disciplinary in nature and so agricultural research studies should be multi-disciplinary involving social, economic and pure scientists.

3. Research-Extension-Farmers Linkages

Over the years, there has been a weak link between the researchers, extensionists and the farmers. The problems of the farmers are not quickly diagnosed and fed to the research agencies. Even the extensionists were neither properly equipped nor mobilised sufficiently to be interested in farmers' problems until the establishment of World Bank Assisted ADPs. Even then, it is necessary to examine and review the activities of the ADPs for greater effective performance of extension services given the current poor performance of agriculture. A revitalisation of the system, greater attention to new areas of agricultural production and the further investigation of the promise of biotechnology can all help to improve the contribution of research and extension to agricultural development.

4. Review of Policies and Programme

As indicated earlier, some of the policies and programmes are confusing and contradictory. There is the need to reduce and streamline them in line with the farmers' socio-cultural and economic conditions. For instance, operational modalities and implementation have often been used as alibi for the failure of policies and programmes. A critical review will show the limitations of some of them and resources can then be re-allocated to those that are quite effective. Presently, it is like a Reverend gentleman at a wedding ceremony who wanted to read 1 John 4 verse 18 but read John 4 verse 18

5. The Need for Greater Financial Assistance to Agriculture

At the moment, only the Government and Banks are giving financial assistance to farmers. Given the poor financial base of the farmers, there is the need for industries to assist in funding agriculture. An agricultural development fund of 2.0% of the profit of all industries and companies should be paid to the CBN for, on lending to farmers, funding agricultural research and farm management training. A non-bureaucratic organisation under the CBN should be set up to manage the funds, with highly knowledgeable team

comprising experts in agriculture businessmen, bankers, e.t.c.

6. Strengthening the Training in Agricultural Economics and Farm Management

Most large scale and medium scale farms in the country are currently facing substantial management problems. This stresses the need for out-of school training programme or in-service scheme for the farm managers. A formal structure should be put in place just as in Israel, Hungary, etc, in Universities of Agriculture to be funded by the Federal and State Ministries of Agriculture and Water/Natural Resources. A greater focus on out-of-farm management is highly necessary as the graduates are called upon to manage agro allied industries.

7. Improvement of Rural Infrastructures

Agricultural progress cannot be guaranteed and made sustainable under the current poor rural infrastructure. In order to encourage farmers to produce, price incentives, timely and effective demand for their output are essential. Hence a consistent, cost-effective and people oriented infrastructures of rural roads, storage and processing, markets and RURAL MASS TRANSIT becomes very essential.

8. Increasing the Availability of Inputs

Given the scarcity of essential inputs such as seeds, chemicals, feeds etc. during planting seasons and some others throughout the production period, efforts should be intensified to obtain them and make them available to farmers. Research Institutes and Universities should be encouraged to evolve cost-effective labour saving techniques, seeds, feed, and improved breeds at affordable prices consistent with the culture and social orientation of farmers. Alternatives to the ever-increasing priced fertilisers are needed in compost and manure by researchers and businessmen.

9. Weather Variations and Irrigation Facilities

Rainfall distribution patterns and volumes had been varying significantly in Nigeria for some years now. It is necessary to guide the farmers on a regular basis as to the appropriate time of planting specific crops based on scientific prediction of rainfall in different parts of the country. Similarly, irrigation facilities should be established in an intensive manner in the South, firstly

because of inadequate and poor rainfall distribution and secondly to encourage dry season farming which is noted for higher productivity.

APPRECIATION

Count your blessings, one by one; Clap your hands, all people! Shout to God with loud songs of joy. For the Lord, the Most High is a great King over all the earth and He has consistently been my rock and deliverer. I thank Thee. Apart from God, my immediate and extended families who gave me tremendous encouragement and assistance, my mates are my major sources of success. My class and schoolmates at the primary and secondary schools and the universities are pillars of my joy. My brothers, sisters and friends in Fountain of Hope International Goodwill Society, great Ilites, the Leeds, Up JOGS, AISS, etc, my colleagues at NISER, erstwhile COSTAB, UNILORIN, and of course UNAAB remain my sources of growth and development. I thank you all very sincerely.

Mr Vice Chancellor, I have learnt a lot from you. I thank you for the various challenges and opportunities. Furthermore, of high significance to my academic success and my life is my dear wife, Omojoyinola Adeyinka Abeke EniAbireyo, a lady of honour and integrity. God will continue to bless you and our children (Amen).

Finally, I thank all the Distinguished Ladies and Gentlemen, My Lords Spiritual and Temporal, my professional colleagues and that, without You, O Lord, I am Nothing.

I thank you all for listening.

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