UNIVERSITY OF ILORIN

THE ONE HUNDRED AND FIFTY-EIGHT (158th)
INAUGURAL LECTURE

"LET THE SMALL-SCALE FARMER BE IN GOOD STANDING"

BY

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THURSDAY, 28TH MAY, 2015

This 158th Inaugural Lecture was delivered under the Chairmanship of:

The Vice Chancellor

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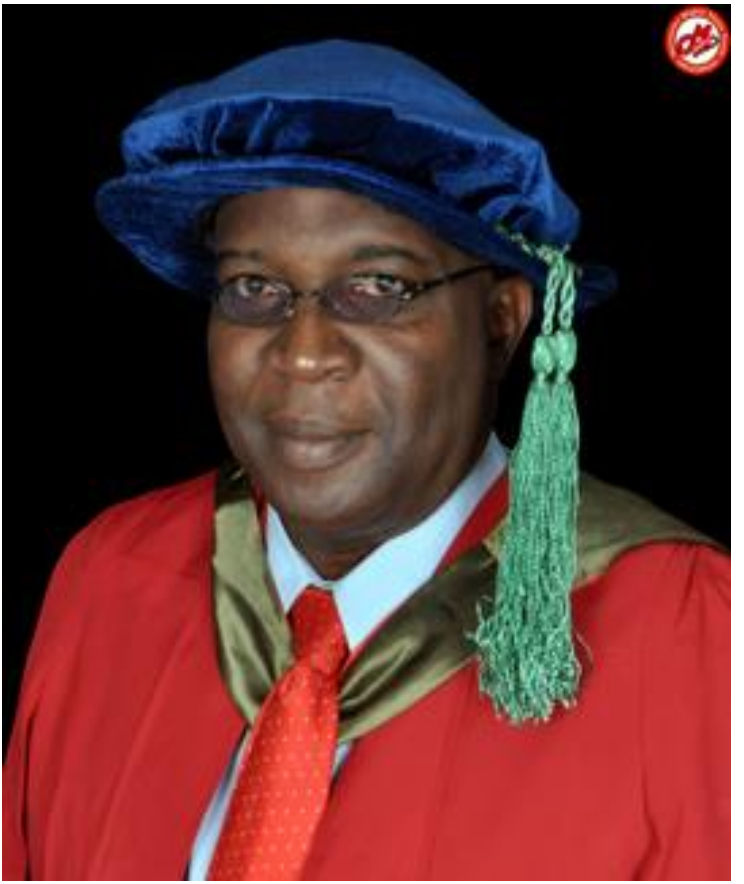
28th May, 2015

ISBN: 978-978-53221-6-3

Published by
The Library and Publications Committee
University of Ilorin

Printed by
Unilorin Press.



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Ladies and Gentlemen

All glory, honour, dominion and power be to the Lord Almighty Who ordained that I stand before you today, the 28th day of May 2015, to present the 158th Inaugural Lecture of this great University. It is the first in the Department of Agricultural Economics and Farm Management.

Introduction

My journey towards a career in Agricultural Economics started with a discussion with my in-law, Mr. Y.O. Momodu, who was then the General Manager of the defunct Nigerian Grains Board, Kaduna, and one of the earliest practitioners of Agricultural Economics in Nigeria.

I was preparing for my GCE A-Level at the School of Basic Studies, Kwara State College of Technology, Ilorin (at the site of UNILORIN mini campus). He asked what I planned to study at the University but I told him I was not sure yet. He then suggested that I studied Ag. Econs., as he loved to call it. The seed was sown and when the time came to apply for admission, I applied to Ibadan, Ife, Zaria and Ilorin. Ilorin was just coming on stream and many of us felt it would not be "chic" to go to a university on the same campus where we did our A-Levels. More than two-thirds of my A-Level class went to the prestigious University of Ibadan.

At Ibadan, I worked very hard and by God's grace graduated with a Second Class Upper Division degree. After National Service, I went back to Ibadan for a Master's degree in Agricultural Economics. On completion of the programme, my mentor, Professor James Adewuyi Akinwumi, called me to his office and suggested that I continued with my Ph.D. He facilitated my engagement as a Research Assistant with U.I. Consultancy Services and later a Teaching Assistant in the Department of Agricultural Economics, U.I. I attended an employment interview for the position of Assistant Lecturer in the Department of Agricultural Economics and Farm Management, University of Ilorin, in September, 1983 and was offered the position. I assumed duty on 21st of March 1984. J.C. Umeh (now a Professor at the University of Agriculture, Makurdi) and I were the pioneer lecturers in the Department. The rest, as they say, is history, as by the special grace and guidance of God, I rose from Assistant Lecturer to Professor with effect from 1st October, 2000.

Nigerian Agriculture

Agriculture is a practice that involves the production of animals, crops, as well as utilization of forest resources for the consumption of man and supply of agro-allied products to the industrial sector. Agriculture is an important sector of the Nigerian economy as the favourable agro-climatic conditions, the richness of soil types and water resources, and the high population density provide great potentials for a wide range of crop and animal production. It is clearly indubitable that the Nigerian agricultural sector, if well managed, is strategically positioned to have a high multiplier effect on the nation's quest for socio-economic and industrial transformation (Ehigiator, 2012).

Nigeria has an approximate land area of 91,000 square kilometers, out of which about 81 percent is categorized as agricultural land. However, only 40 percent of Nigeria's agricultural land is currently cultivated. Though, Nigeria has about 263 billion cubic meters of water including two of the largest rivers in Africa, yet only 7 percent of the nation's irrigable land has been put into use. The implication of this is that our farming system is still grossly dependent on the vagaries of weather. It is worthy of note that, in spite of the rapid growth in the oil industry in recent years, the Nigerian agricultural sector still makes significant contributions to the nation's Gross Domestic Product and provides employment (formal and informal) to about 70 percent of the over 175 million Nigerians (2014 estimate). The sector contributes to reduction in poverty and hunger levels and helps prevent rural-urban migration. The resource-poor farmers in the rural areas, representing over 90 percent of the farming

populace, produce as much as 85 percent of the total agricultural production (**Omotesho** et al; 1995; Adewumi and **Omotesho**, 2002). The country's agricultural system which is subsistence in nature is operated by the rural farmers who on the average live on less than a dollar per day and cultivate less than two hectares tilling the ground with crude implements in the scorching sun and crushing rain. The small-scale farmers have always occupied a very important part in agricultural production in Nigeria. The country has a comparative advantage in the production of cocoa, rice, cassava, sorghum, peanut, palm oil, millet, corn, yam, rubber, cattle, fish, timber and many other crops. Nigeria is the largest producer of yam and cowpea in Africa and the world's foremost producer of cassava. The country has enormous potentials, immense ambitions, well-articulated policies but paradoxically, still struggles with chronic food insecurity and poverty particularly among the rural populace with the female-headed households being highly vulnerable (**Omotesho** et al; 2006; Babatunde, **Omotesho**, Olorunsanya and Owotoki, 2008).

Over the years, previous Nigerian governments have attempted through various programmes, initiatives and policies, to address the challenges that face agriculture and ensure its development. Okuneye (1995) summarized the multiplicity of the various programmes vis-à-vis the performance of Nigerian agriculture in his inaugural lecture titled, "Nigerian agriculture on the run: yet refuses to move". International Food Policy Research Institute 2010 Global Hunger Index classified Nigeria's hunger situation as "serious". Nigeria is also one of the five countries with half of the world's malnourished children. In 2009, about 6 million children were said to be malnourished in Nigeria.

Malnutrition is a major cause of child mortality and reduction in labour availability for farm work which in turn leads to low farm output causing higher food prices. Since majority of the rural dwellers in Nigeria are poor and uneducated about their nutritional status, the yearly loss of about 6 million children may reduce the number of farmers in our villages (Adewumi, et.al., 2010, Adewumi, Jimoh & **Omotesho,** 2012). This displaces local production with the consequence of continued reliance on foreign countries for food and energy.

Who are the Small-scale Farmers?

Explaining the concept of small-scale farming is important from the policy point of view. Succinctly put, small-scale farming is a system of farming that is characterized by low asset base, low fixed capital investment, labour intensive practice, small farm size, low investment and expenditure on farm inputs and improved technologies, crude tools and equipment and low productivity, among others. This is because the scale of operation of small-scale farmers is usually too small to attract the provision of the requisite services they need to be able to significantly increase their efficiency and productivity. These farmers live in resource-poor conditions operating with few purchased inputs – like seeds and fertilizers and with limited access to high-tech equipment. Though ecologically friendly due to the fact that less land is cleared for cultivation and there are fewer emissions due to less use of fuel-driven machinery, the system is nonetheless labour intensive.

