

Inaugural Lecture Series 110

**IMPROVING FARMERS'
MANAGEMENT CAPABILITY
IN NIGERIA: HISTORICAL
PERSPECTIVE AND
EMPIRICAL EVIDENCE**

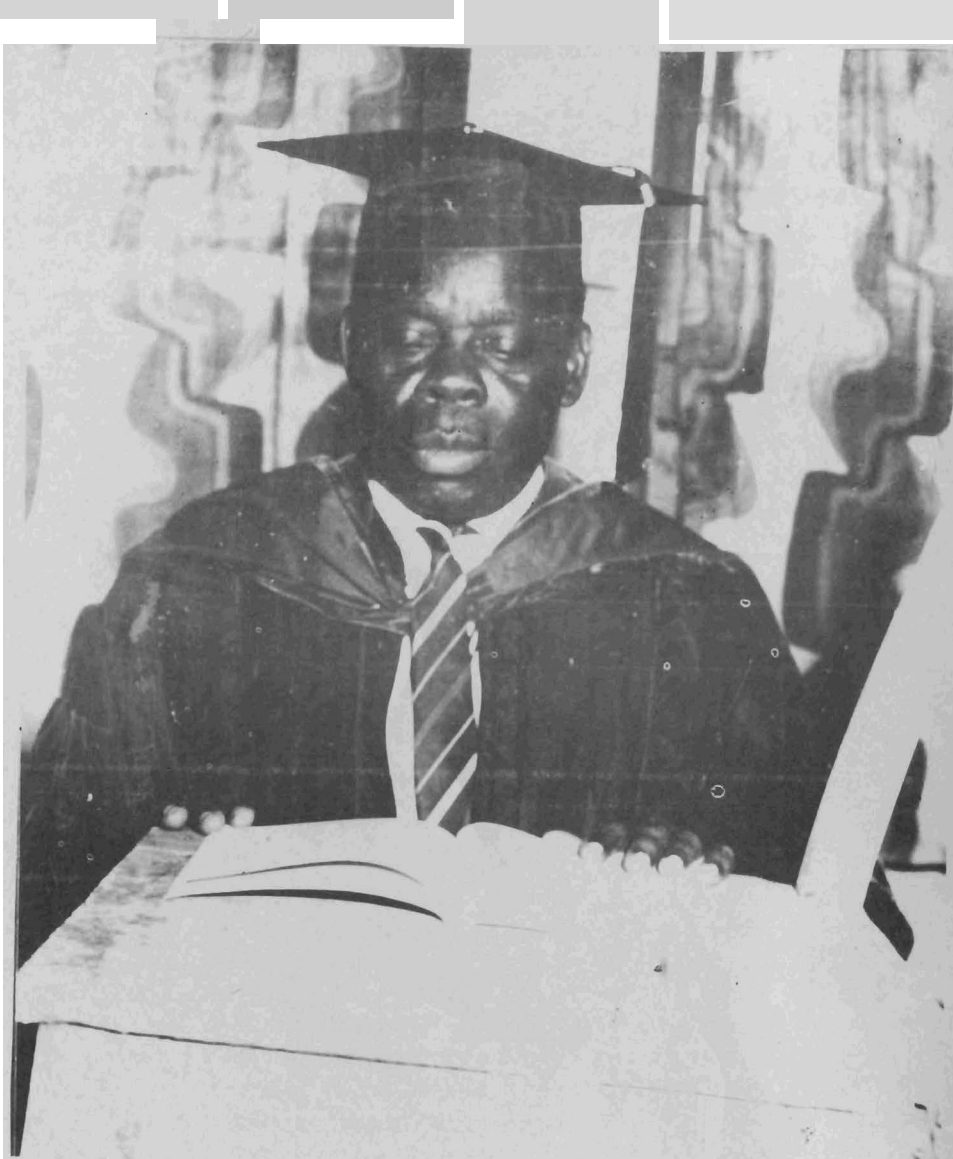
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IMPROVING FARMERS' MANAGEMENT CAPABILITY IN NIGERIA: HISTORICAL PERSPECTIVE AND EMPIRICAL EVIDENCE

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INTRODUCTION

That agriculture is first among other human professions is copiously underscored by a vast body of literature. First, the Biblical version of the history of creation eloquently recorded the primacy of agriculture in the First Book of Moses. After creating the heavens and the earth including Adam and Eve, God said;

"Behold, I have given you every plant-yielding seed which is upon the face of the earth, and every tree with seed in its fruit; you shall have them for food. And to every beast of the earth, and to every bird of the air, and to everything that creeps on the earth, everything that has the breath of life, I have given every green plant for food."

Genesis 1: 29-30

Thus, the foundation of agriculture as the first human profession has, by design, been firmly laid. Agriculture thus became the first and the only human profession to be specially ordained by God. Little wonder then that the first man, ADAM, after leaving the Garden of Eden went into farming and became the first human to manage a farm for livelihood.

Second, outside the Biblical literature, numerous other historical documents recorded the primacy of agriculture. Although a matter of legend and speculation, the evolutionary story of the world reveals that the first true men were agriculturists whose system of farming comprised fruit gathering, hunting, and fishing (Wells, 1960).

Third, the physiocrats of the 18th century France may perhaps claim credit for being the first to expound the doctrine of the primacy of agriculture. As an important school in the history of economic thought, they held the view that agriculture is the only productive industry and consequently the source of all wealth for the economy. The corollary to this belief is that manufacturing industry and commerce are sterile because they produce no net product, but only change the form or title to the wealth produced by agriculture. Although current theory has criticised and subsequently refined the physiocrats' position, nonetheless, their belief has underscored the fact that agriculture is basic to all the other sectors of the national economy.

