This First Inaugural Lecture was delivered under
the Chairmanship

of

The Vice-Chancellor

Professor Haruna Yakubu

Published 04, April, 2013

ISBN:

Series No 1: Professor Abayomi Oloruntoba
Printed by University For Development Studies, Tamale, Ghana

Professor Abayomi Oloruntoba

B.Sc. [Ibadan], M.S [UC-Berkeley], PhD [Ibadan]

Professor of Agricultural Extension and Rural Development

Printed by University for Development Studies, Tamale, Ghana

CITATION

Professor Abayomi Oloruntoba has an interesting mix of academic and professional backgrounds which span over three decades as a lecturer, management trainer, extensionist, researcher and consultant all of which put him in good stead for his role as Professor of Agricultural Extension and Rural Development. He graduated with a B.Sc. (Agriculture) in Forest Resources Management from Nigeria's Premier University, the University of Ibadan, in July 1979. He also earned a Master's degree in Resource Science with specialisation in Economics and Policy from the University of California, Berkeley, U.S.A in December 1984and a Ph.D. degree in Agricultural Extension and Rural Development from the University of Ibadan in May 2000.

After the mandatory one-year National Service with the Bauchi State Ministry of Agriculture, Azare, he joined the Federal Ministry of Agriculture, Lagos, Nigeria in July 1980 and was seconded to the Forestry Monitoring and Evaluation Unit-a World Bank / International Bank for Reconstruction and Development (IBRD) Assisted Afforestation / Pulpwood Development Project in Nigeria as one of the pioneer Monitoring and Evaluation Officers. In 1989, he was recruited as Principal Management Development Officer at The Agricultural and Rural Management Training Institute, [ARMTI], Ilorin-a quasi-research centre also supported by the World Bank / IBRD. A diligent worker, he was promoted to the rank of Assistant Chief Management Development Officer in 1993. Here, apart from his onerous task as a trainer, he pioneered the establishment of a rural development outfit -'The Village Alive Women Association'-an 'Action Research Social Laboratory' modeled along the Bangladesh Academy for Rural Development, Kotbari, Comilla, where he received short training in 'Management of Agricultural Extension' under the Training and Visit (T&V) System in 1991. He also had a brief stint at the German Foundation for International Development (DSE / ZEL), Feldafing, Germany on 'Extension for Rural Development' in 1993. While in ARMTI, he was a great asset in developing capacity as he promoted and actively participated in the training of approximately 150 frontline agricultural extension officers, extension managers, and senior research managers per year in the State-wide Agricultural / Forestry Development Programme, Federal Ministry of Agriculture and Rural Development, Agricultural Research Institutes and other organisations in both the public and private sectors.

Because of his quest for a PhD, he resigned from ARMTI to pursue his PhD full-time at the

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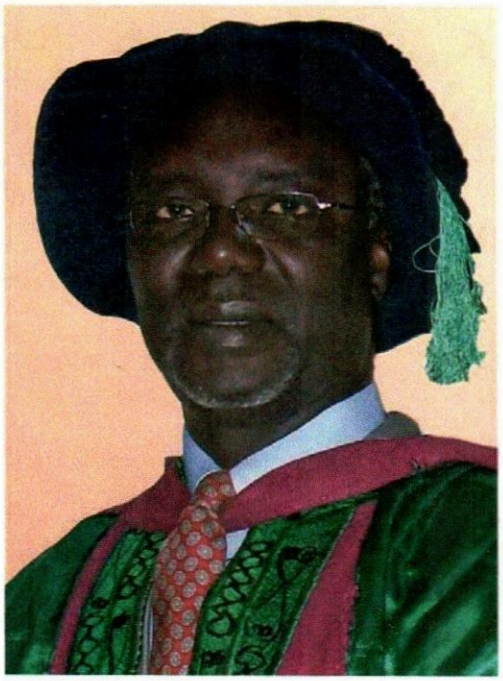
University of Ibadan. In 1995, he established Cedar Grove Management Consultants, a product of his managerial acumen, good team spirit and resilience as the Chief Executive Officer / Principal Consultant. On completion of his PhD in May 2000, he joined the Federal University of Agriculture, Abeokuta [FUNAAB] as a Lecturer Grade 1, was promoted to the post of Senior Lecturer in October 2003, and became Associate Professor in October 2006. He was elected by the Board of College Agricultural Management, Rural Development and Consumer Studies [COLAMRUCS], as Deputy Dean for two terms of two years each. There, he had oversight functions over seven departments and acted as Dean on several occasions in the absence of the substantive Dean. He was a member of many Statutory Boards and represented the College in the Senate, Curriculum Development and Disciplinary Committees among others. Again, for four years, he was the Postgraduate Coordinator of the Department of Agricultural Extension and Rural Development.

Oloruntoba was a Visiting Scholar at the University of Ghana Legon, Department of Agricultural Extension during his sabbatical leave in 2007/08. In 2010, he joined The University For Development Studies, Tamale, Ghana and was promoted to Full Professor of Agricultural Extension and Rural Development in January 2012. He has taught various courses at all levels, successfully supervised a good number of Bachelor's, Master's and Doctoral students along with his research work and published numerous articles in high impact international and local journals. He is also a widely travelled scholar with numerous professional qualifications and affiliations both within and outside Africa including the Life Membership of Agricultural Extension Society of Nigeria, Nigerian Institute for Training and Development, Association for International Agricultural and Extension Education, USA, Society of American Foresters, Commonwealth Forestry Institute, and, Forestry Association of Nigeria.

At the national level in Nigeria, he was nominated and served on the Presidential Technical Committee that prepared the 'Poverty Alleviation Programme [PAP]' blueprint for the Federal Republic of Nigeria' in year 2000, Member of Ministerial-Sub-Committee for the 'Development and Promotion of Sustainable Use of Organic / Bio-organic fertilizer and Bio-pesticides in Nigeria' in 2010 to date, and recently nominated as Member, National Universities Commission Ad hoc Accreditation Panel of Undergraduate Academic Programme in some Nigerian Universities. His motivation and vision is anchored on the premise that a well-focused, carefully organised, creatively managed agricultural research, technology transfer and advisory services initiatives could build capacity, rapidly and sustainably transform the African continent from a vastly poor and food insecure entity to a prosperous, food secure and net exporter of food and agricultural products.



Prof. Haruna Yakubu
Vice - Chancellor

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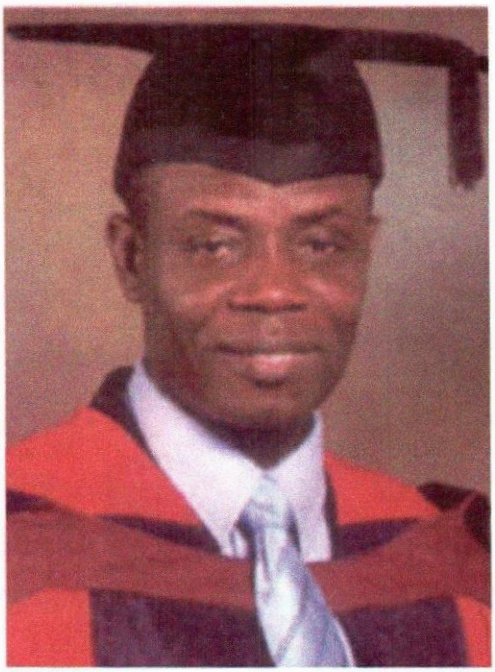

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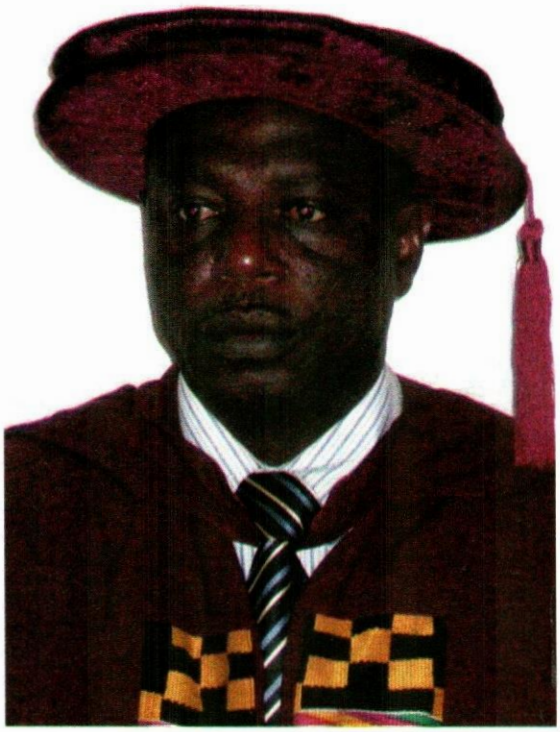

Dr. A. B. T. Zakariah

Registrar

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THURSDAY, APRIL 04, 2013

INAUGURAL LECTURE

Topic : Unleashing the Power of Capacity Building as an Elixir for Agricultural and Rural Development.

Venue : Academic Board Chamber, Central Administration, Central Administration, Tamale Campus

Chairman : Prof. Haruna Yakubu
Vice-Chancellor, UDS

2: 00pm : Guests Seated

2: 10pm : - Vice –Chancellor's Procession (Audience Stand)
- Prayers (Christian and Moslem Prayers)
- Introduction of Chairman by Dr. A.B.T Zakariah, Registrar
- Welcome Address / Introduction of Lecturer by the Vice-Chancellor
- Lecture on the Topic by Prof. Abayomi Oloruntoba
- Chairman's Closing Remarks
- Vote of thanks by Dr. Francis Obeng, Head ,Department of Agricultural Extension, Rural Development and Gender Studies
- Announcements
- Vice-Chancellor's Recession (Audience Stand)

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Dedication

This lecture is dedicated to the entire Agricultural Extension family and peasant farmers, who toil day and night, produce the bulk of the food, feed and fibre for human and animal consumption.

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Abstract

The Inaugural Lecture *'Unleashing the Power of Capacity Building as an Elixir for Agricultural and Rural Development'* examines capacity building as it relates to agriculture and rural development drawing on a compendium of research expositions and 'hands-on' experience of the Lecturer, Professor Abayomi Oloruntoba. The paper outlines the different types of capacity building methods used, namely; capacity building in agricultural extension, for farmers, extension, researchers, and students. This is followed by constraints confronting capacity development; conclusions and policy recommendations were made aimed at improving the capacity building of agriculture and rural development practitioners, research scientists, farmers and students.

1.0 Introduction

The Vice-Chancellor
Pro-Vice Chancellor
Registrar
Other Principal Officers
Deans and Directors
Heads of Departments
Members of Academic Board
Distinguished Guests
My Friends
Students
Gentlemen of the Press
Ladies and Gentlemen

You are all welcome to the First Inaugural Lecture of the University for Development Studies (UDS) which coincides with the 20th anniversary celebration of the establishment of the University in Northern Ghana. I salute and congratulate the founding fathers, staff, alumni, students and all of us for the achievements so far recorded. I also feel very much honoured to present this inaugural lecture. I wish to thank the Vice Chancellor and his management team for this rare privilege.

At the recent Convocation ceremony of Harvard University, the President of this most prestigious University in the world, Professor Drew Faust, affirmed that 'Universities are stewards of an unbroken and endless chain of inquiry'. This is a fundamental declaration of the role of Universities and their central and original role in modern life. Inaugural Lectures have been an essential feature of University life for centuries. Indeed, it is a significant event in an academic staff member's career at the University to mark his/her promotion or appointment to Full Professor. It is also an occasion to celebrate an important personal milestone with colleagues, family and friends. For the university, it is an occasion to celebrate and show-case the academic achievements of its staff. It therefore provides newly promoted / appointed professors with the opportunity to inform colleagues, the campus community and the general public of their work to date. Implicitly, a capstone lecture of this type would provide an opportunity to give vent to one's knowledge in the area of individual calling, deriving from research, professional practice and experience. Let me begin by thanking once again, the management of The University For Development Studies for availing me this opportunity to summarise my research findings with the

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hope that this will only be the first among several other inaugural lectures that will project the image of our University as an institution where research is encouraged and pursued.