Small-scale farmers are those that employ the traditional hoe-cutlass technology which is often combined

with little capital in the form of small land area, tools and operating cost to finance their farming activities (Omotesho, et. al., 1995). Their farming system which is also characterized by fragmented land holdings is labour intensive and irksome with the household as a major source of farm labour.

While different indicators have been identified in literature to describe the small-scale farmers, the most common indicator used is land ownership and the degree of access to it. The limit, most frequently, takes the form of a threshold that is usually selected on an ad hoc basis (2 hectares, mean or median land size). For instance, households with less than a threshold land size of two hectares may be characterized as smallholders. Nevertheless, across countries, the distribution of farm sizes depends on many other factors such as agro-ecological and demographic conditions as well as economic and technological factors. Other indicators usually employed include geographical attributes; access, use and ownership of capital, livestock and inputs (including credit); the operational objective of the farm and its degree of independence along with its size. The number and types of crops cultivated are also considered. Small-scale farming provides a source of livelihood for the landless labourers and other service providers; and plays a major role in the trading of inputs, food and raw materials at the community and village levels. Details of the socio-economic characteristics of small-scale farming households are as presented in Table 1.

Small-scale farming drives the rural economy and enhances local development. Its role is multi-dimensional. It includes efficiency advantage relative to large scale, and

contribution to national food security. By providing the rural economy with a livelihood platform, the system has capacity for accommodating poverty reduction and food security strategies along with welfare improvement objectives.

Table 1: Socio-economic Characteristics of Small-scale Farming Households

Socio-economic Characteristics	Average value
Household head is male (%)	90.4
Age of household head	49.8
Average year of education of head	4.5
Household head is literate (%)	52.1
Average year of education in household	4
Average household size	6
Per capita consumption expenditure (₦)	56,805
Average household farm land	1.06
Physical Inputs:	
Proportion that use fertilizer (%)	48.3
Proportion that use pesticide (%)	17.8
Proportion that use herbicide (%)	23.3
Other Agricultural Characteristics:	
Proportion that use animal (%)	31.3
Proportion that owns livestock (%)	73
Proportion for whom at least one plot is purchased (%)	9.7
Households that receive agricultural advice (%)	14.7

Value of agricultural capital (₦)	4,299
Non Agricultural Income	
Household owns/operates a nonfarm enterprise (%)	56.5
At least one member of household received external wages (%)	11.9
Household had rental and/or investment income (%)	4.3
Per capita profits from nonfarm enterprise(s)	15,224
Per capita wage income	10,934
Per capita rental and investment income	321.8

Source: World Bank, 2014

Challenges Faced by Small-scale Farmers

Empirical evidence has shown that small-scale farmers in developing countries are as efficient as the large-scale farmers if given a level playing field. Nevertheless, the small scale farmers are faced with a lot of challenges. These include declining productivity, risks associated with diversification to high value crops, uncertain financial viability, limited access to services and markets, environmental constraints including those arising out of climatic change and idiosyncratic risks like floods and droughts. The farmers are constrained to farm on marginal lands without irrigation using saved seeds with no formal training and access to credit facilities.

Another challenge the farmers face is tenure insecurity which adversely affects their capacity to undertake investments necessary for improving their farming practices. The implication of this is the burgeoning

rural populations that must cope with decreasing farm size and little or no alternative economic opportunities. The small-scale farmers are usually made to have their destiny in their own hands. The decision process and the management of small-scale farms within its most frequent organizational form- the family farm are supposed to promote learning and innovation if provided with an enabling environment.

However, the continued urban-biased development process which distorts economic incentives, yielding highly dualistic outcomes, slowing sectorial and aggregate growth rates and promoting non-equitable distribution of resources and returns to development, is a serious issue that calls for concern. Development indicators for rural areas lag behind those for urban areas in no small way: incomes are lower, infant mortality rates are higher, life expectancy is shorter, illiteracy is more widespread, malnutrition is more prevalent, and greater proportions of people lack access to clean water and improved sanitation services. Rural development policies and programmes have continually been constrained by poor funding and implementation to the detriment of the local farmers. Information dissemination to farmers is a vital part of agricultural development. Unfortunately, Nigerian farmers are usually in the dark and seldom feel the impact of agricultural innovations (Yusuf, 2014). This is neither because they are lazy nor is it that they are bereft of ideas; rather, it is either because they have no access to such vital information or because it is poorly disseminated. The unfavorable economic, socio-cultural and institutional conditions also do not help matters, which results in the farmers being forced to adopt their own indigenous knowledge. The norm

over the years has been that available information is exclusively focused on policy makers, researchers and decision makers with little attention being paid to the information needs of the small- scale farmers who are supposed to be the primary beneficiaries of the policy research and decisions. The non-provision of agricultural information is a key factor that has greatly limited the productivity and efficiency of the small-scale farmers. To enable effective service, the ratio of extension agent to farm- family should be 1:250 (Benor and Baxter, 1984, Ozowa, 1995). According to information from Agricultural Development Programmes in 27 states in Nigeria, Gombe State has the highest extension agent to farm family ratio of 1:826 whereas in states like Niger, Lagos, Ebonyi, it is 1: 5000 or less (Oladipupo et al, 2014). How then can the small-scale famer be better off with this kind of statistics? The situation is made worse by the poor infrastructure in the rural areas which has made access to the resource-poor farmers more difficult.

Another vital problem faced by small-scale farmers is inadequate access to markets which are often under-capitalized and inefficient. Because they generally lack storage and processing facilities, farmers usually struggle to distribute and market their produce at extremely high risk and transaction costs. In fact, research has shown that only one third of agricultural output produced in the country reaches the market. The farmers are consigned to sell their products in the local or surrounding market with little opportunity to make good profit from their labour. To make agriculture sustainable, the grower has to be able to make profit. No nation in the world can develop without embracing market economy.

The smallholder farmers in trying to increase productivity also face the problem of how to get capital to buy modern agricultural inputs. They, therefore, sometimes go into debt by borrowing money at exorbitant interest rates to buy inputs which, if crops fail, they have no way of paying back. Microcredit financing has been heralded as the solution to global poverty. However, this process designed to foster sustainable development has run into problems, especially of corruption. Drawn by the potential for quick profits, banks and other private institutions now dominate the sector often charging very high interest rates and pushing the already poor resource farmers deeper into poverty.

The Need for Favourable Agricultural Policy in Nigeria

The crucially important role of public policy and government intervention for smallholder agriculture cannot be overemphasized if the country is to develop a vibrant and flourishing agricultural sector. These farmers need to be able to produce stable quantity of food, earn better incomes, and have decent diets just like other people. To produce food, small-scale farmers need access to good-quality inputs, good-quality soil, and a favourable climate. During the Green Revolution, technological progress based primarily on improved seeds was easily adopted by farmers irrespective of operational size (Mugera and Karfakis, 2013).

Nowadays, technological advances require investments both in human and physical capital, as well as advanced relationships with a wide network of suppliers and traders of inputs (including credit) and services. There is urgent need for adequate investments in marketing

infrastructure to effectively link smallholders to the value-chain, and stimulate vast growth in the Nigerian agriculture. Studies have shown that the Nigerian small-scale farmers are technically efficient but are rarely, if ever, consulted on what their needs are. It is disheartening but not surprising therefore that most gigantic agricultural projects executed by the government with large sums of money since the early seventies till very recent times have been ineffective. Such projects include Operation Feed the Nation (OFN), River Basin and Rural Development Authorities, Farm Settlement Scheme and National Accelerated Food Production Programme (NAFPP), the Green Revolution, The National Economic Empowerment and Development Strategies (NEEDS), The National Poverty Eradication Programme (NAPEP); National Policy on Integrated Rural Development (NPIRD), National Special Programme for Food Security (NSPFS), National Fadama Development Project and the various presidential initiatives such as the presidential initiatives on Cassava and Rice.

One major problem that has become the bane of our policy is the lack of continuity associated with government programmes. The effect of this on agricultural development has been far-reaching. Successive governments come up with new programmes, schemes and institutions, which in most cases do not represent continuity nor complement the existing ones. Policies are therefore abandoned midway, in most cases, before their effects become manifested.