Fourth, the doctrine of the primacy of agriculture has more recently been further advanced by the class of Americans known as *Farm Fundamentalists*. In scope and content, the doctrine of Farm Fundamentalism involves much more than a belief in the economic

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importance of farming. The doctrine contends that there is something special and unique about farming and the rural way of life. The doctrine asserts that country living produces better people; the countryside is a good place to rear a family. It is a good place to teach the basic virtues that have helped to build nations; young and old people on the farm learn how to work, to be thrifty and how to do things with their hands. Country living has given millions of people all over the world the finest preparation for life (Benson, 1960). Some farm fundamentalists have even argued that farming is a divine calling where God and man work hand-in-hand to supply the physical needs of mankind. Farmers, they proclaim, are the chosen people of God, if ever He has a chosen people.

Martin (1874) in emphasising the primacy of agriculture declared:

"We cannot afford to oppress the farming class of this country (America) It is our chief element of strength and stability, and a wrong inflicted upon it must react upon the whole nation. If the farmer suffers, the country at large must suffer with him"

Speaking before the Minnesota Historical Society in 1897, railroad tycoon, James J. Hill declared:

"Everyone here will recognize that unless the condition of the farmers of Minnesota and the Northwest is prosperous, all other interests will suffer, the banker's, the merchant's, the manufacturer's, the lawyer's, the doctor's, - everybody's. All must therefore feel an absolute interest in the prosperity of the farmer."

The thesis of farm fundamentalism is true for the American economy of the eighteenth and nineteenth centuries as it is true for Nigeria of today, and would be true for Nigeria of many more years in the future. In that respect, agriculture will continue to be the lifewire of the Nigerian economy, the chief element of our strength and stability and to adapt James Hill's declaration; unless the condition of the Nigerian farmer is prosperous, all other interests will suffer including that of the military, the politician, the professor, the Director-General, the banker, the manufacturer, the physician, the market woman, the roadside mechanic - everybody's.

But the condition of the Nigerian farmer cannot be prosperous without sustained improvements in his productivity and income which

are brought about, at least in part, by improvements in his management capability.

Management capability involves farmer's acquisition of proficiency in the following basic skills:

- (a) **Technical Skills** which include:
 - skills in crop, livestock, horticultural and fish production,
 - skills in soil and water management,
 - skills in the construction of farm structures,
 - skills in operating and maintenance of farm machinery and equipment.
- (b) **Analytical Skills**, which include:
 - skills in identifying alternative production processes and combination of enterprises, and in analysing impacts of such alternatives on the profitability of the farm as a whole,
 - skills in establishing, maintaining and analysing adequate sets of farm production records and farm financial accounts with a view to identifying ways of increasing the profitability of each part of the farm business and of the farm as a whole,
 - skills in identifying the root causes of inadequate technical or financial performance and in finding ways and means of dealing with these causes.
- (c) **Managerial Skills** which depend heavily on the first two skills mentioned above, and they include:
 - skills in decision-making,
 - skills in action-taking, and
 - skills in responsibility bearing.

Government Programmes and Activities to Develop Farmers' Management

For the purpose of this lecture, our starting point in discussing government efforts, over the years, to develop farm management capabilities of the Nigerian farmer, particularly the small-scale farmer, is the Kware Irrigation Scheme, 1926.

The Kware Irrigation Scheme

The Kware Irrigation Scheme situated 16 miles north of Sokoto was established in 1926 to increase rice yields to supply the increasing population of Sokoto emirate.

The Sokoto Native Administration chose Kware district not so much because it is fertile, but more importantly because it offers what was considered the most severe experimental conditions, that is, severe drought in the dry season and flood during the rains. This was the kind of management problem the scheme aimed to solve.

Prior to the establishment of the scheme, experiments had been conducted on the response of imported white rice to fertiliser application and this had proved successful. Before the introduction of the white rice, local farmers cultivated black rice which is more flood resisting than the white rice but less responsive to fertiliser application. The black rice was, however, preferred by the local people because it makes a better dish of local rice meal.

The scheme started with 1,000 acres and 800 farmers with individual peasant holdings varying from one-quarter of an acre to three acres of land scattered all along the river bank.

The irrigation scheme consisted of the use of Shadoof, a traditional Sudanese method. The shadoof has several disadvantages:

- i) it is inadequate on large farms and is only workable near a stream or a well; and
- ii) it is a slow process wasting much time and energy. Canals for irrigation were cut from a stream that flows past Kware all the year round to the site of the scheme; carrying water to the crops in the fields. Bunds were built on three sides of the area to control the floods along river Rima.

Problems

- i) Collection of operational costs on ploughing was found difficult and had to be abandoned and the Native Authority had to run the scheme at no cost to the farmers.
- ii) In 1943, 1945 and 1954 high flooding of river Rima destroyed the protective bunds washing away most of the rice crop. These calamities brought untold hardships on the local farming community and farmers had to demand for a change to the cultivation of the more flood-resistant variety of the local black rice.
- iii) The use of the much needed manure had not yet taken root among the farmers. The use of manure had become crucial because of the

higher rate of depletion of soil fertility caused by multiple cropping now being practised on a piece of land in a year.

In summary, the scheme had failed to impart any meaningful management skills on the local farmers, neither did it achieve any of the objectives it set out to accomplish, namely, increase in yields of foodcrops to feed the growing population of the emirate, introduction of a new variety of rice, management of severe drought in the dry season and floods during the rains, the adoption of the use of manure on heavy crops such as cassava and sweet potatoes.

The Niger Agricultural Project

The project was established in 1949 and was designed to produce groundnuts for export and guinea-corn as subsistence crop. The objectives were (i) to enable West Africa contribute further to the relief of the world food shortage, (ii) to demonstrate better farming techniques and (iii) to increase the productivity of the Nigerian agriculture.

The scheme was jointly founded on a 50-50 per cent basis by the Colonial Development Corporation (CDC) and the Nigerian government. An un-inhabited site near Mokwa was selected on the recommendation of the West African Oilseeds Mission set up in 1947 to identify areas suitable for mechanical cultivation of foodcrops. The CDC's function was to clear the land, settle the participants and plan and control the agricultural operations based on the ideas of the Gozira Scheme in Sudan.

Settlers from outside the project areas were disallowed from taking part in the project on political grounds, but farmers in the emirate who stood to gain did not feel enthusiastic in the project as they already had enough land for their needs.