The title of this Inaugural Lecture *'Unleashing the Power of Capacity Building as an Elixir for Agricultural and Rural Development'* was conceived to capture my exposure in the field of agriculture and rural development that started after my first degree at the University of Ibadan, Ibadan-Nigeria's premier University where my life was initially shaped. Many years later, the exposure extended to various part of the world in Americas, Europe, Asia and Africa including Ghana. My first sojourn to this great country was in 2007 during my sabbatical leave at The University of Ghana, Legon-and my subsequent employment at The University for Development Studies (UDS) few years after--a University I so much cherish and appreciate. The exposures culminated in research output, human resource development and institutional collaborations within and outside the University system. My research interest in the university was actually prompted while working as a Consultant / Management Development Officer at the Agricultural and Rural Management Training Institute [ARMTI], Ilorin, Nigeria. There; I was involved in capacity building of extension officers, research managers from the public and private sectors and women / farmers' groups. I have also been able to combine extensive experience in collaborative work with various international and reputable national organisations as well as creative application of theoretical principles to sharpen my research focus. This inspired me to chart a further course of research endeavours in agricultural and rural development. In this Lecture therefore, attempt will be made to present a brief overview and compendium of research undertaken during my career in the years past.

2.0 What is Capacity Building?

Mr. Vice-Chancellor Sir, currently more than 800 million of the world's extremely poor people live in rural areas and depend on agriculture and other jobs for their livelihoods. In Africa, the pervasive poverty in rural areas is often blamed on lack of capacity building of the rural folks as a result of numerous ineffective strategies employed in halting this monster called poverty. If poverty is to be reduced, productivity of the agricultural sector must be increased. However, agricultural productivity will not increase if the capacity of farmers and other actors in the agricultural value chain remains low, preventing them from innovating. Innovations could include new agricultural knowledge or technologies related to primary production, processing, and commercialisation-all of which can positively affect productivity, competitiveness, and livelihoods of farmers and others. By putting farmers and other actors at the front burner of innovative practices and encouraging

learning through the interchange of ideas, successes, and failures, they could develop the capacity to operate efficiently in the knowledge economy.

In sub-Saharan Africa, capacity building is important for agriculture because extension staff work closely with farmers. They take on roles as facilitators by helping farmers to identify their production problems and opportunities, thereby *'helping them to help themselves'.* Capacity building is a concept closely related to education, training and human resource development. Capacity building is 'the development of knowledge, skills and attitudes in individuals and groups of people relevant in design, development, management and maintenance of institutional and operational infrastructures and processes that are locally meaningful' (Gout and van der Molem, 2000). Capacity is the '*power of something*'-a system, an organisation, an individual, to perform and produce properly (Enemark, 2003). The term capacity has many different meanings and interpretations depending on who uses it and in what context. In the context of agricultural extension, I will adapt the UNDP (1998) basic definition of capacity building as the ability of individuals (extension staff, researchers and farmers) and organisations (extension institutions, research institutes and farmers/ farmer-based organisations) to perform functions effectively, efficiently and sustainably. The capacity building for individuals is an on-going and not a passive process. But, capacity building for organisations should emphasise enhancement of the overall system termed as *Capacity Development.* This does not mean that capacity was non-existent a all, but includes human resources development and strengthening existing capacities of individua and organisations to perform their tasks optimally. The OECD has defined capacity developme as 'the process by which individuals, groups, organisations, institutions and societies increase the abilities to:

a) perform core functions, solve problems, define and achieve objectives, and,

b) understand and deal with their development needs in a broad context and in a sustainable manner.

Consequently, capacity building entails improving the knowledge, skills, competencies, abilities and attitudes of farmers, extension staff, researchers, input suppliers, rural-based organisations students and communities to help achieve their goals. Hence, Agricultural Extension has added and can still add to the capacity and resilience of rural industries and their associated communities. Capacity-building and resilience are conceptually linked and include agricultural extension and rural development programmes. The capacity-building roles of rural extension services communities far exceed simply achieving changes in on-farm agricultural production or natural resource management practices. Agricultural Extension Agents are investments that add value

and capacity to the communities that rely on them, providing vital and accessible skills to stakeholders negotiating challenging circumstances. Retention of core agricultural extension capacity and expertise at all levels should therefore be a strategic objective for rural community stakeholders and industry and government policy makers. Capacity for agricultural extension must therefore, be promoted, and for this to serve farmers, the framework by which extension agencies operate must be contemporaneous and inspire confidence. This is because extension cannot serve the purpose of building the capacity of farmers if farmers themselves do not have confidence in extension.

Mr. Vice-Chancellor Sir, my contributions in the area of capacity building find expression in my over 50 articles published both in international and local journals world-wide, more than half was in the area of capacity building in rural extension and the rest shared between gender and other topical issues in general agriculture.

3.0 Building Capacity in Agricultural Extension

The success of agriculture and rural development programmes depend largely on the caliber and commitment of the executing teams and members of staff. In terms of qualifications, many members of staff hold a bachelor degree, a master's degree, or postgraduate diploma. Experience has shown that successful and sustained agricultural and rural development could only be achieved from within nations, from the capacity of the people, institutions and governments. Akinola *et al.* (2011) posited that extension is the organised exchange of information and the purposive transfer of skills in order to capacitate rural actors for continuous relevance in a commercial economy. It is evident that large proportions of African peasant farmers (65-80%) are still not exposed to any form of agro-technology and still depend on the traditional methods of farming that they have for many years.

In Nigeria, the Agricultural Development Programmes (ADPs) constitutes the single largest agency charged with the responsibility of agricultural extension. The programme was originally funded by the Federal and State Governments with financial assistance from the World Bank. The role of agricultural extension is to build capacity of farmers in science, technology and innovation so that farmers could be empowered to move from peasantry to real commercial farming. The provision of extension education aims at improving farmers' agricultural information uptake for effective farm / home management decisions. Consequently, the goal of agricultural extension is to enhance the capabilities of farmers to solve problems and deploy their power to define and drive the process of

change. It is therefore evident that the quality of extension is only as good as the quality of its recommendations as perceived by farmers.

Farmers are dependent on effective extension services to provide advice on commercial and technical opportunities to improve their livelihoods. Under the Training and Visit (T&V) system of the Unified Agricultural Extension System (UAES) introduced in 1989 by the World Bank, extension agents are to deliver to farmers, production recommendations in all aspects of agriculture including crop, livestock, agroforestry and fisheries through regular visits to farmers homes and farms. This in essence means that, extension workers were also made 'generalist-specialist' through regular trainings in the Monthly Technological Review Meetings (MTRM's) and the Fortnightly Training sessions (FNT's) where farmers' problems are discussed. However, the capacity of the extension workers in technical and extension knowledge and skills needs regular training and re-training to be able to cope with the challenges of their jobs. T&V has since been criticised within the Bank (Anderson, Feder, and Ganguly, 2006). Despite the yield increases, the programme was not sustainable, and left many countries saddled with huge debts. T&V has shown to be more successful in Asia, where there is more homogeneity within farming systems and higher capacity among agents and farmers. The T&V system was also more successful in promoting very specific packages (where they were suitable). Ghana modified her extension system in 2003, based upon a 1997 policy to decentralise (Anderson, 2007). However, such modifications take a long time; hence, there is no information on its success. T&V, although financially unsustainable, proved effective in training agents and improving the management of the overall system

It should be noted however that the understanding of the peculiar characteristics of rural clientele is an essential requirement in planning and implementing useful socio-economic programmes to help the farmers. But, the dearth of reliable location-specific data has constrained the documentation of understanding of rural communities. In the course of our career, we carried out some studies in relation to this. The study by **Oloruntoba** and Fakoya (2002) used socio-economic indicators as proxies to assess the status of rural adult females in Kwara State, Nigeria. Findings suggested that adult females exhibited variables typical of poor status because majority of them had low average monthly income, high expenditure on food consumption, which fuelled low savings. They were also mostly petty traders with large family size of eight persons, sourced for informal credit to boost income generating activities and had low education. The paper presented extension strategy to ameliorate their conditions and offered recommendations to improve opportunities for women as providers and beneficiaries in education, microloans, agriculture and

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family planning. These are essential ingredients for faster socio-economic progress, increased adoption of technologies and reduced population growth.

In a similar vein, Fakoya and **Oloruntoba** (2009) found that certain socio-economic characteristics had become linked with small ruminants' production system. More importantly, possession of small ruminants was positively influenced by the gender of herd owners, land ownership and access to capital. Findings show that majority of farmers were females, married with a mean age of 41 years, and owned small number of ruminants and other backyard animals. Other variables implying small holders' characteristics were the mean rearing experience (6.31 years), mean household size (6 persons), mean income ($86.55). Majority of women are married and employed semi-intensive system as ruminants were kept around the homestead or on small farms without large fodder; hence, majority depends on forage grazing due to high cost of concentrate. A cursory observation revealed that goats were more popular than sheep due to the perception that goats are of lower risk investment than sheep. Again, goat rearing has implication for sustainable management of agro-ecosystem because, as shown by Okunlola (2002), intensive and semi-intensive systems constitute more of a nuisance to the environment than extensive systems. That majority of women were married had implications for increased herd ownership and might probably be one of the common ways for women to gain access to land, and their rights to land.

From that same study, the results of fitted regression model in **Table 1** show the coefficient of multiple determination (R^2), which explains the 'goodness of fit' for the relationship between the dependent variable small ruminant production (herd size) (Y), and each independent variable.

Table 1: Multiple Regression Result

Form of equation	Sample size	A	X_1	X_2	X_3	X_4	X_5	X_6	R^2
Linear	120	-5.43	17.94***	-26.08**	29.97**	67.0***	99.30	34.24	++
		(3.17)		(-2.07)	(2.29)	(4.50)	(2.05)	(3.56)	0.76
Semi Log	120	-7.85	46.02	40.08*	37.91	48.60	13.34**	0.20**	++
		(1.40)		(1.54)	(1.09)	(2.13)	(3.43)	(1.64)	0.67
Double Log	120	4.74	0.23*	0.03*	0.05**	0.57**	0.03***	0.024**	++
			(1.31)	(1.40)	(2.64)	(3.41)	(2.45)	(0.20)	0.78

Figures in parentheses represent are the *t*- value

*** t - value significant at 1%
**t - value significant at 5%
*t - value significant at 10%
++ *F*- value significant at 1%

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The coefficients of four of the explanatory variables, that is, age of farmers (X_1), income (X_3), year of rearing experience (X_5) and educational level (X_6) were found to be positively significant at α=1.0, 5.0 and 10.0%. The coefficient of multiple determination R^2 was also found to be 0.78, meaning that about 78 percent variation in small ruminant production was explained by the independent variables identified. Inomi *et al.* (2006) confirmed that income from small-holder livestock operation had a positive and statistically significant effect on improved nutrition, food security and consequently rural poverty reduction. One explanation for the significant positive educational level is that high literacy could positively affect small ruminant herd size (Y)

*"**Tell me**, and I will forget. **Show me**, and I may remember. **Involve me**, and I will understand" (Confucius circa 450 BC).*

Involving users or clients in research and development is a principle of successful innovation. Apantaku, **Oloruntoba** and Fakoya (2003) examined small-scale farmers' involvement in agricultural technology generation and utilisation. It was found that the level of farmers' involvement in agricultural problem identification and prioritisation was low as farmers were willing to be involved in solutions to their agricultural problems but majority of the technologies were not based on farmers' identified problems and felt needs. The study recommended that policies and processes be initiated to mandate development agencies to involve farmers in participatory agricultural problem identification and prioritisation and other stages of agricultural research and extension processes using bottom-up approach.

In a related study, it was discovered that one of the ways of halting the continuous deterioration of the threatened environment in arid areas in sub-Saharan Africa (**Plates** 1, 2 and 3) is the participation of communities in social forestry. Participation of community is an essential condition for making development initiatives acceptable to the communities. Several assumptions in literature underlie the concept of participation or involvement. An important premise is that greater involvement from problem definition to designing solutions could ensure that programmes are more effective and sustainable. The major reason for participation is for the sustainability and overall workability of the programme and thus, its success.