Another weak point of most of these programmes is that they are designed to favour large scale agricultural production at the expense of the small scale farmers who produce the bulk of the food we eat in Nigeria. Indeed

studies have shown that large scale agricultural production is not the solution to Nigeria's food insecurity challenges as most of such projects are not easily sustained especially in terms of farmers' participation (Omotesho et al; 2012; Akanbi, **Omotesho,** and Ayinde, 2011). For instance, in Asia, adoption of technological advances even among the smallholders implied that agriculture could play a leading role in economic growth. The role of small-scale agriculture has different economic and policy implications. This is as observed in Thailand where smallholders did manage to commercialize the agricultural sector. Also, over the past thirty years, China has achieved enormous growth in agriculture dominated by small-scale farmers and successfully reduced poverty in many rural areas. This evidence suggests that small-scale agriculture can lead to agricultural and economic development if well supported. A similar success story can be seen in Brazil, where smallholders play a huge role in supplying food to vulnerable groups through the zero hunger programme, in which the government buys products directly from smallholders at a guaranteed price and distributes them to a network of day-care centres, hospitals and community associations (International Institute for Environment and Development, 2011).

The Nigerian Agriculture: Is it in Good Standing?

Just as being in good academic standing is a *sine qua non* for continued studentship of an undergraduate student in the university, so it is for a nation. No nation can progress if it is not in good standing. To be in good standing, a person, organization or nation must comply with all their explicit obligations giving them unabated

powers to conduct their activities with a feeling of fulfillment.

Any nation that is not able to sustainably feed its population cannot be said to be in good standing. This is justified in the popular Yoruba adage: ***Bi ebi ba ti kuro ninu ise, ise bu se*** meaning that ″once the problem of food is addressed in the life of a poor fellow, the poverty level has been substantially solved.″ There is thus a direct correlation between our standing as a nation and the development of agriculture. It is obvious, therefore, that the development of agriculture in Nigeria is a criterion for our being in good standing. A cursory look at the agricultural development in Nigeria has shown that we are not yet prepared to confront the food challenges facing us as a nation; and if urgent actions are not taken, I am afraid, we may not be able to cross-over to the next stage of development with our contemporaries. It is appalling that our condition is at variance with those of South and East Asian countries, where there have been rapid improvements in agricultural practices and production. Compared with the emerging Asian Tigers, notably, Thailand, Malaysia, China, India and Indonesia that were far behind Nigeria in terms of GDP per capita in 1970, these countries have transformed their economies and are now better off than Nigeria by taking advantage of the productivity gains that investment in agriculture could offer (CBN, 2012).

The contribution of agriculture to our national development has waned considerably in recent years and the rate of decline is abysmally nauseating. In the sixties and seventies, Nigeria was a major exporter of agricultural commodities as evident in cocoa and kolanut production in the Western Nigeria, groundnut pyramids and cotton of the

north, the rubber plantations in the Edo axis, etc. In those good years, Nigeria accounted for more than 40 percent of the global supply of palm oil, 35 percent of groundnut, 23 percent of groundnut oil and 25 percent of cocoa, while farmers from the north and south made money from their sweat. During that period, agricultural exports accounted for over 60 percent of both total export earnings and proportion of GDP making the country self-sufficient in food production.

With the discovery of oil, the earnings from agriculture and the country's food sufficiency status began to decline. By 1996, the contribution of the sector was only 30 percent of GDP and about two percent of foreign exchange earnings (Ahungwa et al; 2014). In 2014, the agricultural sector's contribution to GDP after rebasing is estimated at only 22 percent of the total GDP (NBS, 2014). I am sure that with this performance, details of which are as presented in Table 2, I do not need to tell you whether Nigeria's agriculture is in good standing or not.

Table 2: Contribution of Agriculture to Nigerian Gross Domestic Product (1960-2013)

Year	Total GDP (N'M)	Agriculture GDP (N'M)	Percentage of Total
1960-64	2568.4	1579.64	61.65
1965-69	3088.58	1640.26	53.27
1970-74	9314.62	3268.4	39.69
1975-79	31233.22	7328.64	23.80
1980-84	51809.44	16426.78	31.30
1985-89	119632.2	44270.86	38.12
1990-94	539207.3	181622.32	32.55
1995-99	2668070	920018.08	34.32
2000-04	7223539	2734641.3	37.05
2005-09	2056063 0	6929310.4	33.50
2010- 12	3712938 6.5	1236889 8.7	37.02
2013 (after GDP rebasing)	80223681.8	17,625,142.90	21.97%

Source: NBS (2014); Ahungwa, et al, (2014).

Though the rebasing of the Nigerian GDP gave it the status of the largest economy in Africa and the 24th largest economy in the world, the pertinent question to ask is: to what extent, has our new found status affected or improved the lives of the small-scale farmers who produce the bulk of the food we eat? The situation is more pathetic because more than 70 percent of the Nation's population depend on agriculture for their survival. Nigeria is now a net importer of food items, and is battling with enormous food shortages. It is really pathetic to note that Nigeria still

imports what she can produce in abundance. This development is not unconnected with the increase in oil output and prices beginning from the first half of the 70s, which has led to the formulation of macro-economic policies which did not favour agriculture, and inconsistent foreign exchange rate policies. Agriculture has been completely relegated to the background with the country becoming an importer of items such as rice, maize, tomato, etc that we can comfortably and cheaply produce locally. This view was supported by the Governor of the Central Bank of Nigeria who in 2011 noted that Nigeria spends N630 billion to import agricultural foods annually because the agricultural sector has been pushed to the background (Ahmed & Hassan, 2011). According to FAOSTAT, annual food importation in Nigeria between 1961 and 2011 ranged between $43.6 million and $4.93 billion. This is as presented in Fig. 1.

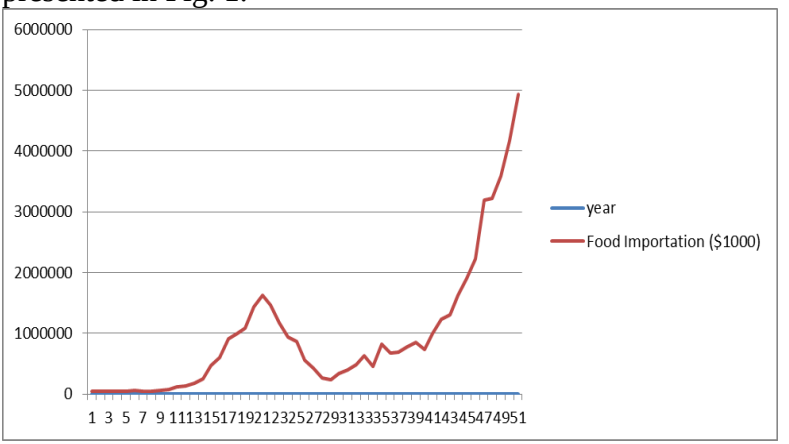

Fig. 1: Trends in Food Importation in Nigeria (1961-2011)

In Nigeria, farmers are now the most impoverished and backward amongst all types of business professionals. According to the National Bureau of Statistics (2014), 73.4 percent of Nigerians, majority of who are farmers who live in the rural areas; are poor. This is not the case in developed countries of the world where farmers are among the richest and most successful entrepreneurs. Fortunately or unfortunately, the recent drastic fall in oil prices has now opened our eyes to the unpalatable reality that our over dependence on oil has caused us. The question is: to what extent will this ginger us to develop other sectors? Our rapidly growing population also does not help matters and our problem might be compounded with the challenge posed by the effect of climatic change on food production.
Nigeria is projected to have the third fastest population growth in the world between the years 2000 and 2050. Currently, Nigeria is the 8th most populous nation on the planet earth, with an estimated population of 177 million. This is expected to rise to 264 million by the year 2050 (CIA, 2015).

With the poor investment in agricultural development and decline in agricultural infrastructure, there has been continuous drop in per capita food output gaps in the country. The possibility of being in good standing as far as food production or sufficiency is concerned is becoming gloomier and drearier by the day as we are achieving very little in spite of our vast potentials. The questions to ask are: Who are we to blame for our predicament? Is it totally the government's fault or should the small-scale farmers and the researchers share in the blame? Can we still make it? Is it still possible for us to cross over? Would we still be able to compete favourably

with our contemporaries? Can we ever get out of the doldrums we now find ourselves in? What is or are the cause(s) of our problem? Was it as a result of our negligence or were we just destined not to be in good standing? What can we do to reverse the tide to the good old days? Providing answers to these questions and worries has been my preoccupation in the last 31 years of my life as an Agricultural Economist.