In five years starting from 1951, about 9,600 acres of bush were cleared with 163 families settled. Each settler was given 24 acres normally cultivated by peasant farmers in the area. But the machines could only be used for ploughing and ridging; no machine was suitable for weeding, planting and harvesting. It required 17 Mondays per acre to weed after planting. Thus, the farmer had an impossible task of accomplishing 408 days' work in six weeks and yet there were no casual labour available to assist him.

Since the settlers had no financial investment in the scheme, the Company decided to introduce sharecropping system under which it kept two-thirds of the produce while the farmer kept one-third. This was a disincentive to work hard. The system was bound to encourage cheating and pilfering.

Problems

- i) The model villages that were constructed for the farmers involved a change in their social form of organisation, and the agricultural system was also strange.
- ii) The seeds available to the project farmers were largely unselected, hence yield was hardly higher than that of the subsistence farmer, thus the expected income was not realised and the company's share of harvest was difficult to collect.
- iii) Labour was scarce since there was no noticeable unemployment in the area.
- iv) The relationship between the settlers and management was largely one of mutual frustration, misunderstanding and irritation.
- v) There was frequent breakdown of machines while spare-parts were not available.
- vi) In the early days of the project, the unemployables, social misfits and similar type of people made up the settlers.
- vii) Water supply was inadequate. Wells were dug but most of them reached 200 feet before reaching water.
- viii) Settlers were not given any decision-making responsibilities as every meaningful decision was made for them. Their main responsibilities were merely routine: to plant, weed and harvest.

The failure of the project was evidently a matter of time. The turnover of settlers was high, and on December 1, 1954, the CDC and the Central government withdrew from the project turning it over to the Northern Nigeria government as a training and experimental farm.

The Farm Settlement Schemes

The Farm Settlement Schemes were launched in the old Western Region in 1960, in Eastern Region in 1962 and in Midwestern Nigeria in 1964. In the Northern Region the Farm Training Institutes were established in the early 1960's. The major objectives of the schemes, particularly in the south, were to solve unemployment problems of school leavers and to modernise agriculture and increase productivity.

In the Western Region, 25 individual settlements scattered throughout the region had been established by 1965, with each settlement having at least 1,500 acres of land and 50 settlers. This

means that each settler was initially expected to cultivate 30 acres, but the number of settlers was ultimately raised to a minimum of 100. By 1966, the Ministry of Agriculture and Natural Resources was handling as many as 37 settlements. An important adjunct of the scheme was the Farm Institute where settlers were to receive a two-year training in Farm Management.

The scheme was also conceived as an instrument of agrarian reform with the following advantages:

- guarantee of absolute security of tenure with a compact farm unit and larger farm holdings;
- Facilitating regular expert advice from extension workers and easy provision of supervised credit;
- easy adoption of latest techniques of production by educated settlers resulting in high yields per man and per acre, and
- expectation of having demonstration effects on the surrounding farmers.

The scheme in the Western Region cultivated all categories of farm enterprises - tree crops, arable crops and livestock (poultry). Pretty soon, the scheme ran into a multitude of problems ranging from government's inability to adequately fund the highly capital-intensive scheme, to a number of perceived disappointments and frustrations suffered by the settlers.

As early as two years of the scheme, settlers had started to leave the project in succession, and so high was the turn-over that by October 1968, only 38 per cent of the total intake of settlers (1,325 out of 3,870) remained on the settlement. A number of the 62 per cent who had left did so not so much for reasons of any hardships but because of uncertainties and the long period of waiting before they could expect any earnings (Hussain, 1966).

The other problems include:

- i) inadequate number of farm machinery and equipment; with roughly fewer than three tractors to a settlement or 36 tractors to a total land area of over 92,000 acres, the project definitely lacked an important logistic support; machine breakdown was also rampant and spare parts difficult to obtain;
- ii) On the supervisory level, operational difficulties also arose; the field overseers who were in direct contact with the settlers had the same level of basic education as the settlers while the settlers underwent an additional two years of training in agricultural practice. Consequently, the field

overseers did not know as much as the settlers in terms of agricultural techniques, yet they were supposed to advise the settlers.

- iii) Specialist services were not readily available. For example, veterinary services were sometimes slow in giving the results of mortality investigations, and agricultural research conducted in the past and economic information that were available, were insufficient to meet the needs of the situation. This also affected the cropping policy as some of the crops grown were not suitable for the soil.
- iv) Selection of settlers was confined to immature youths too often lacking in experience, maturity and sense of endurance.
- v) Transport for, and supplies of, poultry feed were often irregular and eggs and culled birds were not orderly marketed, leading to glutting of the market and subsequent low prices received for these products. In similar vein, accounting was always in arrears because of scarcity of trained and experienced staff to keep up-to-date records.
- vi) Settlers were only able to make token managerial decisions on their farms and the co-operative aspect of the scheme was late in functioning.

On the eve of the creation of Ogun, Ondo and Oyo states in February 1976, there were just 29 farm settlements in operation in the former Western State. Up to that point in time, ₦14m had been invested by government in the scheme. The planted areas of land were 2,761 ha of cocoa, 3,790 ha of oil palm, 1,027 ha of rubber, 261 ha of citrus, 62 ha of coffee, 1,026 ha of teak and 39 ha of gmelina.

From the management viewpoint, the scheme did not impact much on the Nigerian food agriculture, although one would concede that the scheme could claim credit for raising the level of poultry management in Western Nigeria. The scheme's generally poor achievements can be attributed to (i) non-optimal use of scarce resources, particularly investible capital, (ii) poor administration and lack of experience in project preparation, finance, control and execution, and (iii) non-availability of technical expertise and inadequate managerial capacity.

The various reasons for the limited achievements of the scheme have been well documented in literature, and the lessons have, hopefully, been learned. A decision to continue the project or to set up a similar one would have the benefit of learning from these mistakes.