Plate 1: Homestead engulfed by desert encroachment

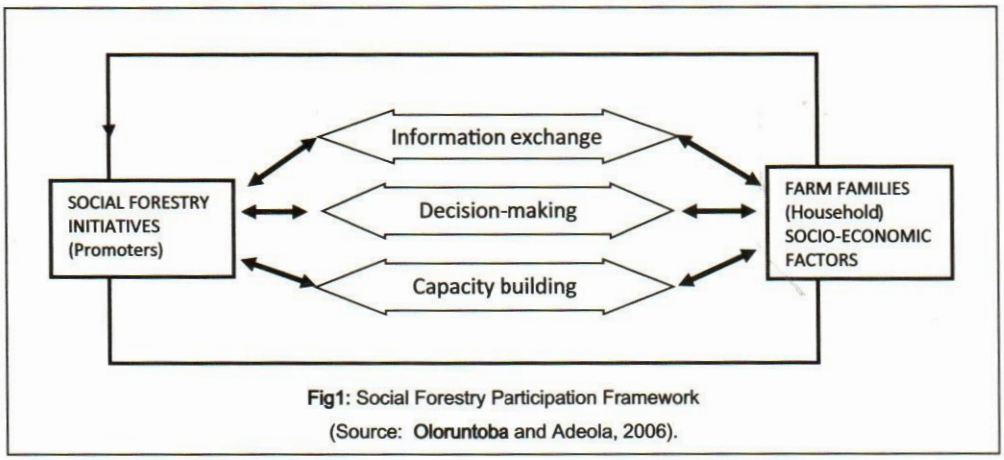

Fig1: Social Forestry Participation Framework
(Source: **Oloruntoba** and Adeola, 2006).

Oloruntoba and Adeola (2006) in their work on participatory social forestry framework in **Fig 1**, describes how ownership and control could be transferred to the local communities in order to stimulate exchange of ideas, knowledge and techniques leading to mutual changes in attitude, practices, knowledge, values and behaviour toward forest and plantation management. Participation in social forestry could help local community and indeed Forestry Projects mitigate the risks associated with aridity and desert encroachment. The issue of control could not be ruled out completely in the promoters/local farm family/household's interaction. To control implies the capacity to bring about desired effects or conversely to prevent undesirable consequences.

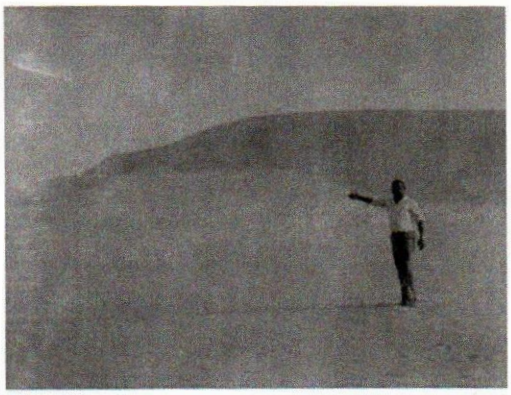

Plate 2: Vast expanse of wasted land due to desert-lification in Arid North of Nigeria (1981)

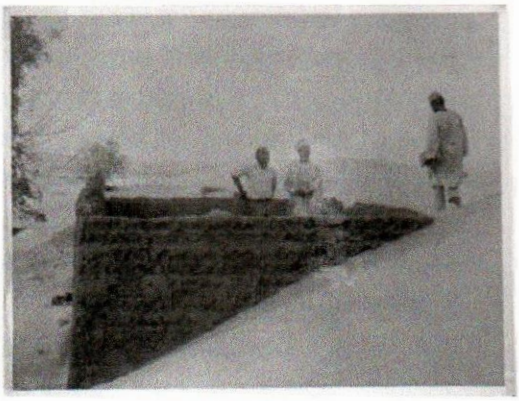

Plate 3: Homestead sacked by sand dunes

The term capacity could also be used not only to describe the development of local capacity and self- reliance, but, to justify the extension of control of the state. It has been used not only to devolve power and decision-making away from external agencies, but also to justify external decisions. The framework, therefore, tries to describe the linkages and interaction of three mix bags of mutual exchange of information, decision-making and capacity building.

In particular, the capacity-building and awareness-creation processes, whereby the participating communities gain managerial and technical forestry skills, are aimed at self-management and a diverse set of benefits. Therefore for the development of confidence between the promoters and the participating communities, learning / participatory training could help local communities identify problems and demonstrate their capacity in forest protection and management. These are explained by prevailing socioeconomic factors, notably farm size, age, income, available labour, level of education and infrastructure assets.

Oloruntoba and Adeola (*op cit*) found that participation in social forestry in the arid zone of Northern Nigeria was therefore significantly determined by selected socio-demographic factors. Farm size in particular was not a limiting factor in social forestry. One explanation for the significant positive farm size was that households with a large farm size are more likely to be able to set aside portion of their marginal land to woodlots without jeopardising household food security on the remaining land. Results also showed that older and more educated rural households with large farm size were more likely to participate in social

forestry. The study confirmed that alleviating excessively threatened environments require that cognisance be taken of certain independent variables which have a significant impact on households in social forestry programmes. Fakoya, Ajayi, **Oloruntoba**, and Bolarinwa (2010) revealed that both men and women involved in *fadama* (wetland) farming have their major role to play in contributing to household food security.

Oloruntoba and Ajayi (2003) examined the relationship between socio-economic characteristics and employee motivation. It was found that job-related factors are better predictors of job satisfaction than socio-economic characteristics. **Table 2** shows that non-monetary benefits were highly correlated with job satisfaction (*r=0.96*). Hence, to obtain positive motivation, it is necessary to increase the intrinsic interest in the job and give employees a sense of responsibility, achievement, recognition, growth and overall job enrichment, which involves job rotation and job enlargement.

Table 2: Correlation between Job Satisfaction and Selected Variables

	Variables	1	2	3	4	5	6	7	8	9	10	11
1	Job satisfaction											
2	Non-monetary benefits	.966										
3	Age	.015	.011									
4	Educational qualification	.179	.105	.206								
5	Marital status	.882	.065	.276	.276							
6	Position held	.189	.163	.210	.297	.130						
7	Leadership climate	.067	.133	.050	.236	.087	.355					
8	Family size	.200	.188	.056	.160	.438	.213	.007				
9	Gender	.192	.170	.215	.053	.053	.210	.050	.056			
10	Job experience	.080	.016	.209	.438	.222	.078	.093	.121	.111		
11	Income/salary	.110	.133	.007	.019	.048	.200	.141	.009	.035	.032	

Again, job satisfaction and psychological strain were employed by Ladebo and **Oloruntoba** (2006) to assess the well-being of faculty members. Job satisfaction, which refers to an individual's positive emotional state resulting from the appraisal of her/his job, was measured using a seven-item scale. The scale was subjected to maximum factor analysis to determine its construct validity and was found to be uni-dimensional. The single factor solution explained 43.60% of the variance in scores (*eigen* value=3.05) and was a good fit to the data ($c2(14)=72.11$, $p<0.0001$). The results showed that stressors such as poor working conditions and heavy workloads were significantly and negatively related to job satisfaction and psychological strain.

In terms of women's involvement in artisanal fishery, **Oloruntoba** and Fakoya (2002) found that most women in Epe and Eti-osa of Lagos State, Nigeria were generally less involved in the use of fishing with hooks/ traps and boat in the creeks and lagoons. This may probably due to customs, which discourage women from fishing in open-boats and / lack of adequate capital to purchase a canoe. Surprisingly too, women were less involved in fish processing and storage, demonstrating the need for fisheries extension delivery since the proportion of women in artisanal fisheries receiving extension advice was low in both locations. This position confirms that of Fortmann (1979) and Staudt (1975), that, women in productive resources are less likely to have access to extension workers.

In the context of African agriculture, small-scale farmers use the Indigenous Technical Knowledge (ITK) of local farm tools and implements such as hoes and cutlasses for arable food production. After centuries of cultural and biological evolution, subsistence farmers have developed complex farming systems adapted to local conditions with little dependence on modern agricultural science. Farmers thus depend on the indigenous knowledge acquired or inherited for crop production.

Oloruntoba, Ashaolu and Akinbile (2005) investigated the Indigenous Technical Knowledge (ITK) for maize production by small-scale farmers in Odeda Local Government, Ogun State, Nigeria. Findings show that majority of the small-scale maize farmers had no formal education and cultivated less than 0.5 hectare of land. Of the 39 ITK identified, majority of farmers used crude implements for site preparation and weeding; bush burning ranked highest for manuring; a high proportion of farmers winnowed for viable seed no matter where seeds were obtained and either kept part of the harvested maize cobs on roof ceilings or preserved them near a smoking kiln with bamboo terraces where they could dry up and used for planting in the following season. Yellow solo maize was also preferred to white, economic reasons, since the variety was in high demand in the local market, and ash was used for seed dressing. Farmers generally preferred to plant three seeds per hole, but few planted more per hole; the method and time of planting were also very crucial in traditional agriculture as majority prefer to plant in April when rainfall was adequate than in March when maize crops were scorched by intense heat of the sun. To control for pests, farmers scared birds by hanging scarecrows '*effigy*' in the form of images dressed to resemble human beings. Generally, harvesting was done 3-4 months after planting. Since most of the farmers hardly had storage rooms, storage of maize cobs was done on bamboo terraces in

their farms or hamlets. This is an area where it became obvious that capacity building was important. To unleash the power of capacity building, it was recommended that extension agencies should encourage the modification and improvement of some indigenous practices that are found relevant by blending them with western scientific methods.

4.0 Building Capacity of Farmers

Building the capacity of farmers involves usage of contemporary extension teaching methods of individual, contact group, result demonstration and mass media training, conducted for a few days. Training of farmers can also be in form of focus group discussions and village or on-farm adaptive trials with emphasis on critical steps required for effective farm production. Olowu (1992) noted that getting farming audiences to receive understand and act upon new and improved technologies recommended by research and extension required setting up appropriate learning/training activities.

The Ministry of Food and Agriculture (MoFA) in Ghana, the state-wide Agricultural Development Programmes (ADPs) in Nigeria, the National Fadama Development Programme, Non-Governmental Organisations (NGO's), Agricultural Research Institutes Universities and Management Training Institutes are known to organise capacity building training for managers, scientists, students and farmers. For instance, the National Fadama Development Project 1 (NFDP 1) focused mainly on building capacity of farmers to manage wetlands (fadama) and promote simple low-cost irrigation technologies in a bid to increase food production (Adegbite, **Oloruntoba**, Adubi, Oyekunle and Sobanke, 2008).

Furthermore, agricultural research institutes also organise trainings for farmers from time to time. For instance, Solomon, **Oloruntoba** and Ajayi (2007) conducted a study on oil palm farmers' preferences for period of training on improved oil palm production technologies provided by the Nigerian Institute for Oil Pam Research (NIFOR) in Benin City. Findings showed that majority of the farmers preferred that trainings be conducted in the morning hours, while few preferred trainings at any time of the day. This finding is important as it takes into cognisance the fact that farmers apportion their time between various farm and other livelihood-related activities. In relation to the day of the week / months of the year, trainings are mostly preferred on the Monday to Wednesday period. However, of the three days, Mondays were the most preferred. Majority preferred trainings between the months of January and April. In accordance with the cultivation pattern of the oil palm, January to April

are months when activities such as site selection, land preparation and field planting were carried out and a time farmers make vital decisions on farm activities for the year. This perhaps explains why these months were preferred by farmers for training. These findings have implication for extension activities directed at oil palm farmers. It was recommended that adequate training needs assessment be conducted to identify the most relevant, effective and beneficial training for the farmers.

One of the tangential roles of agricultural extension is the linking of small scale farmers to the source of agricultural credit (Adegbite, **Oloruntoba** and Olaoye, 2008). The main function of agricultural credit programmes is to reach a large number of targeted small-scale rural farmers who constitute the bulk of farmers in developing countries. But the seasonal nature of arable farming, high transaction costs, lack of collateral to secure loan from commercial banks, usurious interest rates from money lenders and the convention of repayment of loans once in harvest makes agricultural credit intrinsically difficult. Farmers perceive credit as important for boosting their agricultural production and alleviating the problems of time-lag between planting and harvesting and lack of savings. However, lack of access to, and control of, agricultural credit by farmers is limiting production of some arable crops. The situation is affecting the procurement of modern input such as agrochemicals, seeds, storage and transport facilities for production and marketing. Sustainable food production and household food security could be achieved through farmers' access to microcredit.