What is the Economics in Agriculture?

Agricultural economics originally applies the principles of economics to the production of crops and livestock. The economics of agriculture is concerned with analysing the short and long run implications of any act or policies that affect agriculture, tracing its consequence for each (micro) and for all (macro). Agricultural Economists are concerned with managing the problem of scarcity of resources in agriculture, optimizing and achieving the best with what is available. Economic thinking is required to give full value to our human and natural resources. Agricultural Economics as a discipline was initially referred to as Agronomics which was a branch of economics that specifically dealt with land usage (Schultz, 1956). The discipline was closely linked to empirical applications of mathematical statistics and made early and significant contributions to econometric methods. Henry Charles Taylor is one of the greatest contributors to the discipline with the establishment of the Department of Agro- Economics at Wisconsin in 1909. Another contributor, the 1979 Economics Nobel Prize winner, Theodore Schultz, was among the first to examine economics as a problem related directly to agriculture.

Schultz was also instrumental in establishing econometrics as a tool for use in analyzing agricultural economics empirically. He noted in his landmark 1956 article that agricultural supply analysis is rooted in "shifting sand," implying that it was, and is, simply not being done correctly (Shaars, 1972). The discipline combines the theory of the firm with marketing and organization theory. It is the application of economic methods to optimize the decisions made by agricultural producers, while maintaining a good soil ecosystem. The discipline though began in the 19th century, actually grew to prominence around the turn of the 20th century (Shaars, 1972).

Agricultural Economics as a discipline has continued to expand and the current scope of the discipline is much broader. Agricultural Economists have made substantial contributions to research in economics, econometrics, development economics, and environmental economics. Agricultural economics influences food policy, agricultural policy, and environmental policy. Agricultural Economists have made lot of contributions to human and agricultural development through the development of models such as the cobweb model, hedonic regression pricing models, multifactor productivity and efficiency theory and measurement. Today, the discipline has transformed into a more integrative discipline which covers farm management and production economics, rural finance and institutions, agricultural marketing and prices, agricultural policy and development, food and nutrition economics, and environmental and natural resource economics (Lichtenberg, Shortle, Wilen and Zilberman 2010). As a worldwide professional association, the International Association of Agricultural Economists

(IAAE) of which I am a member holds its major conference once every three years.

My Contributions to Knowledge

Mr Vice- Chancellor, Sir, with due sense of modesty, humility and responsibility, I solemnly render before you and this august gathering an account of my contributions to the world of knowledge and human development singly and in collaboration with co-researchers in the field of Agricultural Economics. Mr Vice-Chancellor Sir, please permit me to use the words of Abraham Lincoln who in his address before the Wisconsin State Agricultural Society in 1859 (cited in Basler, 1953:475) stated as:

> Every man is proud of what he does well; and no man is proud of what he does *not* do well. With the former, his heart is in his work; and he will do twice as much of it with less fatigue. The latter performs a little imperfectly, looks at it in disgust, turns from it, and imagines himself exceedingly tired. The little he has done comes to nothing, for want of finishing.

I had become interested in the field of Agricultural Economics as a young school leaver, an interest that was transformed into a lifetime dedication. Within the limit of the time available, I intend, in this lecture to discuss the importance of my subject and my place in it for the sake of intellectual history and as an advancement of the course of human knowledge in the field of Agricultural Economics in particular and agricultural development in general. As I had said earlier, Agricultural Economics can be studied either

from the micro-economic perspective or from the macro-economic perspective; nevertheless it is a field with so many branches. For these few years of my falling in love with the profession, I have been able to explore a good part of it.

My research efforts over the years have been focused on the economics of agricultural production with special emphasis on the poor resource farmers. My works span the various aspects of Agricultural Economics. I have worked on dry season agriculture, risk analysis, adoption to agricultural technologies, determination of profitability and resource availability, analysis of resource-use and technical efficiency of the resource-poor farmers, gender, poverty and food security issues, agricultural marketing, evaluation of macro-economic policies and agricultural development programmes using appropriate econometric techniques. My contributions in these aspects of Agricultural Economics can therefore be discussed under the following categories:

Policy Research

Against the background of the National Accelerated Wheat Production Programme occasioned by the ban in 1987 on wheat importation, a comparative study by **Omotesho** (1998) on the profitability of wheat and tomato production on the Kano irrigation project revealed that tomato production resulted in more profitable use of land, irrigation water and labour than wheat production. The study was able to show that lifting of ban on wheat importation in 1992 was justifiable to the extent that the huge expenditure on the Accelerated Wheat Production Programme can be channelled towards encouraging increased production and development of processing

facilities for tomato for which the country has a comparative advantage over wheat.

In a study on the risk attitude and management strategies of small-scale crop farmers in Kwara State, Nigeria, Ayinde, **Omotesho** and Adewumi (2008) found that small-scale crop farmers exhibit different risk attitudes and not all are risk averse as being assumed in literature. The households mostly employed crop diversification as their risk management strategy. Availability of farm land, capital and crop diversification are the factors that influence farmers' risk- taking attitude.

Youth participation in agriculture is generally expected to lead to the development of the agricultural sector of the Nigerian economy. Muhammad-Lawal, **Omotesho** and Falola (2009) analysed the production and the technical efficiency of the Youth-in-Agriculture programme in Ondo State. The study showed that efficiency differentials exist among youths participating in the programme. The mean technical efficiency for the youth was 85percent. Household size, years of participation in the Youth-in Agriculture programme, usage of extension information and level of education were the significant factors that account for observed variation in efficiency among the programme participants. The study also revealed that land, labour, herbicides and number of cassava cuttings were the major factors that affect output of the youths' production in the programme.

Following an agreement between the Nigeria Federal Government and some white farmers and agricultural experts from Zimbabwe in 2001 who settled in Shonga, Kwara State, to raise agriculture beyond subsistence level through large scale commercial agriculture, Adewumi, Jimoh and **Omotesho** (2012) carried out a study on the implications of the presence of the foreign farmers in Kwara State, Nigeria. Specifically, the study examined the spill-over effect of the foreign large

commercial farms on the local farms and estimated the differentials in production efficiencies of the local farms before and after the foreign farmers' arrival in the study area. The motivation for the study was borne out of the fact that previous studies on the relationship between farm size and efficiency had produced conflicting results and there had been a lot of argument that investment liberalization may increase social and economic problems for the rural people rather than alleviate their problems. The study concluded that there are signs of positive spill-over effects of the foreign farmers in the short run and that the mean efficiency of local farmers was higher in the enclave of the white farmers than outside the enclave since the arrival of the white farmers.

The high level of vulnerability of small scale farmers and poor rural households to economic shocks occasioned by the economic policies of the Federal Government of Nigeria, was the inspiring factor that propelled Muhammad-Lawal, **Omotesho** and Kolade (2012) to assess the degree of vulnerability of households to economic shocks in Nigeria. The result of the analysis showed that the rural households were about 70 percent vulnerable to economic shocks and that households' gross annual income and expenditure were the most significant variables accounting for households' vulnerability to economic shock.

Global trends have indicated that stimulating entrepreneurship is one of the most viable ways by which people can be empowered and that risk analysis model of entrepreneurs forms the framework for any programme and innovation that is to result in a successful effort. Ayinde, Muchie, **Omotesho,** Ayinde and Adewumi (2012) therefore

studied the contribution of the agricultural entrepreneurs' socio-economic characteristics in predicting their risk behavioural group. The study found that the household size, available farm land, amount of capital, disposable assets and crop diversification index influenced the risk-taking attitudes of agricultural entrepreneurs.

In a study on the efficiency and constraints to the marketing of soybean in Kwara State, Nigeria, **Omotesho** et al; (2012) revealed that the average marketing margin and marketing efficiency of the respondents were ₦104.40 and 178.8 percent, respectively and that the major constraints faced by the respondents were lack of credit facilities, and inadequate storage and transport facilities.