The National Accelerated Food Production Project

The National Accelerated Food Production Project (NAFPP), as the name implies, is a nationwide programme set up by the Federal Government in the early 1970's with emphasis on key staples nationwide, thereby maintaining sharp commodities relevance. It involved farmers through their respective state governments in the identification of suitable seed varieties and fertilisers in a three-phased sequence of mini-kit trials, production-kit trials and mass adoption. It benefitted from the active involvement of selected agricultural research institutes in programme design and implementation. However, it was prematurely replaced in government priorities by the Operation Feed the Nation in 1976. Poor funding was the major constraint.

Agricultural Development Projects

The inputs for the Agricultural Development Projects (ADPs) are derived from four sources: farmers' contributions in form of land and labour; State governments; Federal government, and Federal government guaranteed World Bank loan.

The establishment of the ADPs in Nigeria originated with Funtua (1974), Gusau (1974), Gombe (1975), Ayangba (1977), Lafia (1977), Bida (1979) and Ilorin (1979), all in the northern states. Since this first generation of ADPs, several more have been set up with each state having its own. The establishment of these projects represents government effort to develop agriculture through the small farmers in the rural areas. The concept is based on the premise that a combination of factors comprising the right technology, effective extension, access to physical inputs, adequate market and other infrastructural facilities are essential to develop small-scale farmers' managerial capabilities and to improve productivity thereby raising the living standards of the rural dwellers.

The ADPs merely play a facilitating role in foodcrops production by its exclusive involvement in seed multiplication, distribution of improved inputs, construction of rural roads, boreholes, irrigation facilities and extending the results of on-farm adaptive research through the extension service personnel, input delivery and credit system and farm service centres.

Although the conception of the ADPs as an instrument for the spread of agricultural technology can hardly be faulted on theoretical grounds, it appears that, in practice, they have had somewhat marginal impact on the small farmers, at least, in most of the southern states.

For example, the Lagos State ADP's agronomic survey reports, 1989-92, reveal that farmers' adoption rates of improved farming inputs

were very low in comparison with the target set by the project. The average rates of adoption of improved practices among the farmers covered by the reports were 13.4 per cent for use of fertiliser, 5.2 per cent for agro-chemicals and 25.2 per cent for use of improved seeds and planting materials.

The farmers' uptake of the state ADP inputs for the same period represents a simple average of 55.1 per cent of the ADP's procurements, while the items that showed high percentage of purchase were inputs having relatively low unit costs and those that could be diverted outside the state for commercial use in non-agricultural sectors. The reports also showed that quantities of seeds, seedlings and agrochemicals expired in the stores of the state ADP due to lack of patronage by farmers even though the prices were below the open market prices.

In Kwara state, Adesina (1992) shows that a lot of constraints inhibit adoption of improved farm inputs supplied by the state ADPs. Such constraints include high cost of inputs, lack of credit, inadequate extension staff, infrastructural facilities, farming inputs and lack of funds.

However, Umeh (1985) reveals that a cross-section of project farmers of Lafia ADP applied more modern inputs and obtained higher crop yields per ha with respect to yam, maize, sorghum, millet and rice than non-project farmers. The project farmers also claimed to have benefitted immensely from the state ADPs' extension services.

The Operation Feed the Nation

The OFN scheme was a crisis food production programme launched by the Federal Military Government in the middle of the cropping season in 1976.

The basic philosophy of the scheme was that every one in the country should develop a keen awareness of the need and a personal commitment to increasing food production so as to make Nigeria self-sufficient and self-reliant in food supply. The basic approach was to put all idle arable land into cultivation and to develop and/or increase backyard gardens and poultry farming through massive government financial and material assistance to farmers and non-farmers alike.

Almost all Nigerians responded to the OFN clarion call by actually tilling the soil in order to increase food production. However, despite the genuine efforts of the government which invested heavily in the scheme and in spite of the co-operation of the entire populace in the implementation of the scheme, the programme failed to achieve its objective. By February 1980 when the scheme was finally abolished by

the civilian government, shortage of food in the country had become more acute than before the scheme was launched.

In terms of enhancing farmers' management capabilities, the scheme achieved little or nothing. First, the principle of mass mobilization embodied in the scheme was considered as running counter to and against the interest of the small farmer in that of the scheme had been successful, it would have taken the traditional farmers out of the current cash economy by throwing them back to subsistence. Second, the programme was drawn up in such a hurry that there was little or no time to engage in research to determine the best zone for the different crops. Third, the scheme was launched when the material inputs, especially fertilisers, seed, pesticides, for its successful take-off were not readily available in the country. Fourth, there was lack of adequate preparation and co-ordination and as such there was considerable lack of details on who was to do what, how and at what time. Fifth, there was no clear-cut statement as to the relative involvement of peasant farmers, cooperatives, public corporations or food companies, corporate businesses, etc. Sixth, there was inadequate and/or irregular supply of facilities and material inputs for crop and livestock production such as irrigation schemes, technical staff, day-old chicks, vaccines and cheap poultry feeds. Seventh, official corruption was colossal as production inputs especially fertilizer did not get to the target population because of diversions by government agents. Eight, realistic appraisals were not carried out each year at any level of governmental hierarchy before approving proposed action programme for the following year.

River Basin Development Authorities

In 1976, the Federal Military Government established eleven River Basin Development Authorities (RBDAs) covering the entire federation and expanded the number to 18 in 1984.

The objectives of the Authorities were to undertake a comprehensive development of both surface and underground water resources for multi-purpose use, to undertake the mechanised clearing and cultivation of land for crops, fish and livestock production, and to raise crops for seed multiplication.

A few of the RBDAs completed a number of irrigation projects, others made their achievements in the provision of farm inputs to farmers while others made efforts to establish farmers on food production projects. For example, Ayinmodu (1984) reports that the Niger RBDA completed an 800 ha irrigation project in respect of the Tungan-Kawo dam near Wushishi for rice production. The same

Authority evolved agricultural credit schemes which enabled project participants to obtain fertilisers, herbicides as loans in kind which they repaid at the end of the season through the sale of their crops to the Authority.