Oloruntoba, Ashimolowo and Solomon (2007) examined the perceptions of farmers regarding agricultural credit in rice producing villages in South-western Nigeria. Results show that the perception of rice farmers favoured the informal agricultural credit sources like relatives and friends as against obtaining credit from formal financial institutions such as commercial or rural agricultural credit banks. Farmers agreed with the use of credit for procurement of input and hiring of labour but disagreed with whether credit could be used for the purchase of farmland or sourced from money lenders.

The fact that agricultural technologies were generated is not synonymous with diffusion. According to Swanson (1996), technology is the application of knowledge for practical purpose. This is generally used to improve the condition of the human and natural environment and carry out some other socio-economic activities. Innovation is, on the other

hand, an idea, practice or product that is perceived as new by the potential users or adopters. Improved seed varieties and fertilizers are examples of innovations. Ajayi and **Oloruntoba** (2007) investigated the level of adoption and perception of farmers on technologies developed by The International Institute of Tropical Agriculture (IITA), Ibadan in areas adjacent to the institute. Despite the fact that the Institute does not partake in direct extension services, majority of farmers use IITA as a source of agricultural information on improved technologies due to on-farm level activities and the proximity of the Institute to the area. Findings show that the on-farm trials by IITA scientists with farmers influenced the adoption of some of the technologies. The improved cassava and maize varieties, rapid multiplication of cassava and seed yam minisett technique had the highest adoption. Non-adoption of some technologies was attributed to inadequate information and missing knowledge, lack of awareness of the technologies and lack of follow-up by extension personnel. The study recommended intensification of adequate and effective research-extension-farmers linkages and possible establishment of extension liaison services for ease of dissemination of research findings.

A major feature of agricultural markets in developing countries is the absence of standard measures and grades for commodities offered for sale. As a consequence, price tags are generally absent and difficult to enforce. Farm and non-farm prices at the wholesale and retail levels are determined through rigorous haggling. In the process, productive time and energy are expended. Phillip, **Oloruntoba**, Fakoya, Phillip, Ashaolu and Alogba (2006) conducted a study in four spatially separated urban markets. The means of the asking (sellers') prices and those of the offered (buyers')did not differ between male and female buyers, or between buyers' modes of dressing (appearance) in any round of bargaining, but the time spent haggling over beef prices did, statistically. Most of these retail price variables had means that were higher, statistically, in the morning than evening times.

It should also be noted that in addition to the provision of technical information by agricultural extension, other ways of building the capacity of farmers are through numerous non-formal adult educational sources such as the Farmer Field Schools (FFS), farm broadcast using radio and television, drama, and role playing. The FFS is one approach that promotes group learning based on principles of adult education which was first developed in Asia in the 1980's and introduced to Africa in the 1990's where we now have more than 27 countries participating in the programme. Open Broadcast Strategy (OBS) is the area in which we

have farm programme being broadcast on radio or television in many developing countries. For instance in Nepal, radio programme broadcast for 15 minutes, four times in a week, and usually prepared by the Ministry of Agriculture. In Nigeria, many States Radio Stations broadcast farm programmes at a particular time within the week during farming seasons.

5.0 Building Capacity of Agricultural Research System

The capacity of the agricultural research system to generate relevant technology and thereby provide the needed changes in the farmers' traditional system of food production requires that scientists are trained and re-trained in agricultural research management. Capacity building methods used for senior research managers include workshops, management training, on-the-job learning, study visits, staff meetings and mentoring.

According to **Oloruntoba** (2002), the provision of training could improve the recipients' effectiveness and evaluation, a useful feedback to both the employer and training organizer. It is therefore the task of training institutions / organizers to provide trainees with the opportunity to learn and stimulate mental and physical activity, and to produce desired learning. It should be noted that; training could help in building national capacities for agricultural research and also enhance food production in Africa by increasing the crop of competent research and extension workers in the humid tropics (Ajayi, 2001). The purpose of training is thus to impart knowledge and skills that are applicable to practical situations. Meenambigai and Seetharaman (2003) asserted that training is the most singular factor affecting individuals' attitude, productivity, improvement, risk-minimization and quality of job

Plate 4: On Study Tour to Zambia Industrial Plantation Project, Copperbelt Region (1983)

performance in any endeavour. It entails a skillful management of both human and physical resources to facilitate desired change. Okwu and Ejembi (2005) opined that training is concerned with those activities designed to improve human performance on specific jobs and is usually short-term, narrow-focused and specifically designed to meet the need that has immediate application.

Oloruntoba (2001) similarly found that more than half of trainees in a management training course rated their post training job performance as being excellent and majority did not experience a decline in their post training job performance because of gender, age, managerial position and span of control. Training therefore is expected to result in change of behaviour or performance of individuals. Hence, one of the main reasons for training is for the trainees to learn. Therefore, a well-organized training should create situations in which trainees develop learning skills.

In any training, needs analysis is usually the first step to be conducted to determine the missing skills or gaps to which training is expected to fill. Training needs analysis conducted by the Agricultural and Training Institute (ARMTI, 1993) showed that senior research managers in Nigeria's 18 Agricultural Research Institutes lacked research management skills and training has always been on technical competence. In other words, technical competence has received more emphasis, whereas; the essence of managers' job is managerial decision-making and corporate leadership. Consequently, these managers were exposed as a group to agricultural research management training sponsored by the World Bank-assisted National Agricultural Research Project (NARP). The goal of the training was to enhance the management capacity of participants, and to sensitize them to various tools and skills necessary for organisations' success within the National Agricultural Research System (NARS). The training was split between ARMTI in Nigeria and National Academy for Agricultural Management (NAARM) in India.

One of the goals of training evaluation identified by Swierczek and Carmichael (1985) is assessing employee's skill levels. **Oloruntoba** (2000) found that the provision of training made a great difference in job performance between the trained research managers exposed to management training and those not trained (comparison group). This implies that the trained group and the comparison group were not equivalent in terms of their managerial skills before and after training, while the skills of the former increased those of

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the latter group did not. It is also widely assumed that the provision of training intervention for employees will automatically lead to improved job behaviour. Again, findings by **Oloruntoba** (2002) using factor analysis indicated otherwise-that there were constraints that prevented them from applying the skills and knowledge learned during training. Table 3presents the computed *eigen* values of the five rotated factors impeding the use of training at work setting. The identified factors are inefficient support services, poor financial/

Table 3: Computed *eigen*values of five final rotated factors impeding the utilisation of training

	Factors	*Eigen*values	% Variance
1	Insufficient support services	21.90	66.4
2	Poor financial and personal characteristics	2.59	7.8
3	Adverse socio-political and economic	1.62	4.9
4	Attitude to work	1.35	4.1
5	Insufficient reward system	1.03	3.1

personal characteristics, adverse socio-political and economic factors, attitude to work and insufficient reward system. This result corroborates that of Jaiswal (1992) that when trainees (participants) go back to their work environment, there might not be any improvement in their performance because of underlying factors impeding the use of such training in work setting.

In terms of competency of research managers, **Oloruntoba** (2002) found that high significant associations were observed between trainees and comparison groups on 12 competence areas after management training. The study also showed that the trainees' group acquired and are utilising more managerial skills than the comparison group. In general, majority of trainees claimed that the training inspired more confidence in their jobs. The implication is that the research management training provided ensured improvement in managerial abilities of trainees.

The agricultural extension agents are the closest to farmers and perform the specialised functions of teaching the farmers on the use of proven agro-technologies and / innovations. The agents are also expected to obtain feedback on farmer's needs and problems for the attention of research scientists. In a study conducted by Anaglo and Ladele (2005) in Ghana on effectiveness of extension delivery, it was found that farmer-formed groups were more cohesive and sustainable than the Extension agent-formed groups. According to Youdeowei and Kwanteng (1995), training is useful only when it is designed to meet training needs, and

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is offered to people who will benefit from it. Hence, training needs are the competencies that must be acquired by trainees to enable them perform their jobs at the optimal level. Gbolamresa (1993) therefore suggested that all professional competencies should be learned or developed after extension agents are employed. **Oloruntoba** (2006) also conducted a study on the perceived professional competencies of agricultural extension agents. Results show that more competent extension agents perceived their levels of professional competency as adequate and have had a positive and significant impact on technology transfer to farmers.

Learning is commonly associated with training design, training environment and logistics / services such as lecture rooms, trainers / facilitators and learning aids provided during training, and could be affected positively or negatively depending on how well-motivated the trainees are in terms of adequacy or otherwise of these learning components. It has been generally observed that evaluation of learning components has always been a routine activity usually carried out using the '*End-of-Course Evaluation Form*' otherwise known as *'Happiness Sheet'* heralding the end of a training course. **Oloruntoba** (2003) found that learning is more effective when quality of training material and learning aids are generally adequate, trainees are actively involved in learning experiences rather than being passive listeners to facts being demonstrated.

6.0 Capacity Building for Sustainable Management of Wetlands

The Convention on Wetlands, adopted in Ramsar, Iran, in 1971 and since known as the Ramsar Convention, which came into force in 1975 was the first of the modern global intergovernmental treaties designed to protect the environment and preserve natural resources. The Convention's mission, which was re-stated in 1996, is the conservation and the wise use of wetlands by national and international co-operation as a means of achieving sustainable development throughout the world (Ramsar COP8, 2002). A study by **Oloruntoba** and Akindele (2009) establishes that the basis for sustainable management of Eriti wetlands in Ogun State, Nigeria is for the community and the stakeholders to adopt ecological sustainability which aims to reconcile the utilization of ecosystems with their ability to regenerate.

The Eriti wetland is a fragile ecosystem characterised by growing human activities which may impact negatively on it. Such activities include cultivation for vegetables and cassava,

Plate 5: Ogun River in Eriti Wetlands

Plate 6: Canoes for Transportation at Ogun River, Mokoloki

Plate 7:Ogun River (upstream), Eriti wetlands

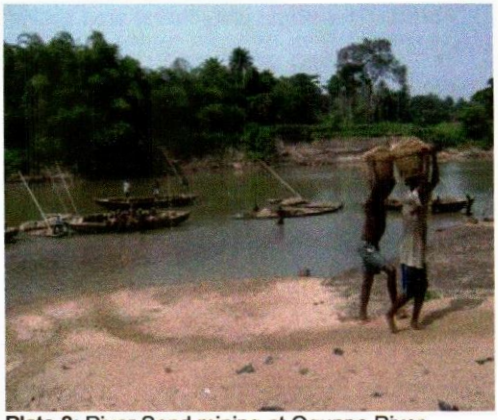

Plate 8: River Sand mining at Ogunpa River

Plate 9:Ogun River, Abata Midstream, Eriti

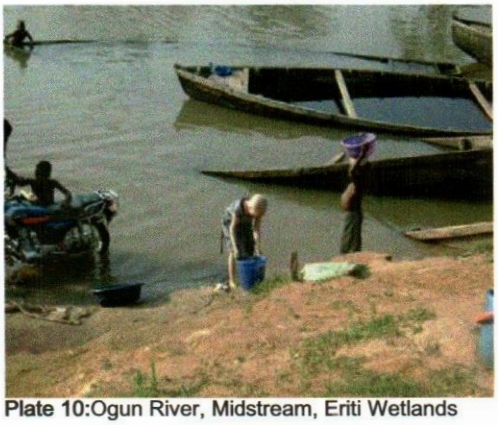

Plate 10:Ogun River, Midstream, Eriti Wetlands

hunting and poaching of wildlife, dredging for sand removal and collection of Non-Timber Forest Products (NTFPs). Findings show that the inhabitants are farmers, female-dominated. Deforestation and forest degradation have reduced the vegetation to shrubs and grasses in many places. The fact that a substantial amount of land is grassland necessitates reforestation projects. But, the areas that still have some semblance of forest are poorly stocked, with most trees being of very small size. Prior to the commencement of this study, there was no particular area of land designated as Eriti Community Forest., but with the study, the boundary is now well-demarcated and cadastral map produced. Through advocacy and meeting with the entire community during the study, the area of land made available by the Eriti Community for forestry development was 53.54 hectares (**Oloruntoba** and Akindele, 2009). This was the area surveyed and now set aside as Eriti Community Forest. This community forest area provides series of tangible and intangible benefits to the local inhabitants and those in the fringe communities.