Over the years, the Nigerian government has come up with various programmes aimed at raising the productivity and welfare of small-scale farmers. The World Banks' supported *Fadama* Development programme is one of such programmes. In a bid to examine the impact of this programme, Adenuga, **Omotesho,** Babatunde, Popoola and Opeyemi (2013) examined the micro level effect of the National *Fadama* III Programme on poverty status of rice farming households in Kwara State, Nigeria. The results obtained from the headcount indices showed that 33percent and 60percent of the beneficiaries and non-beneficiaries, respectively, were poor. The poverty gap indices were 0.36 and 0.45 for *Fadama* III and non *Fadama* III farmers, respectively. The result also showed that the National *Fadama* III programme impacted positively and significantly on the beneficiaries' welfare. Household size, farm income, educational level of the household head, age and beneficiary status were identified as the major determinants of poverty in the study area.

Omotesho et al; (2013) studied the marketing of wild fruits in Nigeria using African star apple as a case study. The study also identified the factors militating against efficient marketing of the commodity in Ilorin Metropolis. The findings revealed that the marketing of African star apple was profitable and efficient in the study area. The study also revealed inadequate credit facilities, seasonal variation in price, high transportation cost and poor storage system as the major problem facing marketing of the commodity in the study area.

Fresh okra is an important but highly perishable vegetable. In a bid to find how farmers can get the best out of their labour through efficient marketing, **Omotesho** et al; (2013) examined the marketing of fresh okra in Kogi State, Nigeria. The findings revealed that fresh okra marketing system in the study area was centralised. Net marketing margins of ₦4,190/ton and ₦1,960/ton were earned by the wholesalers and retailers, respectively, with marketing efficiency of 11.53 percent and 4.80 percent, respectively, implying that marketing of fresh okra was profitable but less efficient in the study area. The major constraints to efficient okra marketing by the traders were inadequate capital, inadequate access to market information and spoilage resulting from poor storage system and high cost of transportation.

Farm Production Research

The quality of planning and decision-making by the resource-poor farmers is believed to determine the outcome and productivity of the Nigerian Agricultural sector. It is therefore important that rural development strategies accurately reflect the objectives and farmers' relative

priorities in the decision- process. In this regard, Adewumi and **Omotesho** (2002) analysed the production objectives of small-scale rural farming households in Kwara State. The result of the analysis demonstrated the possibility of developing a statistically significant hierarchy of production objectives for rural farming households in the country. It also showed that farming households placed emphasis on meeting food requirement of households above gross margin.

Babatunde and **Omotesho** (2002) examined the farm size and productivity relationship among small, medium and large-size farms categories in Kwara State, Nigeria. The result of the study showed that the gross margin was higher for the large- size farms than the small and medium-size farms. The result also showed an increasing trend for inputs productivity ratios with increase in farm size except for agrochemicals and improved seeds. The normalised profit-function showed that farm size and fertilizer use significantly affect farm productivity and profitability in all the farm categories.

Given the huge investment on irrigation agriculture in the early 80's, **Omotesho** et al; (1995) embarked on a study to determine ways of enhancing the national benefits from dry land agricultural production using formal irrigation in Northern Nigeria. The result of the study revealed inefficient utilization of key production resources such as land, labour and irrigation water. The study concluded that addressing issues of resource-use efficiency, especially for irrigation water is necessary to ensure sustainability of formal irrigation projects in Nigeria.

Omotesho and Olawale (1991) investigated the profitability, cultural production practices, cropping

patterns and the efficiency of resource-use among small-scale dry season vegetable farmers along Asa River in Kwara State, Nigeria. The result of the study showed that dry season vegetable production in the study area was profitable and that productivity of the farmers could be improved on by using more improved stock of the resources.

Babatunde, **Omotesho,** Olorunsanya and Amadou (2007) examined the optimal crop combination of small-scale vegetable irrigation farming in Niger Republic. Results obtained showed that the optimal crop combination was the tomato-based mixtures, consisting of tomato/cucumber/onion/okra/water melon. The optimal value of the programme was CFA 329,681. While land was a limiting resource in vegetable farming in the study area, labour, irrigation water and capital were non-limiting resources.

Rahji and **Omotesho** (2006) examined the technical efficiency and competitiveness among rice farmers in Niger State, Nigeria. The result of the study revealed that, among other resources, improved rice seed had the greatest impact on rice production in the study area. The farmers were found to be 81 percent technically efficient in the production of rice. The results of the inefficiency model showed negative and significant coefficients for farming experience, extension visits, and the ratio of the number of female to household size variables. The implication of this is that increases in these variables reduce the technical inefficiency of the farmers.

Fadama is a Hausa word used for describing wetlands or the seasonally flooded or floodable lands along major savannah rivers used mostly for growing vegetables

in the northern part of the country. However, whether the system is sustainable or not was a research question that needed to be answered. Ibrahim and **Omotesho** (2009) assessed the sustainability of vegetable production under *Fadama* in Northern Guinea savannah zone of Nigeria. The result of the study revealed that the system of vegetable production in the zone is not sustainable due to inefficient soil management practices among *Fadama* land users.

With the country faced with the burden of high cost of food importation in spite of the country's comparative advantage in cassava production, Babatunde, **Omotesho** and Ogunmokun (2004) studied the economics of cassava production in Kwara State, Nigeria. The results of the study showed that the average gross margin for cassava production was ₦36, 700 per ha. The study also showed that land, labour and purchased inputs were the major factors affecting cassava production and that land and purchased inputs were being under-utilized while the labour resource was over-utilized.

Global trends nowadays towards long-term sustainable crop production are hinged on either supplementing the use of chemical fertilizers with organic materials or completely using organic materials. **Omotesho et al;** (2012) therefore investigated the level of organic material-use in Nigeria's agriculture and the factors influencing it. The study showed that farmers sourced chemical fertilizer inputs from the open market at very exorbitant prices while organic materials were sourced from cattle, goats, sheep and poultry droppings. The average quantity of organic material used was 12,513 kg per hectare. The result further showed that the cost of organic materials and quantity of chemical fertilizers used

by the farmers were the main factors influencing the quantity of organic fertilizers used by the farmers. Poor transport facilities and cutworm infestations of the organic materials were also identified as the major constraints to the use of organic materials by farmers.

The basic resources for agricultural production are grouped into land, labour, capital and management. While the country is blessed with abundant natural resources, the degree of utilization of these resources has a significant effect on the nation's agricultural production. Akanbi, **Omotesho** and Ayinde (2011) assessed the economics and technical efficiency of rice farms in the government irrigation scheme located at Duku area of Kwara State, Nigeria. The result revealed that the mean technical efficiency of the project sites (Rice Farm) is 0.98. The high efficiency estimate obtained for the rice farms at the project site could be attributed to government assistance to the farmers in form of input/output linkages.

Fatoba**, Omotesho** and Adewumi (2009) examined the costs and returns, and the technical efficiency of wetland rice production technology in Niger State of Nigeria. The study measured the rate of compliance with the recommended package and the technical efficiency of the production technology. With a mean output-oriented technical efficiency of 0.75 for the rice farmers, the study showed that the optimal usage of the technology had not yet been attained. While the on-going level of compliance with recommended production package afforded the farming households positive gross margin, they were yet to attain their potential yields.

Sugarcane (*Saccharum officinarum)* is grown by many local farmers in Nigeria; yet, the level of production

has not kept pace with the level of consumption. **Omotesho et al;** (2013) studied the efficiency of sugarcane production in Niger State, Nigeria. Results of the study showed that an average gross margin of ₦401, 606 per ha was realized from sugarcane production. The study also revealed that the mean technical efficiency of the farmers was 69.50 percent and that experience and household size of the farmers had significant effects on the efficiency of sugarcane production in the study area.

Omotesho et al; (2012) studied the technical efficiency of gari processing in Kwara State, Nigeria. The level of technical efficiency of the processors was estimated at an average of 91 percent. The significant variables affecting the technical efficiency of gari processors were the education status and membership of cooperative association.

Women continue to form a crucial part of Nigeria's farming community, not particularly due to their sheer large number but also because of their participation in the production of highly needed food crops such as vegetables. Women are responsible for about 70 percent of the actual farm work and constitute up to 60 percent of the farming population. Figures 2 to 4 show women engaged in different stages of agricultural production.