Udoh (1988) reports that the RBDA project participants in Cross River State adopted more recommended farm practices and obtained significantly higher crop yields than the non-project participants. The Basin farmers also had more extension contacts but there was no significant difference between the two groups of farmers in the payment of farm loans on schedule.

The identified problems which afflicted the Authority consist of lack of basic data required for designing irrigation projects, massive financial embezzlement, inadequate cash flow, inadequate executive capacity, and poor infrastructure in the project areas.

Agro-Service Centres

The philosophical foundation of Agro-Service centres is that farmers can be motivated to improve their management practices and hence their productivity and income if they have access to modern and improved production inputs at the right time, place, quantity and at affordable prices. This consideration motivated the setting up of these centres in 1977. About 380 such centres have so far been established providing integrated farm inputs and services within the contexts of the ADPs, NAFPP, OFN and RBDAs.

Cross-section studies have provided some evidence on the impact of these centres on patronising farmers. Adesina (1986), for example, reported that the Ondo State Agro-Service Centre met a high percentage of the demand of a cross-section of patronising farmers for improved farm inputs. However, it was observed that the level at which farmers use these inputs was very low. The major problem of the centre was poor funding which has been responsible for a miscellany of logistic problems.

Mbata (1987) finds that farm size and the levels of crop yields, income and fertiliser use of farmers patronising the Imo State Agro-Service Centres were significantly higher than the observed values for non-patronising farmers. However, for all other inputs there was no significant difference in the levels of use by the two groups of farmers.

Some factors were identified as major constraints in the efficient operation of the Agro-Service Centre in the State. They include bad roads and transportation facilities, poor staffing including extension personnel.

The Green Revolution Programme

The term "Green Revolution" was coined to describe the resultant effects of the application of science and technology to traditional agriculture in Asia and Latin America. These new technologies consist of the development of high-yielding varieties of wheat, rice, maize, adequate supply of water, fertiliser, pesticides and modern equipment. The application of these inputs on large and small farms in Asia and Latin America brought huge successes to these countries.

Nigeria launched its Green Revolution Programme in April 1980 as a successor to the Operation Feed the Nation Programme. The objective is to modernise the agricultural sector, especially to achieve self-sufficiency in food production. Its operational activities involved various other projects such as mechanised land clearing schemes, farm mechanisation centres, agro-service centres, river basin development scheme, and the national accelerated food production programme. The Green Revolution Programme significantly induced massive importation of fertilisers and supply of chemicals and other material farm inputs as well as more credit under the Agricultural Credit Guarantee Scheme.

The programme was capital-intensive in content, and on account of this, it led to the emergence of a new breed of capitalist farmers - the retired military officers and civil servants, doctors, lawyers, contractors and businessmen - who reaped the harvest of public investment in the programme. Aided by their much easier access to the available farm credit and political authority, the new breed of farmers had the capacity to respond rapidly to the new technology. They brought many small farmers out of their traditional free-holds in order to increase their individual holdings to take full advantage of government subsidy on inputs such as fertilizers, tractors and irrigation water.

Even those peasants who still owned their land could not bask in the expected prosperity of the programme for it costs a lot of money to be a Green Revolutionary in spite of the higher subsidies (up to 75% in the case of fertilisers). Credit and other loan schemes theoretically designed for small farmers never reached them because of the stringent and unrealistic terms as well as the tendency for the influential "emergency farmers" to divert such credit to purposes other than agricultural production.

The Structural Adjustment Programme

The Federal Military Government officially launched a macro-economic policy christened 'Structural Adjustment Programme' (SAP) in July, 1986 to restructure the nation's productive base largely through

increases in agricultural production in order to provide food for domestic needs, raw materials for domestic industries and agricultural exports for foreign exchange earnings.

The measures designed to promote agricultural production include trade liberalisation, devaluation of the naira, export promotion incentives, removal of some input subsidies, establishment of the Directorate of Foods, Roads and Rural Infrastructure (DFRRI) and of the National Directorate of Employment (NDE)

The impact of the SAP on the Nigerian foodcrops agriculture has been both positive and negative. For example, output of some foodcrops increased due to enhanced producer prices, incentives provided by the government for the development of specific crops such as wheat and guinea corn and activities of the ADPs. On the other hand, production costs increased substantially, definitely out of proportion to production increases or product price increases. The upward revision of import duties on some items also contributed to this cost-push inflation.

In terms of structural change and the level of farm investment, the SAP is reported to have made meteoric positive impact largely at the initial stage, especially through the activities of the NDE aided by the loans granted under the Agricultural Credit Guarantee Scheme.

However, inspite of the activities of DFRRI and the NDE, a body of empirical evidence has shown that the pursuit of ecological specialisation, technological progress, and massive rural infrastructural support which could guarantee appropriate framework for sustainable growth in the food subsector were lacking in the Structural Adjustment Programme. Thus the SAP can be likened to a double-edged sword whose negative edge cuts much more deeply and incisively than the positive edge.

The Nigerian Agricultural Insurance Scheme

The Nigerian Agricultural Insurance Scheme was established by the Federal Military Government in 1987 to benefit all categories of farmers. The scope of the cover initially is limited to a few crops, maize and rice; poultry and cattle; tangible fixed assets such as farm buildings, machinery and equipment, the farmer himself, farm labour and their dependants.

The insurance cover is deliberately designed for all farmers who receive agricultural credit from any approved lending institutions. The risks covered are fire, lightning, windstorm, flood, drought, pests and diseases for the crop subsector and death, injury, disease, fire, lightning, storm and flood for the livestock subsector.

The objective of the scheme is to promote agricultural production since it would enhance greater confidence in adopting new and improved farming practices and in making greater investment in the agricultural sector.

The insurance scheme began operation in 1989 and has attracted a few beneficiaries all over the country. For example, in Ondo State, 20 beneficiaries participated from June to December 1989; 2000 in 1990 and 480 between January and May 1991, making a total of 2,500 farmers for the two-year period.