Consequently, the study produced a 'Working Plan' which include detailed prescriptions for 5 years with 2009 as base year. The plan brought together all aspects of sustainable management of the wetlands. Since planning poses more problems in forestry, the convectional instrument of planning is the 'Working or Management Plan'. Hence, the only valid basis for adopting this 'Management Plan' is that it will achieve the policy objectives more effectively than any other course of action. The success of the management plan and continuity depend significantly on the availability of suitable human resource to implement the plan. Hence, it was concluded that considerable attention should be given to capacity building activities.

The capacity building activities were in two major fronts as follows:

- Those activities directed towards training community members on income-generating schemes (domestication of wild animals such as the grasscutter; homestead fish farming; bee keeping; etc.) that will make them less dependent on the forest.
- Those activities directed towards management plan implementation, silvicultural operations, forest inventory and monitoring.

To achieve the first and the second, there was the need to organize special training sessions by inviting resource persons who are seasoned with track record of ability to impart knowledge to varying classes of individuals. Provisionally, training was recommended to be done quarterly, throughout the planning period of five years, with the aim of touching every

member of the community. Potential trainees at each point in time were to be identified by the committee.

7.0 Building Students' Capacity for Field Practical

7.1 Farm Practical Year Programme

An attempt to increase the technical know-how of the university graduates of agriculture necessitated the introduction of the Farm Practical Year (FPY) programme in Nigeria. According to Ogunbameru (1986), this process of gaining knowledge and practical skill through observation and by doing is called internship. It is mandatory and indeed a policy of the National Universities Commission (NUC) that agricultural undergraduates in the fourth year of the five-year degree be exposed to farm practical year. This was also in line with the NUC Benchmark Minimum Academic Standards (BMAS) (introduced in the late 1980's) that specified the need for Students Industrial Work Experience Scheme (SIWES) for degree programme in agriculture, forestry and other disciplines (Olawoye, 2006). Again, programmes of this nature could be valuable in increasing the practical content, skills and knowledge of students, if delivered in the way that the programmes was really designed. Undergraduate agricultural students must determine how to solve practical farm problems, gather and organise farm data or information; and write technical reports. These practices promote ownership of knowledge and translate into critical thinking skills they need develop for themselves (Bransford *et al.*, 2000; White and Fredericksen, 1998). Students' participation in farm practical can also be an effective means of

Plate 11: Building Capacity of Forest Officers in Forest Management Practical at the Ogun State Forestry Plantation Project, Area J4, Nigeria (1986)

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promoting experiential learning and associated skill development (Matter and Steidl, 2000; McCleery *et al.*, 2005). This is the hallmark of the inquiry approach (Young, 1997).

To this end, the roles of Faculties / Colleges of Agriculture in producing agricultural graduates for academic and professional leadership and management are critical to national social progress and economic growth (Amalu, 2006). But, in recent years, along with a rapid expansion in the number of agricultural faculties / colleges, poor vocational competence and near-zero practical skills in agriculture became evident. This necessitated the Round-Table Conference of Deans of Agriculture of Nigerian universities on Practical Training organised by the Leventis Foundation (Nigeria) Limited, Federal University of Agriculture, Abeokuta and National Universities Commission in June 2006. However, this situation is not peculiar to Nigerian universities alone (Warren, 1998; Maguire, 2000; Zinnah *et al.*, 2001). In India, the World Bank (1995) observed that there was little emphasis in the curricula on preparing the agricultural graduates for better career in agriculture or agribusiness outside government jobs. In Ghana, Okorley(2001) reported that only 20 per cent of final year university agricultural students surveyed indicated a definite willingness to pursue agribusiness as a self-employment venture because of the poor practical training delivered by the curriculum. Okorley *(op cit)* reported that the Head of Departments of three Faculties of Agriculture in Ghana were of the opinion that the present curricula for teaching agriculture in the universities were not adequate to address the training needs for self-employment in agribusiness. Others have advocated for education that produces university graduates who can create rather than seek employment (Munowenyu, 1999). Consequently, the traditional classroom lecture-based delivery systems provide limited opportunity to acquire the necessary skills and experience to explore careers (Nikolova-Eddins *et al.*, 1997; Mc Lean, 1999; Ryan and Campa, 2000; Boersma *et al.*, 2001; Perry and Smith, 2004).

Perhaps one of the strongest arguments in the justification for establishing three Federal Universities of Agriculture in Nigeria is the need to produce a critical mass of new-cadre agriculturists. The Farm Practical Year Programme (FPY) addresses the short comings in curricula of agricultural graduates, enabling them to acquire knowledge and practical skills needed to become proficient in agriculture. **Oloruntoba** *(op cit)* study provides insights into the perceptions of level 400 agricultural students regarding the Farm Practical Year (FPY) programme at the Federal University of Agriculture, Abeokuta, Nigeria. The FPY programme presents the university a unique opportunity to reinforce the practical application of all the theoretical inputs that have gone into her products, and to expose undergraduate agricultural students to all aspects of agricultural production process in crops, livestock, fisheries and forestry. Rather than being theoretical about farming, level 400 agricultural students learn through FPY by actually participating in it. Such knowledge that students

discover and build for themselves is also more meaningful and durable (Resnick and Chi, 1988).

At the Federal University of Agriculture, Abeokuta, the FPY programme was initiated in 1992 and designed to provide the chief source of six months practical training for level 400 agricultural students to learn, develop and have hands-on experience needed in today's changing agriculture. The programme is managed by the University Teaching Farms Management Committee (TEFAMAC) and has trained over 4000 students since inception. It could be assumed that the provision of farm practical would make under-graduate agricultural students favourably disposed to agriculture and agribusiness careers, hence, the need to clarify this assumption by examining the perceptions of students about it. Furthermore, new educational programmes are required to evaluate the effectiveness of the FPY, and identify areas that need adjustment or improvement. This should provide information vital to an organisation's survival and prosperity (Bryson, 1988).

Oloruntoba (2008) conducted a study on the perceptions of undergraduate agricultural students towards Farm Practical Year Programme. Results show that the programme provided students with 'hands-on' experience and opportunities to apply theory learnt in classroom to real-life field situations in which students had to adapt and solve problems on a daily basis. Students also felt strongly that the farm practical would contribute to their professional career and employability on graduation. However, certain perceived problems were raised by students such as lack of on-campus accommodation, delay in payment of allowances and paucity of resources.

7.2 UDS Third Trimester Field Practical Programme

University programmes should teach students critical thinking and problem-solving skills and develop their curricula by injecting feedback from students, farmers, communities in general into the curriculum to make it very relevant to the society. The example that readily comes to mind is Third Trimester-Field Practical Programme (TTFPP) of The University for Development Studies. The programme has adopted practical-oriented methodologies for teaching and learning, research and outreach services as a means to fulfilling its mandate of blending "the academic world with that of the community for the total development of Northern Ghana in particular and the country as a whole". An integral component of this approach is the (TTFPP) programme which incorporates feedback from students and actors in the agricultural value chain, including farmers living in remote communities. The programme is a success story as it tends to enrich the curriculum and make it more relevant to the needs of society. This approach offers students from the faculties/schools of the University the opportunity to live and work together in selected communities.

The programme covers two phases engaging students from the first year through to the second year in a single community. The work of each year builds on to the other in a dynamic manner. Students are introduced to aspects of community studies during the first year. Students practice community entry and aspects of community diagnosis using participatory approaches. Emphasis is placed on techniques of needs assessment, culminating in the assessment of the problems and potentials of the community using a variety of complementary techniques as well as suggesting tentative/ possible interventions. The problems and potentials analysed during the first year serve as the starting point for the activities of the second year whereby students are tasked to propose pragmatic interventions to the resolutions of the problems. Students are expected to demonstrate the use of the identified potentials of the community in their proposals or plans. Consequently, experiential learning pioneered by UDS has promoted more easily direct linkages with the community and community linkages have become more important for the UDS all in the promotion of *'town and gown."*

8.0 The University's Outreach Programme

Outreach is one of the ways of building capacity in the university. By definition, outreach is any programme of activities initiated and designed to meet the information needs of an un-served or inadequately served target group (Young, 1983). By continuing to focus on the needs of specific segments of a population, the right support can be made available to the right people at the right time. Knowing the potential customers, and how they will be reached, is one way to assure funders that their resources are being used in a strategic way. Outreach is therefore the art and science of understanding and responding to the needs and wants of groups of people, sometimes called 'segments' or 'niches'. The outreach strategy helps figure out which group of people needs what. The outreach is often built around a commitment to information flow across the target clientele- in our case the rural farmers.

Over the past decades, various socio-economic, ethical and political obligations aimed at ameliorating the condition of the rural farmers have been launched by various governments in developing and transition economies. Many of these interventions come as single doses and often introduced as political palliatives to 'whet' the appetite of the poor and probably leave them more wanting than ever before. While these programmes brought a lot of scattered showers of relief, the projects were not backed up with sustainable management.

Again, where projects are established through the technical assistance of donor agencies [bilateral / multilateral], there is tendency for such projects to 'die-off' almost immediately the donor withdraws its management intervention. There is no doubt that some of these quasi-government donor agencies projects have momentarily brought succour to the lives of the poor, they would have achieved much more lasting impact had they provided the management skills for beneficiaries to enable them maintain the project and ensure its sustainability beyond the 'survival' level. The road to development should be people-centered, in a way that sustainability with growth is maintained in order to realise better quantity of life. Hence, the primary principle of development strategy is that, it must start and end with people. People have to be the agents, the means and the end of development. Therefore, if people initiate their own development, the development process will not turn into an exercise in alienation. Consequently, the sustainability of agriculture is usually judged at least by five criteria: ecologically sound; economically viable; socially compatible; humane; and adaptable. In many countries, the universities are expected, by tradition and common consent, to provide leadership and serve as beacon to the society in terms of outreach. It is also their duty to advance learning by teaching and research, and thus providing services for the whole society.

8.1 FUNAAB Extension Outreach

The Agricultural Media Resource and Extension Centre (AMREC) was established by The Federal University of Agriculture, Abeokuta, Nigeria as a means of presenting university research findings through extension in understandable ways to farmers living within the mandate areas which spread over several states in the southwest rainforest farming system zone of the country. AMREC engages farmers and are directly served by extension staff through advisory services, action research as well as learning. The outreach provides educational programmes and research-based information, enabling farmers to make decisions that improve the quality of their lives. Farmers operate within specific natural and socio-economic settings and the role of extension is to facilitate the adoption of new agricultural technologies or to influence the rate of diffusion and adoption of innovations by farmers. Accordingly, research scientists and extension experts in the university have focused on improved maize variety for adoption by farmers in outreach villages. One of the steps taken is the promotion of farmer-managed and implemented *Striga*-resistant maize trials called *Across 97*. The approach permitted farmers to have freehand in testing and adopting proven cultural practices. The *Across 97* is an open pollinated maize seed (not an

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hybrid crossbreed seed) which can be multiplied by continuous planting without contamination by other varieties of maize seed. Over the past decade, the university recorded a breakthrough in the fight against the menace of noxious witch weed *Striga hermonthica* and *Striga lutea.*

A study was conducted by **Oloruntoba** and Adegbite (2006) on the adoption of *Across 97* variety developed by the University at the farm level by the participating farmers in model villages. Findings show that the provision of extension by the university coupled with other factors such as gender, membership of a farmers' group, age, assistance in the provision of tractor-hiring services and improved crop yield significantly influence decision to adopt introduced cultural practices with attendant improvement in the well-being of participating

Table 4a: Descriptive of Explanatory variables used in '*Across 97*'Maize adoption Model

Explanatory variable	Description
TOFZ (X_1)	Total farm size (Ha)
GENDER (X_2)	Gender of household head
EXTENSION (X_3)	Extension visits
MEMBER GRP (X_4)	Membership of group e.g. cooperatives
AGELES6 (X_5)	Age 6 years and younger
AGE 7-16 (X_6)	Age 7 – 16 years
FAGE 16 (X_7)	Female adults > 16 years
MAGE 16 (X_8)	Male adults > 16 years
ASSCLT (X_9)	Assistance on choice of land
ASSPTHS (X_{10})	Assistance on provision of tractor-hiring
IMCRPYD (X_{11})	Improved crop yield

Table 4b: Descriptive of Explanatory variables used in '*Across 97*'Maize adoption Model

Explanatory variable	β coeff	*t*-ratio
TOFZ (X_1)	-.051	-.563
GENDER (X_2)	.385**	1.136
EXTENSION (X_3)	1.808**	2.408
MEMBER GRP (X_4)	-1.130**	-2.006
AGELES6 (X_5)	.197**	2.057
AGE 7-16 (X_6)	-.238**	-2.393
FAGE 16 (X_7)	.169**	1.407
MAGE 16 (X_8)	.092	.850
ASSCLT (X_9)	.335	.225
ASSPTHS (X_{10})	4.042**	2.661
IMCRPYD (X_{11})	-3.777**	-1.592
N	280	
Constant	1.722	.811
LR x^2	215.84**	

**Statistically significant @ 5% level

farmers. The pattern of adoption has proved that the smallholders have keenly taken advantage of the incentives and institutional structures created by the Federal University of Agriculture, Abeokuta to alleviate the burden posed by *Striga* infestation on their farms.