Fig 2: A woman working in her vegetable farm

Fig 3: Women harvesting rice

Fig 4: Women engaged in cassava processing

Omotesho, et al; (2013) investigated the production management techniques as well as the extension needs of women vegetable farmers in Kwara State. Data analysis revealed that majority of the respondents used traditional, low-yielding production and management techniques and consequently earned meager income. Furthermore, about 30 percent of them had any previous extension contact. Even though nearly 60 percent of the respondents were somewhat aware of modern production techniques, only a few had tried, and fewer still had adopted, up to 40 percent of the techniques. Respondents' major perceived adoption constraint was 'lack of capital'. But their low knowledge level concerning some relatively affordable modern and better result-yielding vegetable production and management techniques was palpable. This has limited most of them to wet season vegetable production. The study further revealed that women vegetable farmers require crucial extension intervention in the areas of farm information sourcing, irrigation, crop protection, soil improvement, storage and marketing.

The adoption of improved technology is a key factor in raising crop productivity. Adenuga, **Omotesho,** Ojehomon and Diagne (2014) studied the major factors influencing the adoption of improved rice varieties in Nasarawa State, Nigeria. The result of the study showed that non-farm income, gender of the household head, access to credit, years of farming experience and farm size were the major factors influencing the adoption of improved rice varieties in the study area.

Given the high post-harvest losses (30-70 percent) resulting from the absence of efficient storage system in the cowpea value-chain, Fakayode, **Omotesho** and Adebayo

(2014) examined the adoption of improved cowpea storage practices/facilities by cowpea farmers and traders in Kwara State, Nigeria. The results showed that majority of the farmers still use traditional storage techniques which include the use of old drums, jute bags, earthen pots, and gourds with only a few of them using the improved/modern storage practices such as cribs and silos. The perception of respondents about storage pests as threats to their crops, household size, and credit availability were identified as the factors that determine respondents' likelihood of adopting modern storage techniques for their crops. Factors identified as constraints to efficient storage practices were inadequate credit facilities, high costs of, and poor access to, improved storage facilities.

Food Security Research

A fundamental challenge the world faces today is ensuring that millions of households living in poverty have access to enough food to maintain a healthy and active life. Available statistics has shown that low average per capita protein and energy intake constitute perhaps the greatest obstacles to human and national development in Nigeria. Studies revealed that about one-third of the rural farming households in Kwara State were food insecure and that farm size, gross farm income, total non-farm income, household size, food expenditure and accessibility to health facilities were the significant determinants of household food security in the study area (**Omotesho et al**; 2006; 2010).

While considerable attention has been given to the study of food security in developing countries, there are relatively fewer empirical studies in the literature on the

vulnerability of rural households to food insecurity. Babatunde, **Omotesho**, Olorunsanya and Owotoki (2008) examined the determinants of vulnerability to food insecurity among rural households in Nigeria. The study also compared the anthropometric measurement of pre-school children as indicators of calorie intake adequacy among male and female-headed households. The result of the analysis showed that there is gender inequality in terms of resources available to male and female- headed rural households with male- headed households possessing more resources than the female-headed households.

Cereals constitute the primary component of major local food preparations and serve as the most important source of food supply in Nigeria. Muhammad-Lawal and **Omotesho (**2008**)** assessed the role of cereals in farming households' food security in Kwara State, Nigeria. The study showed that in spite of the fact that cereals play a significant role in food security in the study area, majority of the households were subsisting on less than the minimum required calorie and protein per capita per day.

Poverty Research

Poverty in Nigeria like many other developing countries is a critical factor contributing to low or fluctuating level of labour productivity in agrarian-based livelihoods. In view of this, Olorunsanya and **Omotesho** (2014) carried out a study to identify the determinants of poverty among male and female-headed households in Kwara. The result of the study showed that female-headed households were poorer than their male counterparts. Household size, highest educational attainment of the

household head and membership of cooperative societies were the major determinants of poverty in the study area.

Research has shown that economic growth is strongly linked to poverty reduction. Consequent upon the finding by **Omotesho et al;** (2010) where non-farm income was identified as a major determinant of the probability of a household being non-poor, **Omotesho et al;** (2012) assessed the determinants of incidence and severity of poverty among small-scale farming households in Kwara State, Nigeria The study showed that 60% of the respondents were poor and that farm income, gender of the household head and household size were the major determinants of incidence and intensity of poverty among the rural farming household.

Measurement and analysis of poverty in Nigeria has historically relied on the single dimension, consumption-based monetary approach with little attention on multidimensional assessment. Adenuga, **Omotesho**, Ojehomon, Olorunsanya and Adenuga (2013) carried out a multidimensional poverty assessment of rice farming households in Nasarawa/Benue Rice Hub, Nigeria. The results of the multi-dimensional poverty index analysis revealed that female-headed households were poorer than their male counterparts. On the overall, 66 percent of rice farming households were multi-dimensionally poor. Furthermore, gender of the household head, health, marital status and membership of association were the major determinants of multi-dimensional poverty of the rice farming households in the study area.

Summary of my Research Findings

Areas of Research	Findings
Policy Research	• Policies aimed at dry season farming and irrigation agriculture have the capability of raising agricultural productivity. • Small-scale farmers' exhibit different risk attitudes and not all are risk averse as being assumed in literature. • Youth participation in agriculture is vital for the development of the sector and will contribute to increased agricultural production. • Foreign direct investment in the agricultural sector in the form of large commercial farms has a spill-over effect on the local farms if properly managed. • Rural households have a high vulnerability to economic shocks. • The National *Fadama* III programme has a positive impact on the welfare of the small scale farmers because it cuts across the agricultural value-chain unlike previous programmes that had focused only on production. • Inadequate credit facilities, seasonal variation in price, high transportation cost, inadequate access to market information and poor storage system are some of the important factors limiting the efficiency of the small-scale farmers.

Farm Production	• Farm size and usage of high quality inputs such as improved seed and fertilizers have significant effects on farm productivity and profitability of the small scale farmers if efficiently utilized. • Dry season agricultural production results in high level of profitability and productivity among small scale farmers. • Small-scale farmers are technically efficient if provided with an enabling environment and right incentives. • Small-scale farmers do not always have access to the much needed agricultural inputs such as fertilizer, and when they do, they pay exorbitant prices for it. • Small-scale farmers' agricultural outputs are constrained by their use of traditional low-yielding production and management techniques and consequently earn only a meager income. • Small-scale farmers do not have adequate access to agricultural extension services. This has limited greatly their level of adoption of modern technology. • Availability of non-farm income, gender of the household head, access to credit facilities, years of farming experience and farm size are some of the factors that influence the adoption of improved agricultural technologies in small scale agricultural production.

Food Security	• Majority of rural farming households are food insecure, have low dietary diversity, and subsist on less than the minimum required calorie and protein per capita per day. • The food security status of the rural farming households is influenced by farm size, household size, gross farm income, total non-farm income and accessibility to health facilities. • Limited access to agricultural resources resulting from gender inequality is a critical issue among rural farming households. The male headed households possessed more resources than the female-headed households who are more vulnerable to food insecurity. • Cereals play a significant role in food security among rural farming households. • The most important goal of the small-scale farmers is meeting food requirement of households. The household should therefore be the relevant unit of analysis rather than the farm enterprises.
Poverty Research	• More than 60 percent of rural farming households are not only income poor but multi-dimensionally poor. • Household size, level of education of the household head, gender of the household head, farm income, and membership of cooperative society and other social groups influence the poverty status of the rural farming households.

	• Female-headed households are poorer than male-headed households.

My Contributions to the University Community

Mr. Vice-Chancellor Sir, I have had the privilege to serve in various capacities and on numerous committees over the past 31years. I was Sub-Dean in the Faculty of Agriculture and the Student Affairs Unit. These two appointments prepared me for my election as Dean of Agriculture (2008-2012) and appointment as Dean Student Affairs (2012 to date). I also had the opportunity to serve as Head of Agricultural Economics and Farm Management for three terms totaling nine years, during which five members of staff in the Department completed their Ph.D. programmes under my supervision. I was the Chairman, Unilorin Library & Publications Committee (2004-2009). I also represented Senate on the University Governing Council (2009-2013). In February, 2015, I was elected Senate Representative on the Appointment & Promotion Committee. Perhaps taking a clue from my mentor, Prof. J.A. Akinwumi, who was the live wire of Cooperatives at the University of Ibadan, I was President of Unilorin Pace-Setters M.C.S (1998-2008).