The impact of the scheme on the cross-section of beneficiaries in Osun, Ondo and Ogun States is provided in Adepoju (1992), Adeusi (1992) and Okubanjo (1992), respectively. The findings indicate that the scheme has had a positive impact on beneficiaries in Osun State with regard to farm size and farm income but little or no impact on the adoption of fertiliser, pesticides and other improved farm practices. A similar result was obtained for Ondo State. However, in Ogun State the shoe is in the other foot. The reasons for the lack of impact in the state were due, in part to the late take-off of the scheme in the state and largely to the occurrence of adverse weather conditions in the year of study as drought and crop diseases afflicted farmers' crops.

Major Research Contributions in the Department of Agricultural Economics at Ife

The Department of Agricultural Economics at Ife was created in 1967 alongside other Departments in the Faculty of Agriculture. One can therefore safely assert that research efforts in the Department began during the 1967/68 session.

I have collaborated with colleagues both within and outside the Department to conduct research for the promotion of our understanding of, and the advancement of knowledge about, farm management practice in Nigeria. This lecture being the first to be given in the area of Farm Management by the staff of the Department, an attempt is made to highlight some of the important research findings in this area. The presentation is partitioned into two sections, namely, (a) Fisheries and Livestock and (b) Arable and Tree Crops

(a) Fisheries and Livestock Enterprises

Fisheries and livestock are important subsectors of the Nigerian agriculture. Fishing in the Nigerian body of waters is traditionally the occupation of many small-scale fishermen in the riverine areas of Nigeria. While livestock enterprises are spread all over the country there is well-defined geographical specialisation. The climatic and

ecological conditions in the northern part of the country favour the rearing of large animals while the southern parts are suitable for poultry rearing.

Adesimi *et al.* (1976) investigated the economics of motorised canoe fishing in Cross River State and finds that although the fishermen were making fairly good income, they were not making enough trips to justify the huge amount embodied in the establishment capital. More trips would spread the fixed capital over more output, thus reducing average total costs. The establishment capital was also too large in relation to the short use-life of this durable capital. The capital items were obsolete, poorly maintained, and high on fuel consumption. A lot of the fishes caught got spoilt before delivery to the fishing base and labour input was excessive.

In the area of livestock, Adesimi (1979), Adesimi *et al.* (1982) and Adesimi (1989) examined the economics of poultry management, optimal feed inventories control decision in poultry management and the establishment and operation of a poultry insurance scheme, respectively.

The poultry management study reveals a marked productivity differential between the two spatially separated enterprises, the differential being a result of differences in breeds of chicks and management efficiency on both farms. The two farms satisfied the short- and long-run economic viability criteria even though net incomes were higher on one farm than the other, the higher income being the result of economics of size and higher product prices. The record-keeping system was deficient on both farms.

The feed inventory study involved a cross-section of 120 poultry farms in South-western Nigeria with the objective of determining the optimal feed inventories consistent with the minimum cost of management. The evidence reveals a divergence of the farmers' decisions from the optimal, with regard to the number of bags of feeds orders, and consequently cost minimisation objectives were not met. Inadequate operating capital prevented the farmers from ordering larger quantities of feed which attract a price discount and offer overall cost savings.

The poultry insurance study has a pioneering character embodied in the detailed illustration which it furnishes on methodological procedures, analytical computations, and more especially with regard to the experimental data generated using 306 layers (Black Olympic) from which mortality and life tables were computed to derive the required premium and indemnity payments to farmers in the event of

insurance claims. The idea encapsulated in the study will be instructive in running the Nigerian insurance scheme.

(b) *Arable and Tree Crop Enterprises*

Two experimental research studies were conducted on the University Teaching and Research Farm, Adesimi *et al.* (1980) and Adesimi *et al.* (1982). The 1980 study was concerned with nitrogen fertiliser requirements of cassava and its economic implications for farmers in Southwestern Nigeria. The relative effectiveness of calcium ammonium nitrate (CAN), sulfate of ammonia (AS) and urea (UR) was investigated to determine the economic fertilisation rate desirable for optimum cassava root yield.

Split application of CAN in two doses gave the most technically and economically efficient yield. Ammonium sulfate produced the highest return only when the subsidised price was used. Since CAN was not being subsidised in Nigeria, it was recommended that subsidy should be extended to it as well, in view of its technical efficiency.

The second experimental study was designed to find the optimal crop combination under various farm sizes. Given the production conditions, maize enterprise produced the most profitable net income in preference to cassava and seedmelon. The constraints to output expansion consist of labour for bush clearing, land preparation and weeding; so also was operating capital.

A systems study of decision-making in small-holder agriculture, Adesimi *et al.* (1975), developed a conceptual framework characterised by a two-way flow of information, with forward and backward interconnections which define the complexity and interlocking linkages in the farmer's production decision process. Analysis of data indicates that majority of the farmers operate for subsistence but still consider farming as profitable for different reasons and use different forms of price expectations as inputs in production decisions. In managing risks in farming, the farmers use different techniques including traditional, modern and fatalistic methods. The results also show that tenant farmers could grow any category of crops including permanent crops on the farm under the traditional arrangements set up for the administration of the crops in the event of untimely termination of the contract.

The claim by the farmers that they use price in their production decisions was not tested statistically owing to lack of data, but Adesimi (1970) and (1983) reveal that the Nigerian traditional farmers respond to price incentives and that larger farmers are more price-responsive

than small farmers. One of the studies reveals that the Nigerian Tobacco Company has used price incentive as a strategy for spreading technical knowledge to growers through the intensive education and extension programme.

In three other related studies, Adesimi (1976), (1980) and (1987) the results indicate that with low or falling cash income, farm families restrict farm and nonfarm production and savings, and even use part of the farm loans to meet their families living expenses, the most sensitive financial resource to income changes being savings which may be negative if current incomes fall below certain levels.