8.2 UDS Social Laboratory Action Research Project

The University for Development Studies located in the rural North of Ghana recognises its responsibility to extend practical knowledge acquired from research to the rural communities by bringing together the '*town and gown*'. The University by its mandate and her methodology of teaching, research and extension also indicates that its programmes are poverty-focused. This recognition now calls for *action-research social laboratory* embarked upon by UDS through the Department of Agricultural Extension, Rural Development and Gender Studies (Box 1). The concept is patterned along the 'Comilla Model of Rural Development'-a very successful integrated rural development system in Bangladesh. The Social Laboratory would serve as centre for the development of experiential learning, sustainable agriculture and rural development. When fully operational the outreach is expected to stimulate understanding between farmers, farmers' group and Ghana Ministry of Food and Agriculture [MoFA]. Accordingly, contact between farmers and extension is

Box 1: *Action Research*

Action-research is a type of applied research, that is, research and action directed to the formulation or discovery of scientific principles that can be used to solve some practical problems. It consists of five cyclical phases: i] diagnosing; ii] action-planning; iii] action-taking; iv] evaluating; and v] specifying learning experience. Here we experiment with human beings under their social setup as against the use of chemicals in the natural science. This type of action research will be of immediate and direct benefit to communities around the University. Researchers participating in a Field Action Research are taking part in a kind of Laboratory experiment in which variables [that could not be manipulated in theoretical research] and the relations between them are identified and manipulated. This is done in the hope that Action-research will use the tools of research [data collection, systematisation, monitoring and evaluation] to identify, stimulate and manipulate change factors so that problems can most effectively be solved and so that prototypes for systematic action can be developed. The main feature of action-based research is that people gain from the process of the research as well as from the outcome. Therefore, action-based research should be participatory, involving specialists, generalists, NGOs, private concerns and Government Ministries / parastatals. The outcome of which would be 'hands-on', and useful for both our faculty and for the teaching of students.

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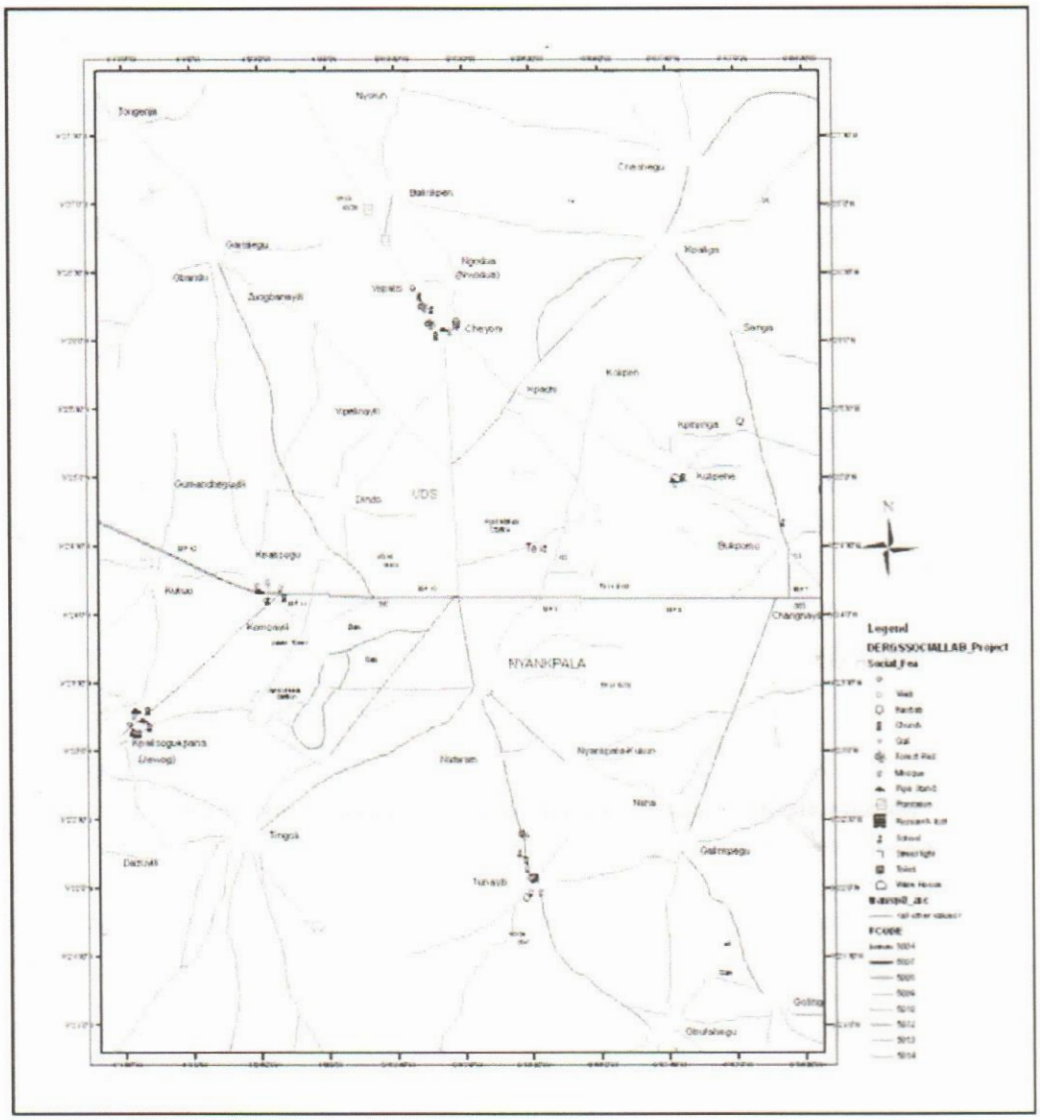

Fig 2: Spatial Map of UDS Nyankpala Action-Research Social Laboratory Villages

Source: UDS Department of Agricultural Extension, Rural Development and Gender Studies

expected to be enhanced as an important factor in the adoption of new practices. There is therefore, a need to promote action-research aimed at examining, developing and promoting sustainable strategies for managing agricultural and rural development and improving the lives the of rural poor.

There is therefore, a need to promote action-research aimed at examining, developing and promoting sustainable strategies for managing agricultural and rural development and improving the lives of rural poor. Already, preliminary reconnaissance surveys of some selected villages at Tolon/Kumbungu Districts have been conducted; spatial map of the selected villages produced (Fig 1) and baseline survey is on-going.

9.0 Challenges Confronting Capacity Development

Mr. Vice-Chancellor Sir, in sub-Saharan Africa in the 21st century, myriads of challenges are confronting capacity building in agriculture and rural development. The most prominent ones include:

1) Poor funding

Agricultural Ministry is still largely in the public domain, meaning that majority of the funding comes in form of sectoral allocation from governments. Extension programmes are therefore run by government through ministries of agriculture. This has-been the main channel for linking farmers to research and increasing productivity However, government spending on agriculture including investment in Research and Development (R&D) still stands at less than 7 percent of agricultural GDP, compared to 11 percent in Asia and 13 percent in Latin America (Kwadwo, 2009). At the Assembly of the African Union, Second Ordinary Session Au / Dcl.7 (11) on Agriculture and Food Security in Africa i10-12 July 2003 in Maputo, Mozambique, resolve to: *'implement the Comprehensive Africa Agricultural Development Programme (CAADP) and agree to commit 10% national budgetary resources for the implementation of agricultural and rural development within 5 years'.* However, with science-based technology being a key driver of agricultural growth, such dramatic declines in Agricultural Research and Development (R&D) funding and budgetary allocations were a clear threat to future agricultural innovation in Africa.

2) Development of Sustainable Approaches

Important issues include: How to develop sustainable approaches in improving the lives of small-scale farmers, how to increase food production, increase the crop of competent

extension staff, improvement of faculties of agriculture curricular to meet ever changing situation, helping smallholder farmers to organise themselves to scale-up production, marketing and advocacy, increase funding in Universities, Research Institutes and Ministries of Agriculture.

3) Poorly trained Staff

Poor training of agricultural extension staff has been identified as one of the problems contributing to the relative ineffectiveness of extension in the field (Rogers, 1996). Chambers (1993) has argued for the need for a new professionalism. This applies not only to extension staff, but to agricultural professionals in general. Unfortunately, the training of human resources in agriculture is often not a high priority in countries' development plans. As a result, curricula and teaching programmes are not particularly relevant to the production needs and employment demands of the agricultural sector.

4)**Lack of Coordination** among agriculture and rural development stakeholders such as:

- Farmers
- Local government
- Policy makers
- Universities
- Agricultural Research Institutes
- Extension centres
- International donor agencies
- Credit institutions
- NGOs

Usually each of these institutions work independently of each other without synergy and the result is not always favourable when poor farmers are the target group. There is also a waste of resources (human, natural, material and money) due to duplication of effort. There should be a strategy to follow which makes it possible for all to work together and thus to be more efficient.

5) ICT in Agriculture

The rapid spread of information and communication technologies (ICT) in developing countries over the past decade offers a unique opportunity to transfer knowledge through private and public information systems. Mobile phones coverage has spread. At the outset,

the adoption was primarily by the wealthy, urban and educated residents, but it is currently being adopted as a means of communication by the peasants. The use of ICT in agricultural extension as an alternate dissemination of technologies becomes necessary because of the low ratio of extension agent to farmer. According to Adebowale *et al.* (2001), the extension agents-farmer ratio has gone back to the pre-ADP periods in Nigeria. A ratio of 1:2000, 1:3000 and 1:3500 were reported for Oyo, Lagos and Ogun States respectively.

Although ICTs are used in extension in countries such as China, India, and Chile, Africa has lagged behind in harnessing ICT potential for extension and other rural development issues. However, in Kenya and Uganda, mobile phone services provide cheap messages about crop price information via text messaging. In Tanzania, there are *"market spies"* farmers who visit local markets and remain in contact with the village using mobile phones.

10.0 Conclusions and Recommendations

This paper has described the term capacity building, building capacity of extension, farmers, research managers, students' capacity building for field practical, and the universities outreach initiatives. The results of findings should remind stakeholders in agriculture and rural development of the importance of getting agriculture moving for sustainable food production.

Agricultural Extension has added and could still add to capacity and resilience of rural industries and their associated communities. Capacity-building and resilience are conceptually linked and includes agricultural extension and rural development programme. Rural extension services can function in capacity building roles in communities that far exceed simply achieving changes in on-farm agricultural production or natural resource management practices. Agricultural Extension Agents are investments that add value and capacity to the communities that rely on them, providing vital accessible skills to stakeholders negotiating challenging circumstances. Retention of core agricultural extension capacity and expertise at all levels should therefore be a strategic objective for rural community stakeholders, and industry and government policy makers. Therefore, capacity for agricultural extension must be served, and for this to serve farmers, the framework for which extension agencies operate must be contemporaneous and must inspire confidence. This is because extension cannot serve the purpose of building capacity of farmers if farmers themselves do not have confidence in extension.