My most challenging time so far in the University was my tenure as ASUU Chairman (2001-2003). I had always been deeply involved in ASUU politics. Although, I was a member of the Strike Coordinating Committee, I went out of my way to avoid taking any position on the Executive Committee. In the heat of the UNILORIN ASUU crisis, the position of Chairman was literally thrust on my laps. I accepted to serve because; I felt I could make

a difference. I was to see and experience the duplicity of man first-hand. People would say one thing in public but *Nicodemously* seek favour under the cover of the dark. The period made me know what true friendship is all about as I put myself and family through a very harrowing experience. I want to put on record the support of Professors S.O. Abdulraheem, O.O. Balogun, I.O. Oloyede, L.D. Edungbola, R.O Fadayomi and members of my EXCO, especially Kola Joseph, Wahab Egbewole, S.Y. Omoiya and Sunny Ododo; they made the burden lighter.

Mr. Vice-Chancellor Sir, you will agree with me that my endeavours at the University of Ilorin from 21st of March, 1984 to date have not been limited to academic work alone, I have given, and God helping me, will continue to give, my best to the system.

My Conclusion

In the words of Albert Einstein, US (German-born) Physicist, **the significant problems we have cannot be solved at the same level of thinking with which we created them.** There is thus an urgent need for us to retrace our steps and change our thinking with respect to improving the productivity and welfare of the poor resource farmers. The government must put in place machinery to ensure that the small-scale farmers have the required access to the much-needed agricultural resources, markets, land, finance, infrastructure and technologies to increase their productivity on a sustainable basis such that they are less vulnerable. Our approach to economic development must be modern, focused and in tune with the global trend. We must shift from just concentrating on increasing yield as practised during the Green Revolution, to the protection of

yield as too much produce is lost after harvest. Transformation should not be mere rhetorics but a process that must lead to new discoveries.

There is an urgent need of value reorientation in our system. Our heroes should neither be those who use exorbitantly priced luxury cars, nor those who have acquired political powers. Rather, our heroes should be those people who will improve the quality of life of our people, fight poverty and introduce more sustainability in our food system, because food is life. Our heroes should be our farmers who regardless of numerous constraints that they face thrive to produce the food we eat. They must not be left to continue to suffer. The numerous policies that we design must be implemented to lift these people out of the vicious cycle of poverty and hunger they have found themselves. Policy makers, activists and practitioners need to keep in mind the big picture of the context that smallholder farmers operate under and prioritize the need to improve their welfare. Many individuals are doing what they can, but real success can only come if there is a change in our societies, economics and politics. A country-wide agricultural revolution is the only way to reduce poverty in the country and help it strive for development especially as an agro-based economy. The focus of our policies should tilt towards the upliftment of the rural poor who earn their living from agriculture without discouraging the big time farmers. The promotion of agriculture at the grassroots would definitely accelerate the development of cottage industries, provide the much required linkages to industrialisation and consequently serve as a source of gainful employment for our rising population.

To be in good standing as a nation, we have to diversify our economy by reducing over dependence on oil, with the aim of putting the economy on a part of sustainable, all-inclusive and non-inflationary growth. The challenge of promoting inclusive sustainable development in rural areas will remain a mirage unless investment policies respond to the diverse needs and aspirations of the many different segments of rural societies. The government needs to create an enabling environment for the Nigerian farmers by increasing the budgetary allocation and creating friendly policy framework for strong and efficient agricultural sector that can accelerate the attainment of Nigeria's dream of becoming one among the 20 world leading economies by the year 2020.

The way forward

The quest for a solution to the challenges facing agricultural development in Africa and specifically in Nigeria calls for sound, systematic research to increase the stock of knowledge for agricultural policy formulation (**Omotesho** and Falola, 2014). Challenges in the Nigerian agricultural system require more innovative and integrated applications of existing knowledge, science and technology (formal, traditional and community-based), as well as modern approaches to agricultural and natural resource management. The following specific recommendations will therefore be very useful in moving the Nigerian agricultural sector forward:

1. **Provision of Credit Facilities:** Nigeria's agricultural sector is under-financed. Currently, agricultural lending represents only about 2 percent of the total lending of banks in Nigeria. This performance is below the level of other

developing countries like Kenya, which registers 6 percent. Lack of reliable access to credit is therefore a major impediment to improving small farm operations and enhancing the livelihoods of rural households. In order to ensure a better performance of modern credit institutions and make farmers have easy access to credit facilities, the government in conjunction with the various agricultural financial institutions in the country should review the interest rate on loan made available to the smallholder farmers downward from a break-even rate of about 14 percent to less than 5 percent, simplify the loan application process, ensure timely disbursement of loans to beneficiaries and scale down the amount of collateral security demanded by the institutions. Besides, the effectiveness and efficiency of operations of the Agricultural Credit Guarantee Scheme as well as other credit programmes need to be improved upon. To this end, cooperatives should be adequately supported to assist farmers to build up the capital needed for agricultural investments and not expose them to horrendous financial risks. Quasi-formal credit arrangements should also be promoted and encouraged to act as alternative sources through which the smallholder farmers can access credit facilities.

2. **Incentives for Agricultural Financial Institutions:** The government needs to review, in totality, the incentives to banks in granting credit to farmer. A clear distinction should be made between banks providing loans to large-scale farmers and those servicing small-scale farmers. A package of incentives can therefore be worked out for both the financial institutions and the small-scale farmers. Such incentives may however include financial support from the

Ministry of Finance, state governments and donor agencies to fund the insurance and technical assistance facilities of the banks. Efforts should also be made to address several reasons why banks do not lend to agriculture such as limited understanding of the agricultural sector, poor pricing of agricultural risk, inadequacy of loan officers with experience in lending to farmers, rigid credit assessment processes, and limited channels for distributing agricultural credit.

3. Enhanced supply of Agricultural Inputs: There is a direct relationship between the quality of agricultural inputs and the level of agricultural productivity. There is the urgent need for the government to formulate policies aimed at ensuring that farmers have unhindered access to improved and quality agricultural inputs such as seedlings, fertilizers, pesticides, chemicals, etc. as it is done all over the world where agriculture is given adequate priority. This will guarantee regular farm production and subsequently allow for consistent income and food security among farmers.

4. Improved Agricultural Extension Service Delivery: The capacity of the Nigerian agricultural research system has been called to question in recent years. Of greater concern is the extension service system that when improved technologies are available they often fail to reach farmers. The government needs to do more with respect to increasing the extension agent/farm family ratio by employing more agricultural extension agents to disseminate the results of agricultural research outputs to the farmers. In this regard, the smallholder farmers need a lot of education and encouragement especially in the areas

of record keeping, saving, and credit management and repayment.

5. **Development of Rural Infrastructure:** The institution of a comprehensive and integrated rural infrastructural development strategy is a necessity if the small-scale farmer must be in good standing. This will improve the level of youth participation in agriculture, contribute to retention of skills in the rural areas, and consequently stem the preponderant rural-urban drift. In addition, this would reduce cost of agricultural production, encourage use of semi-mechanised system of production, make farming more attractive and pleasurable, and enhance the development of small-scale industries engaged in agricultural and food processing in the country. An efficient rural infrastructure will also contribute to the establishment of agro-based industries that are capable of processing Nigeria's agricultural raw materials in a most efficient manner. The local processing of our agricultural outputs will boost export and create more employment opportunities for the Nigerian populace.

6. **Agricultural Products Protection Policies:** Government should give some sort of protection to local agricultural products, to protect the farmers from unbridled foreign imports and competition, especially for those products in which the country has comparative advantage. This could be through import tariff adjustment, outright ban, or any other form of policy that would prevent dumping. Nigeria has no cogent reason for importing agricultural commodities such as rice, fruits, fish, tomato, livestock, etc in view of her vast potentials.

7. **Regulating the Pricing of Agricultural Products:** Pricing has been observed as a major problem facing

agricultural production due to the fluctuations in price levels based on the level of supply of these products. This is because prices are driven down during the harvesting period when all the commodities are all brought into the market. The implication of this is that the farmers are demoralised and are not encouraged to produce more. The government should assist farmers to have a fair prior idea of the prices to expect from their productive activities. The government also has to invest in the procurement of important storage facilities and make them available to the farmers through viable farmers' cooperatives to ensure the spread out of supply beyond the harvesting period.

8. **Social Security Schemes for Farmers:** The government should provide social welfare schemes for farmers that will form part of a social policy for rural poverty alleviation and redistribution of income in favour of the rural poor. The contribution of social security schemes to rural development has been positive in countries like Brazil and Kenya. Though certain states in the country have adopted the policy, there is need for the government to promote the policy with greater efficiency in the rural areas. This will improve the quality of life of the rural farmers and alter the movement of people from rural communities to urban areas.