The set of farming inputs used by the farming households consists of traditional tools, and cropping practices are still anchored largely on customary considerations. The budgetary and programming analyses gave maize/cassava mixed cropping as the most profitable enterprise in preference to sole cropping activities of these two crops in 1987 season. This is an important result because maize and cassava have been the subject of intensive research by the Nigerian government and international agencies, and are being recommended to farmers for cultivation as sole crops. This result therefore indicates that, given the technical and economic relationships and the subsistence requirements found among traditional farmers, sole cropping is practically far less competitive with mixed cropping systems.

Since the pre-colonial era, selective farm tractorisation has been an important component of Nigeria's agricultural development policy. Adesimi *et al.* (1980) investigated the interactive relationships of selective farm mechanisation with labourforce employment, farm size and capital stock in a study of 300 farmers in Ogun State. The evidence indicates that tractorised farms exhibit a tendency towards higher capital/labour ratio and that cropped acreage was found to be positively correlated with labour employment, tractorisation and capital stock; so also was labour employment with tractorisation, implying a tendency for selective tractorisation to be labour-absorbing rather than labour-displaying.

A slightly related study, Adesimi (1974) investigated the implication of the massive rural urban migration of the youths on farm labour force and the resultant impact on the age structure of farmers. The study reveals that the outmigration had produced a largely ageing population of farmers most of whom are nonliterate. Emphasising the ill-effects of old-age and illiteracy on the effective performance of management functions on the farm, the study recommended the need for incorporating technical education courses and rural economics in the

ongoing Universal Primary Education.

In recognition that land, as important as it is in agriculture, has not provided the investment needs of farmers by being a part of the financial capital in Nigerian agriculture, Adesimi *et al.* (1976) studied the prospects for the development of rural land market in Nigeria using Ife Central and Ife North Local Government areas as a case study. Most of the farmers had favourable attitude towards sale of agricultural land but are most willing to sell to agricultural co-operatives and less willing to sell to government and individuals. The socio-economic factors that are likely to promote the emergence of rural land markets are literacy and provision of modern amenities in rural areas, while old-age of family head and imposition of land tax would discourage willingness to sell land.

Given the contribution of capital to the enhancement of management capability and productivity in agriculture, Adesimi (1981) examined the structure of capital formation among farmers in five local government areas of Ondo State. The study reveals that over 80% of the farmers' capital formation is in form of fixed capital, while the remainder constitutes farm inventories comprising means of transport, farm tools and implements, stored produce biological inputs such as fertilisers and pesticides. In relative terms, the rate of capital accumulation in technological inputs - mechanical and biological - was quite low.

A statistical analysis of the data collected indicates that the farm capital accumulation decisions of the households were positively influenced by family income and access to farm credit, while age and dependency ratio have a negative influence.

In order to remove some of the risks in farm production Adesimi *et al.* (1978) and Adesimi (1983) outlined the forms of insurance schemes for Nigeria's arable- and tree-crops respectively. The institutional set-up, data requirements and methodological computations are suggested and illustrated with empirical survey data. On the basis of this pioneer work, the Federal Livestock Department in 1983 invited the author to submit a proposal for the establishment of a livestock insurance scheme for Nigeria. This proposal provided one of the working papers used to design the Nigerian Agricultural Insurance Scheme launched in 1987.

Finally, it is perhaps pertinent to mention that as part of efforts to advance knowledge in Farm Management, the textbook authored by me was published in 1989 and has been used to teach the course in the Department since then. Eight other Universities in the country as well

as a University in East Africa have also been using the book for teaching students of agriculture. The book is written with perspectives through the development process and the contents emphasise the human and socio-economic aspects of management and uses examples from local agriculture.

Summary

The summary of the outcome of our analysis in this lecture is vividly epitomised in the evidence provided in Table 1, which contains comparative information on the rural population in Africa below the poverty line. Poverty line is determined on a country-by-country basis, drawing on both government and International Fund for Agricultural Development criteria.

Poverty as used in the above table is viewed from the perspective of sustainable development which strikes at the roots of poverty. Poverty is not just having low income; it is not the absence of means of social participation; it is not just the persistence of massive inequalities, and it is not just deprivation of decent shelter, clothing and diet. It is much more. It is oppression, hunger, sickness and death—extreme conditions that defy our capacity to imagine, much less to measure.

The concept of sustainable development is defined as development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. Put another way, to say that a development path is "sustainable" means, at least, that its pattern of production and consumption can be reproduced indefinitely without doing increased or irreparable damage to the essential natural ecosystems.

It is incontrovertible that agriculture has an important role to play, and is the key with which to address these issues of poverty reduction. First, agriculture in many ways embodies the idea of interaction between people, land, water and climate. This interaction provides a unique opportunity for man to tackle the problem of poverty from its roots through the reduction of food insecurity and enhancement of natural resource management. Second, the bulk of the Nigeria's poor are in rural areas where agriculture forms the major means of livelihood. A programme of sustainable agricultural development, therefore, implies a major onslaught on poverty.

As could be seen from the table, of the forty-nine countries listed, Nigeria occupies the 31st position in terms of the percentage of rural population in Africa below poverty line. Nigeria has an estimated 35.76 million or 51 per cent of its rural population below povertyline. This

means that among individual countries in Africa, Nigeria has the largest number of rural people living below poverty line, followed by Ethiopia (16.66m) and Sudan (15.92m).

The Nigerian dilemma is not quite surprising because the preceding historical analysis of major agricultural development schemes and the evidence of subsequent empirical research have both not indicated anything to the contrary. Most of the agricultural development projects and programmes in Nigeria over the past six decades have not only been poorly conceived, they have also been inefficiently executed; and have not sufficiently been oriented to productivity enhancing goals; the foodcrops agriculture has not benefitted much from the windfall gains of the oil sector, which confirmed the popular feeling that oil is a wasting asset particularly in developing countries.

The other aspects of the Nigerian predicament have been the existence of too many agricultural development projects and frequent changes in development policies and programmes. This situation is unwholesome as it breeds a lot of inconsistencies, untimely termination of development programmes, and leads to duplication of functions, conflict of roles, inefficient utilisation of limited resources, inadequate executive capacity, official corruption and poor project co-ordination. The resultant effects have been a wide range of technical, socio-economic, organisational, institutional and management problems which, in the main, have scuttled our efforts to develop agriculture and the rural sector of the economy.