Capacity building for sustainable agriculture and rural development requires changes to be made in education of extension workers, training of farmers by extension, re-training of professionals and exposing students to farm practical through community outreach. It requires that farmers should be taken into account and made to participate in the planning and implementation. Capacity development therefore, remains a major requirement for achieving sustainable impacts in the agricultural and rural development sector. It may therefore, be said with all candour, that, even as lamentable as the agricultural extension is, government, NGOs, universities and other stakeholders in agricultural and rural development are making concerted efforts to get it moving. For instance, employers of labour nowadays demand that graduates of agriculture be well grounded in practical content. The exposure of students to Farm Practical Programme provides them with 'hands-on' experience and opportunity to apply theory learnt in classroom to a real-life field situation in which students had to adapt and solve problems on daily basis. Students had also benefited both theoretically in the classroom instructions as well as technically in the field.

Based on the aforementioned, the following recommendations are made:

1) Agricultural development is the key to ending hunger in sub-Saharan Africa. To this end, all stakeholders in this sector should promote and facilitate continually capacity building. Budgetary allocation to agriculture Ministries, universities and research institutes should be increase to make funds available. The increase funding could facilitate the training of agricultural extension, farmers, research scientists, students; procurement of input for farming and for undertaken research.
2) Students' Farm Practical had proved to be a novel programme availing opportunity for undergraduate students to gain practical skills supplemented by theoretical knowledge in agriculture. This no doubt would enhance employability or self-employment in agribusiness on graduation. In order to make the programme relevant and increase the quality of teaching, instructors should avail themselves of modern techniques in agriculture. Furthermore, students should be exposed to private farms outside the university as a way of strengthening knowledge and skills in modern agriculture.
3) In general University must ensure proper perception; appropriate attitude and right teaching / communication behaviour are acquired through sound practical agricultural training. To this end, there is a need to put in place adequate resources and learning environment for the field-based practical. Universities should also show more concern with the welfare of students and staff at

large including mental, physical health and safety, and take all possible precautions to avoid incidental injury. Mentoring is an excellent means for students to receive technical and psychosocial support, students could benefit from various mentoring relationships. Consequently, mentoring of students which is an essential aspect of career development should be encouraged by the university not only in the Farm Practical but throughout students' career.

4) The University Agricultural Extension Outreach is a novel and laudable approach which should be supported by the university in view of the multiplier effect it could bring not only to staff and students but the entire community within the catchment area where we have the mandate to serve. The establishment and with full support by the university, NGOs and government of the Action-Research Social Laboratory should be a priority project.
5) More funding is required for agricultural extension to build facilities, employ staff, train and re-training in order to upgrade and up-date the technical and managerial competencies of staff.
6) Women access to and control of resources are key to enhancing agriculture and rural development. Government should therefore encourage gender equity in the provision of factors of production in agriculture such as land, labour, capital and entrpreneurship.
7) Capacity building efforts through Farmers Cooperatives could raise awareness, build leadership qualities and also have the function of channeling the interests of their members by influencing extension services and project development. Farmers' cooperatives could be initiated to offer opportunities to members to have access to capital / credit and other input.
8) Although most countries have sound extension policy which bothers on capacity building, much is still needed to be done to implement such policy to the overall advantage of extension workers, researchers, undergraduate's students and farmers.
9) Farmers should be encouraged to participate in the research process and in the promotion of environmentally sustainable agriculture.
10) The use of ICT in agriculture should be promoted and vigorously pursued. Agricultural extension is simply information communication in agriculture. Farmers have different information needs during each stage of agricultural production process ranging from weather forecasts, pest attacks, input (seeds, agro-chemicals), improved cultivation practices, pest and diseases management and prices. To minimize difficulty currently experienced with internet access, and to make it cost-effective for dissemination of extension messages to

farmers, GSM operators should be encouraged by government to expand their base stations in rural areas and reduce their charges on airtime.

11.0 Acknowledgments

First and foremost I remain eternally grateful and indebted to the Almighty God, the Alpha and Omega, for fulfilling his promises on me in the land of the living. 'O Lord thou art my God, I will exalt thee, I will Praise thy name for thou hast done wonderful things, thy counsels of old are faithfulness and truth' (Isaiah 25:1). Thank you Father!!!

A number of people have contributed immensely to my success in life. I acknowledge post-humously my parents Late Pa Sumonu Oni Agba Oloruntoba and my mother Late Madam Alice Idowu Oloruntoba whose penchant for sound education gave me a head-start in life. They were the first to build my capacity through the genuine commitment, unalloyed support, unparalleled upbringing, legacy of hard work and perseverance, dedication to work, uprightness and humility they bestowed on me. This philosophy remains a permanent source of inspiration for me. May your gentle souls continue to Rest in Peace.

I also thank my uncle; Chief Folorunsho Oni who held my hand for enrolment in Primary School. He has remained a father-figure to me and I thank him most sincerely for his assistance and love. I also remember my Late Uncle, Michael Adeniyi for his encouragement during my teenage years through counseling and assistance, which undoubtedly helped in further sharpening my focus in life. May you continue to sleep on in the bosom of God.

I thank my siblings Chief Olufemi Oloruntoba, Dr. Bamidele Oloruntoba, Mrs. Joke Rumide, Mrs. Tunrayo Akinbiyi, Pastor Olusegun Oloruntoba, Mr. Adebayo Oloruntoba and Mr. John Oloruntoba. My wonderful in-laws deserve special mentioning, Deacon Titus O.Ogundare and Mrs. Deborah Ogundare for their prayers, spiritual support and encouragement at all times. To Mr. and Mrs. Adeyemo, Mr. Adebayo Ogundare, Mr. and Mrs. Bamidele Ogundare, Mr. and Mrs. Fasoyiro, Mr. and Mrs Hassan. May God bless all of you abundantly.

My sincere gratitude goes to the old Kwara State ...igeria for the award of Undergraduate Scholarship spent at The University of Ibadan, Ibadan; the Federal Government of Nigeria

under whose platform I benefited from the International Bank for Reconstruction and Development (IBRD) / World Bank Postgraduate Fellowship spent at The University of California, Berkeley, USA; the Federal Republic of Germany Fellowship spent at the German Foundation for International Development (DSE), Feldafing on 'Extension in Rural Development'; Commonwealth Fund for Technical Cooperation(CFTC), London Fellowship spent at the Grameen Bank, Bangladesh; Agricultural and Rural Management Training Institute (ARMTI)/IBRD Fellowship on Management of Agricultural Extension spent at The Bangladesh Academy for Rural Development, Kotbari, Comilla and Centre for Technical Agriculture [CTA], The Netherlands. I thank the National Universities Commission for the research grants provided though the Research and Development Centre (RESDEC), Federal University of Agriculture, Abeokuta.

I must acknowledge and thank my lecturers for their commitment and contributions in no small measure to my academic pursuits. At the University of Ibadan, Nigeria, Professor Akin Akinsorotan (Ph.D thesis supervisor), Professor [Engr.] E.B. Lucas (B.Sc. dissertation supervisor), Emeritus Professors S. Kolade Adeyoju and David U.U.Okali , Obi (Prof) L C. Nwoboshi, Professors P.R.O. Kio, Eji Fasehun, S. K. Nokoe, Julius.A.Okojie, N.O.Adedipe, Janice E. Olawoye and late Professors Titus Gege Ogunfiditimi and Terry Olowu. At the University of California, Berkeley, USA, Professors Keith Gilless and William Mckillop (Guiding Professors), Jeff Romm, Louise Fortmann, Lawrence Davis, Teeguarden and Emeritus Professor John Zivnuska made my stay in the department and indeed in the USA an everlasting fond memory. I must acknowledge that God has used you these erudite scholars as vessels in my academic pursuits. I say a big thank them.

With regard to my sojourn for 11 years at the Federal University of Agriculture, Abeokuta, Nigeria (FUNAAB), I deeply appreciate Professor Julius A. Okojie, my Vice-Chancellor and now the Executive Secretary, National Universities Commission (NUC), Abuja, Nigeria. He was one of the founding fathers that laid a solid foundation for the University through his policies on research and development which encouraged publishing for academic excellence. I note with gratitude, the worthwhile cooperation and assistance rendered by the Dean College of Agricultural Management, Rural Development and Consumer Studies [COLAMRUCS] Professor Samuel O. Awonorin under whom I was appointed Deputy Dean for two terms of two years each. I must admit that the experience gained under him taught me patience and thoroughness. I thank former Heads of Departments for their cooperation

namely: Professors S. Momoh [Agricultural Economics and Farm Management], S.O. Apantaku [Agricultural Extension and Rural Development], Folake Henshaw [Food Science and Technology], Clara Oguntona [Nutrition and Dietetics], .Dr T. M. Akinwumi [Home Science and Management], Dr Bode Shopeju [General Studies]. Furthermore, the mentoring effort of Professors Dayo Phillip and Akin A. Omotayo deserves special acknowledgment. I also thank my colleagues at the Department of Agricultural Extension and Rural Development for creating a conducive atmosphere for academic growth and development particularly Drs. E.O. Fakoya, J.M Awotunde, K. Adebayo, C.I. Shodiya, C.O. Adamu, O.R. Ashimalowo, E.B. Fabusoro, O.A. Lawal-Adebowale. I also thank Dr. Helen Aduke Bodunde who graciously agreed to take over from me as the College Deputy Dean while I was away on sabbatical leave. Within the larger university community, special appreciation goes to, Professors Chiedu Mafiana, A.R.T.Solarin, O.B. Oyewole, Drs. Biola Philip and Ibiyemi Olayiwola.' I also remember the departed souls of my good friends whom I miss so much, Late Justice Abdulkarim Abdullai, Professor Lucas Ojo and Dr Victor Ibigbami. May your souls Rest in Peace.

I also wish to thank the University of Ghana, Legon for the provision of sabbatical leave placement. I thank my colleague in the Department of Agricultural Extension, Dr. Acker Nyamike (Jnr) (Head of Department) for assisting me to foray through my initial 'teething problems' of settling down. I also cherished the cooperation of Drs. Sakyi-Dawson, Seth Boateng, Paschal Atengdem, and Dr Freeman.

To my students (past and present), I am happy to have been able to share my knowledge, experience and skills with you to make a difference in your lives; I thank you all for your inquisitiveness, and penetrating questions that helped me in my research inquiries as a thorough-bred teacher.

The University for Development Studies (UDS) announced my promotion as the first Full Professor in the University and indeed the Department of Agricultural Extension, Rural Development and Gender Studies. I owe my greatest and unalloyed gratitude to the University Council for this gesture. I thank the Vice Chancellor, Professor Haruna Yakubu for the approval and support for the presentation of this maiden Inaugural Lecture. I also thank the administration starting with the Pro-Vice Chancellor, Professor Gabriel Teye; Registrar, Dr A.B.T Zachariah; Librarian, Alhaji Ibrahim Antwi and Finance Officer, Mr

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Mohammed Hardi. I recognise and thank the Deans, Directors and Heads of Department here present. Dr. Francis Kwabena Obeng, Head of Department of Agricultural Extension, Rural Development and Gender Studies made my settling down easy on my arrival here. He not only sought for an office space, but graciously furnished it. I am most grateful for your love and cooperation. May God reward your milk of human kindness. Thanks also go to colleagues and friends in the Departments / Faculties and the entire university community for their love and understanding.

All my good friends are too numerous to be mentioned here but I must recognise Elder Dayo Shinkaiye and his amiable wife Honourable Mrs. Shinkaiye, Mr. Roger Obubo, Brigadier General (Rtd) and Professor Mrs. Ted Omede, Commissioner of Police Diipo Ayeni (Rtd), Major Michael Ogunbowale (Rtd), Dr. Femi Biala, Professor Bayo Akande, Dr Franklin Erepamo Osaisai, Dr. Jide Igbodipe, Dr. Olu Makinde, Mr. Ikwuo Nnachi, Mr.Taiwo Olowo, Mr. Andrew Dare Owonipa, Pastor Afolabi Ibinayo, Professors Jerry Ojediran and Elkanah Oyetunji.