9. Improved Access to Market: One major problem confronting the small-scale farmers is inadequate access to market for their produce. Policies and investments aimed at improving the institutions and governance of domestic markets, including the traditional and informal trade that forms the main links between smallholders and the consumers will go a long way in alleviating the suffering of the small-scale farmers. Informal markets are particularly

important for women given their roles in the marketing of farming household's agricultural produce. So policies and measures to strengthen rather than undermine these markets are needed to address women's specific market access constraints. One way to go about this is simple investments in physical infrastructure, such as local market spaces and investment in local processing units. The provision of warehousing and storage facilities as well as market information, or transparent commodity exchanges will also reduce the impact of remoteness from markets and mitigate risk of the rural farming households if effectively executed. This will give room for greater resilience among the relatively vulnerable small-scale producers and allow greater scope for risk-taking, particularly among women.

10. Effective Policy Implementation: The Nigerian agricultural sector over the years has not been bereft of good policies; rather the problem has been that of poor implementation. There is a major gap between good policy intentions and the reality on ground. Until such intentions are backed up by actions, it will be very difficult to achieve the much-needed paradigm shift in the nation's agricultural sector. Effective policy requires not only well thought out policy design, but also sustained investment in implementation. This includes capacity strengthening of government agencies and regulators, and critical evaluation of agricultural projects as well as effective monitoring.

11. **Adequate Funding of Agricultural Research:** Agricultural research needs to be more organised in form of strong and functional network capable of exploring possible synergies to facilitate high impact research outputs in the nation's agricultural sector. The days of "one-man battalion" research is gone as it usually ends up with little

impact. There should be effective and working (not paper) collaborations between the universities, national and international agricultural research institutes, and the private-sector in conducting applied and adaptive researches with high impact on the agricultural sector. The government through the Agricultural Research Council of Nigeria should therefore provide enabling environment and funding for systematic and proactive research aimed at increasing the stock of knowledge for agricultural policy formulation.

12. Effective Agricultural Research and Dissemination: Researchers must base their activities on the real needs and interests of the sector. The outcome of any research should be focused on the priorities of the users and not based on pre-conceived ideas. Research output must be communicated following internationally accepted standards without manipulation of any kind. Dissemination and communication of research findings should go beyond journal publications or conference presentations. There is need for better and stronger linkages between researchers and extension agents to ensure effective dissemination of research outcomes to farmers and other end users of research outputs. Communication of research findings through seminars for target groups such as agricultural producers, commodity groups, farmers, retailers and processors is a comprehensive system that can be adopted by researchers.

Acknowledgements

I give all glory to the Lord Almighty, The Ancient of Days, The I am that I am, The Only Wise God, for the opportunity to reach the zenith of my profession.

Mr. Vice Chancellor Sir, please permit me to publicly acknowledge some of the people who have played pivotal roles in my life. They are:

1. My parents, Chief Julius Adeyeye Omotesho and Mrs. Christiana Bosede Omotesho, who afforded me the best education available in Nigeria in my time, from Capital School, Kaduna, to Saint Mark's, Offa, to Abdul Azeez Attah Memorial College, Okene, to Kwara State College of Technology and finally University of Ibadan. Thank you for your sacrifices for me and my siblings.
2. My siblings: Gbenga Omotesho, Esq., Bolanle Jaiyeola, Dr. Femi Omotesho, Dr. Muyiwa Omotesho and Foluke Akiode and their spouses for their undiluted love and support.
3. My aunties like mother: Mrs C.O. Amusain, Matron H.O. Ajibola and Bimpe Momodu and uncles like father: Pa W.J. Memayin, Late Adewale Ogundare, Late Yide Ogundare and Sunday Ogundare, words cannot express my gratitude for your support at various levels of my education.
4. The various Vice-Chancellors I have served under, starting from Prof. S. Afolabi Toye to Prof. A.G. Ambali for providing an enabling environment for me to thrive and put in my best.
5. Prof. James Adewuyi Akinwumi who taught me the rudiments of socio-economic research and introduced me to consultancy. His wife and children also adopted me as the "first born" of the family.
6. I thank God for all my other teachers; Mr. D.K. Babafemi, my teacher in primary six who is here today, my teachers in Okene, especially Alhaji Raheem Adebayo, Mr. N.T Olabanji, Mr. J. Oyinloye & Alhaji S.I. Bello. My teachers in the Department of Agricultural Economics, U.I. Professors S.O. Olajide, R.O. Adegboye, F.S. Idachaba, Q.B.O. Anthonio, A.F.

Mabawonku and J.T. Atobatele; all of blessed memory. Professors Milton Snodgrass, A.J. Adegeye, O.Ogunfowora, A. Falusi, J. K. Olayemi, T.O. Adekanye and A.E.Ikpi.

7. All the past Deans, Heads of Departments and other colleagues in the Faculty of Agriculture, University of Ilorin.
8. My colleagues past and present, in the Department of Agricultural Economics and Farm Management.
9. All my past students especially postgraduate students including Late Dr. J.O. Otitolaiye - my first Ph.D. student, who was until his demise, a Reader at Kogi State Universty, Dr. M.O.Adewumi, now a Reader in the Department; Dr. R.O. Babatunde - my present Acting Head of Department, Dr. (Mrs) O.E. Ayinde, Dr. A. Muhammad-Lawal - all Senior Lecturers in the Department; Dr. (Mrs.) E.O. Olorunsanya (Reader and Acting H.O.D.) and Dr. A.F. Lawal (Senior Lecturer) both at Ibrahim Babangida University, Lapai; Dr. S.B. Fakayode, Senior Lecturer and Ag. H.O.D., Federal University, Oye-Ekiti; Dr. Hassan Ibrahim (Ag. H.O.D.) and Dr Hussein Ibrahim both Senior Lecturers at Federal University, Dutsin-Ma; Col (Dr.) B.A. Tsoho of the Nigerian Army Education Corps; Dr. Isaac Fatoba of NCRI Baddegi; Dr. Akanbi, U.O. (TEC, Unilorin); Dr (Mrs) Mohammed, A.B. (Deputy Provost, Division of College of Agric., ABU, Kabba); Mr. A. Falola, Mr. A.H. Adenuga; and my current Ph.D. students especially those who are "almost there" namely Ibukun Joyce Memudu, Sheu Adekunle Salau, Fatimoh Ayanlere, Olatilewa Oladuntan and Ivie Olaghere for providing the stimuli to delve into some very interesting issues in the discipline and for their contributions towards making today a reality.

10. My friends who have stood by me all these years, especially Arc. Jude Makoju (of blessed memory), Professors Biyi Daramola (VC, FUTA), Kola Joseph, Kunte Ladele, M.A.Y Rhaji, Tai Oluwagbemi, J.A. Adeniran, Dr. A.A. Fawole, Col (Dr) R.S. Ajetunmobi, Messrs Segun Adeyemi, Tayo Boye, Tosin Ogbonnewo, Omosola Babatunde and Remi Alabi.
11. The Pastoral leadership and the entire congregation of Chapel of Redemption, Gaa Akanbi, especially members of the Security Team of the church.
12. Staff of the Student Affairs Unit of the Vice-Chancellor's office especially the Sub-Dean (PS) Comrade Dr. A. Yusuf, Sub- Dean (COHS) Dr.K.W. Wahab, the Secretary Mr. A.A. Ayoku and the Deputy Registrar, Mrs. Kike Sallee.
13. The students of the University of Ilorin for being at the centre of my daily activities since August 2012.
14. The entire Omotesho clan from Idofin Aaye Iyamoye, Ajibola Ogundares from Ipa compound, Ogbe, and my in-laws - the Adeyemis from Ijagbo and the Ogbehas from Lokoja.
15. Prof. K.L. Ayorinde, Prof. Y.A. Quadri, Dr. M.O. Adewumi, Dr. Jide Balogun, Dr. A. Muhammad-Lawal, Dr. M. A. Adedimeji, & Mr. A.H. Adenuga, for their contributions towards the writing and editing of this Inaugural Lecture.
16. My children, Oreoluwatomiwa, Oreoluwatoni and Oluwateniola, for knowing me so well and making our task of parenting very easy.
17. Finally, I thank my sister, soul mate, prayer warrior, counselor, financial manager and wife, Oluwafunmilayo Fadekemi Omotesho, for accepting me, warts and all.

Mr. Vice-Chancellor Sir distinguished Ladies and gentlemen, thanks for your patience. God bless!

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