Recommendations

In view of the above evidence and in order to remedy some of the shortcomings highlighted, it is hereby observed and recommended as follows:

1. The Federal Government, under the present situation, is over-burdened with too many functions and responsibilities which hamper effective coordination and performance. There is need to shed some of these responsibilities especially those that can be more effectively and efficiently performed by the lower tiers of government. Hence, it is recommended that the centres of agricultural development activity should be reserved exclusively for the state and local governments, while the Federal Government plays largely facilitating roles. The Federal Government is obviously too far removed from the rural communities to be fully effective in executing grassroot rural development programmes and project.

2. There should be a comprehensive review of all the existing agricultural development projects in Nigeria with a view to effecting rationalisation, (integration, merging, scrapping etc.) so as to have a properly streamlined and well-structured body of agricultural development projects and programmes. Similarly, as part of government's agricultural development policy, there should be an annual or mid-term review of every agricultural development project in Nigeria in order to detect structural defects and operational problems and to correct them before it is too late to do so.
3. The concept of farm settlement scheme as manifested in the Kware Irrigation Scheme, the Niger Agricultural Project and the Western Nigeria Farm Settlement should be discarded or, at least, substantially modified as the system fostered a wage earner mentality, suppressed entrepreneurial impulses amongst the participating farmers. They are also very expensive and represent an inappropriate application of mechanical technology and showed a complete disregard for cultural and social organisations of participants, among others. They also did not enlist the willing participation of the targeted communities. Agricultural development projects should be precisely targeted at the felt needs of the participants and should have clearly defined objectives, strategies, input needs, time-phasing, organisational structures, and justification, and above-all, should be empowering, first by developing skills and abilities of participants, and second, by enabling rural people to decide upon and take actions they consider essential for their own development.
4. Agricultural extension services in Nigeria should be remodelled to make the scope more comprehensive so as to provide not just new technological packages that are supposedly tried and tested but to include farm management advisory services which integrate the technological packages into the existing farming system. The new institution will involve not just the conveyance of messages to farmers relating to the use of improved inputs and the adoption of modern cultivation techniques with the objective of increasing yields but also the other objectives of the farmer such as profit maximisation, preference for taste or use of

crop residue for various purposes, the desire to meet subsistence requirements of the household, and preference for mixed cropping, among others. Several of the present cadre of agricultural extension staff in Nigeria will be unable to discharge the functions envisaged for the new institution, hence there is need to recruit additional or complementary farm management experts for a result-oriented agricultural programme. Specifically, the more important objectives and functions of the Farm Management Advisory Service being suggested are to guide investment decisions of individual farmers for the optimal attainment of the objectives of production, to ensure efficient utilisation of resources towards realisation of maximum profits at the level of the individual enterprise, to help develop an optimal farm plan in order to maximise returns to the limiting factors of production, to provide information on yield levels associated with particular application rates, to advise on size and types of buildings and structures required and on the kind of conservation programme that is necessary, and to design simplified and standardised farm record books for administration to farmers.

5. The cost of agricultural inputs is very high in Nigeria and this is already causing serious constraints on agriculture. Government should continue with agricultural input subsidy and the scope of coverage should be expanded to include items such as cutlasses, machetes, hoes, wheel-barrows and headpans. The objective of agricultural input subsidy should be to alleviate the cost burden of the small farmer and to encourage the adoption of technological and technical inputs and not to replace the farmer's personal investment and hard work.
6. Agricultural research should be accorded greater attention and priority in budgetary allocations with emphasis on technological, adaptive, socio-economic, and inter- and multi-disciplinary research. It should be mentioned that government should realise the complementary relationship between socio-economic and technical/technological research in agriculture and should properly reflect this relationship in its agricultural development policy. Measures should be instituted to transform and adapt agricultural research

findings into practical and usable Farm Management Advisory service materials ready for use to guide farmers.

7. Finally, provision of social infrastructure in rural areas should be more honestly and vigorously pursued to give rural dwellers a new lease of life and to encourage private investment in agriculture.

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TABLE 1
RURAL POPULATION IN AFRICA BELOW POVERTY LINE

S/N.	Country	Number ('000)	% of rural population
1.	Central African Republic	1,389	91
2.	Burkina Faso	7,025	90
3.	Malawi	6,124	90
4.	Rwanda	5,649	90
5.	Burundi	4,093	85
6.	Gambia	541	85
7.	Sudan	15,921	85
8.	Congo	890	80
9.	Mauritania	932	80
10.	Uganda	12,398	80
11.	Zaire	16,659	80
12.	Zambia	2,946	80
13.	Guinea Bissau	557	75
14.	Djibouti	55	70
15.	Equatorial Guinea	171	70
16.	Guinea	3,469	70
17.	Senegal	3,046	70
18.	Somalia	3,240	70
19.	Angola	4,502	65
20.	Benin	1,753	65
21.	Mozambique	7,359	65
22.	Sierra Leone	1,780	65
23.	Mali	4,312	60
24.	Tanzania	1,958	60
25.	Zimbabwe	4,031	60
26.	Chad	2,091	56
27.	Botswana	515	55
28.	Kenya	9,903	55
29.	Lesotho	749	55
30.	Ghana	5,174	54
31.	Nigeria	35,758	51
32.	Comoros	179	50
33.	Madagascar	4,290	50
34.	Sao Tome & Principe	32	50

35.	Swaziland	257
36.	Morocco	5,706
37.	Ethiopia	16,873
38.	Gabon	252
39.	Cameroun	2,278
40.	Cape Verde	59
41.	Niger	1,916
42.	Togo	740
43.	Cote D'Ivoire	1,666
44.	Algeria	3,350
45.	Egypt	6,726
46.	Liberia	318
47.	Seychelles	6
48.	Tunisia	545
49.	Mauritius	75

Source: *IFAD (Figures based on 1988 data)*