I must not fail to thank the various national and international organisations who have exposed and collaborated with me through consultancy. My sincere appreciation also goes to my professional colleagues, authors, and co-authors who have published works with me. They are well-acknowledged.

Finally, I thank Dr Elizabeth Omoladun Oloruntoba, my spouse and friend of 'inestimable jewel,' a dutiful and caring mother with exceptional humility, patience, forthrightness, and longsuffering. She is always there for me through thick and thin during my various sojourns May God reward you abundantly. To my children, Dr. Tolulope Oloruntoba, Dr Oluyom Oloruntoba and Engr. Ayodeji Oloruntoba; I thank you for being good children and for not disappointing me in your academic pursuits, I love you so much and God bless.

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12.0 REFERENCES

Adebowale, E. A, Ogunbodede, B.A, Adesehinwa, A.O.K and Salawu, R.A, (2001): Technology Generation and Dissemination. Proceedings of the 14th Annual Southwest Zonal OFAR and Extension Workshop Farming System Research and Extension. Ibadan, Nigeria, February 24-54.2001

Adegbite, D.A., **Oloruntoba**, A., Adubi, K.O., Oyekunle, O. and Sobanke, S.B (2008): 'Impact of National Fadama Development Project II on Small-scale Farmers' Income in Ogun State: Implications for Financial support to farmers' *Journal of Sustainable Development,* 10(3):103-126

Adegbite, D. A., **Oloruntoba**, A. and Olaoye, O. J (2008): 'Performance Assessment of Ogun State Agricultural and Multi-Purpose Credit Agency (OSAMCA) in Credit Delivery and Operation (2004-2006)': *Journal of Sustainable Development,* 10(3):127-153

Ajayi, M.T (2001) 'A Comparison of the effectiveness of on-campus Training Courses for Agricultural Staff at the International Institute of Tropical Agriculture (IITA)'*Journal of International Agricultural and Extension Education* 8(3): 41-47
Available at: http://www.aiaee.org/journal.htm

Ajayi, M.T. and **Oloruntoba**, A. (2008): 'Farmers Participation in Maize/Cowpea intercropped and Soybean in Selected villages in Ogun and Oyo States'. *Journal of Agriculture, Forestry and Social Science* 5(1): 20-2.Available at: http://www.ajol.info/viewissue.php

Akinola, M.O, Issa, F.O and Sanni, S.A (2011): 'Agricultural Extension Systems in West Africa: Adoptable Strategies for Nigeria's Agricultural Extension Reform Agenda'. *Journal of Agricultural Extension* 15: (2) December 2011 http:dx.doi.org/10.4314/jae.v15i2.1

Amalu, U.C (2006): Finding solutions to the problems of low academic and professional standards of graduates of agriculture in Nigeria' Paper presented at Round-Table of Deans of Faculties of Agriculture in Nigerian Universities on Practical Training held at the University of Agriculture, Abeokuta June13-16, 8pp

Anaglo, J.N. and Ladele, A.A. (2005): 'Group attributes Associated with the Effectiveness of Extension Delivery: Evidence from Ho District in Ghana'. *Journal of Extension System* 17, 59-67 Available at: www.jesonline.org

Anderson, J. R. (2007): Agricultural advisory services. Background paperfor World Development Report 2008. Agriculture for Development, Washington, DC: The World Bank.

Anderson, J. R., Feder, G, and Ganguly, S. (2006): The Rise and Fall of Training and Visit extension: An Asian Mini-drama with an African Epilogue', in A.W. Van den Ban and R. K.

Apantaku, S. O, **Oloruntoba**, A. and Fakoya, E. O. (2003): 'Farmers' Involvement in Agricultural Problems Identification and Prioritisation in Ogun State, Nigeria'. *South African Journal of Agricultural Extension*. 4(1): 45-59Available at: http //www ajol info/viewissue php

ARMTI (1993): 'Management Training Needs: Research Management Study for Agricultural Research Institutes in Nigeria' vol. 2, 80pp

Boersma, S.K, Hluchy, M.I, Godshalk, G, Crane, J, DeGraff, D and Blauth, J (2000): Student-designed interdisciplinary science projects. *Journal of College Science Teachers*, 30: 397-402

Bransford, J.D, Brown, A.L and Cocking, R (2000): How people learn: Brain, mind experience and school. National Academy Press, Washington, D.C

Bryson, J.M. (1988): Strategic planning for public and no-profit organizations. San Francisco, CA. Jersey-Bass Publishers.

Enemark, S (2003): Understanding the Concept of Capacity Building and the Nature of Land Administration Systems. TS2 Best Practice in Capacity Building. FIG Working Week 2003, Paris 13-17 April, 2003

Fakoya E.O., Ajayi, M.T., **Oloruntoba**, A., and Bolarinwa, K.K. (2010): 'Gender Involvement in FADAMA Farming for Sustainable Food Security in Ogun State, Nigeria' *Ontario-International Journal of Sustainable Development* 2(1): 89-95

Available at:http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev html

Fakoya, E.O and **Oloruntoba**, A (2009): 'Socio-economic Determinants of Small Ruminants' Production among farmers in Osun State, Nigeria'. *Journal of Humanity, Social Science and Creative Arts* 4(1): 90-100

Fortmann, L. (1979) 'Women and Agricultural Development'. In Kwan, S.K, Mabele, R and M.J Schulthesis (eds.), Papers on Political Economy of Tanzania, Nairobi: Heinemann Educational Book Ltd.

Gbolamreza, P (1993): 'Perceived Professional Competencies Needed by Extension Socialists and Agents in Khorasan State of Islamic Republic of Iran'. The Pennsylvania State University.

Groot, R and P van der Molen Eds.(2000): Workshop on Capacity Building in Land Administration for Developing Countries-Final Report. ITC, Enchede, The Netherlands, 12-15 November 2000

Inomi, O.E., Chukwuji, O.D., Ogisi, O.D., Oyaide, and W.J. 2006: 'Alleviating Rural Poverty: What Role for Small-holder Livestock Production in Delta State, Nigeria'. *Agriculturae Conspectus Scientificus* 72(2): 159-164

Jaiswal, N.K. (1992): 'Human Resources Development in the ADP System. Paper presented to the 1992 Annual Conference of Chief Manpower Development Officers, Makurdi Nov 24-26 12pp

Kwadwo, Asenso-Okeyere (2009): Building Capacity to Increase Agricultural Productivity and Incomes of Poor Small-Scale Farmers. 2020 Focus Brief on the World's Poor and Hungry People. Washington, D.C. IFPRI

Ladebo, O .J and **Oloruntoba**, A. (2005): 'The Effects of Stressors, Positive Affectivity and Coping Strategies on Well-being among Academic Staff in a Nigerian Agricultural University' .*Acta Academica* 37(3):212-232
Available at:http://www.journals.co.za/ej/ejour_academ.htm

Maguire, C.J (2000): Agricultural education in Africa: Managing Change. A paper presented a Workshop 2000 on bringing African Universities more into agricultural development held i Accra and Cape Coast, Ghana September 4-6

Matter, W.J and Steidl, R.J (2000): University Undergraduate curricula in wildlife: Beyond 200 *Wildlife Society Bulletin* 28: 503-507

McCleery, R.A, Lopez, L.A, Harveson, N.J and R.D. Slack (2005): 'Integrating on-campus Wildli Research Projects into Wildlife Curriculum'. *Wildlife Society Bulletin* 33: 802-809

McLean, R.J.C (1999): 'Original Research Projects: A major Component of an Undergraduat Microbiology Course'. *Journal of College Science Teachers 29:* 38-40

Meenambigai, J. and Seetharamen, R.K. (2003). Training Needs of Extension Personnel in Communication and transfer of technology. AgREN Newsletter No 48 Agricultural Research and Extension Network, Overseas Development Institute, London, pp. 19.

Munowenyu, M.E (1999): 'The Need to offer Basic Vocational Education in Zimbabwe's Secondary Schools. *Zimbabwe Journal of Educational Research* vol 11 (1): 43-56

Nikolova-Eddins, S.G, Williams, D.F, Bushek, D, Porter, D, and G. Kineke (1997): Searching for a Prominent Role of Research in Undergraduate Education. Project Interface' *Journal of Excellence College Teachers* 8: 69-81

Ogunbameru, O.B (1986): Extension internship: A Pre-requisite for Students degree. *Journal of Extension Systems* l2: 69-71. Available at: http://www.jesonline.org/1986jun.htm

Okorley, L.E (2001): 'Determinants of the Propensity to enter into Agribusiness as Self-Employment Venture by Tertiary Agricultural Students in Ghana.' The World Bank, Washington, D.C

Okunlola, J.O. (1991) 'Socio-economic Constraints to Sheep and Goat Production in Ekiti and Ondo States, Nigeria'. Unpublished M.Sc. Thesis, Department of Agricultural Extension Services, University of Ibadan, Nigeria. pp 12-46

Okwu O.J., Ejembi S.A. (2005): Essentials of a Successful Farmer Training Programme in Agricultural Extension in Nigeria. Proceedings of the 10th Annual National Conference of the Agricultural Extension Society of Nigeria 14th–17th June 2005

Olawoye, J.E (2006): State of Training facilities for Practical agriculture in Nigerian Universities and the way forward. Paper presented at Round-Table of Deans of Faculties of Agriculture in Nigerian Universities on Practical Training held at the University of Agriculture, Abeokuta June13-16, 7pp

Oloruntoba, A (2000): 'Evaluation of Management Training Programme on Job Behaviour of Senior Agricultural Research Managers in Nigeria.' Unpublished Ph.D Thesis Agricultural Extension & Rural Development, University of Ibadan, Ibadan, Nigeria 227pp

Oloruntoba, A (2001): 'Research Managers' Post Training Job Performance in Nigeria's' Agricultural Research Institutes' *Journal of Advanced Studies in Educational Management* 1(1): 235-240

Oloruntoba, A. and Fakoya, E.O (2002): 'Constraints to the Increased fishing Productivity of Women in Rural and Peri-urban settings of Lagos State, Nigeria'. *Journal of Extension Systems* 18(2): 60-71 Available at: www.jesonline.org

Oloruntoba, A (2002): 'An Emperical Investigation of Constraints to Utilisation of Management Training Programmes in Work setting' *An International Journal of Agricultural Sciences, Science, Environment and Technology (ASSET)* 2(1): 1-9

Oloruntoba, A (2002): 'Competence Evaluation of Trainees in Agricultural Research Management Training Programmes in Nigeria' *Moor Journal of Agricultural Research* 3(1): 137-144 Available at: http://www.ajol.info/viewissue.php

Oloruntoba, A. (2002): 'An Empirical Investigation of Constraints to Utilisation of Management Training in Work setting'. *Journal of Agricultural Sciences, Science, Environment and Technology*- ASSET Series A 2(1): 1-9

Oloruntoba, A. (2002): 'Competence Evaluation of Trainees in Agricultural Research Management Training Programme in Nigeria'. *Moor Journal of Agricultural Research* 3(1):137-144 http://www.ajol.info/viewissue.php

Oloruntoba, A. and Ajayi, M.T. (2003): 'Motivational Factors and Employees' Job Satisfaction in Large-scale Private Farms in Ogun State, Nigeria'. *Journal of International Agricultural and Extension Education*. 10(1): 67-72. Available at: http://www.aiaee.org/journal.htm

Oloruntoba, A. and Akinsorotan, A. O (2003): 'Assessment of Learning Components of Management Training Course for Senior Managers at the Agricultural Research Institutes in Nigeria'. *Moor Journal of Agricultural Research*. 4(1): 140-148. Available at: http://www.ajol.info/viewissue.php

Oloruntoba, A. and Fakoya, E.O (2003c): 'Socioeconomic Indicators and Status of Adult-Females in Rural Communities of Nigeria'. *Journal of Extension Systems* 19(1): 48-57 Available at: www.jesonline.org

Oloruntoba, A, Ashaolu, O.F. and Akinbile, L.A (2005): 'Indigenous Technical Knowledge for Maize Production by Small Scale Farmers in Odeda Local Government, Ogun State, Nigeria'. *Bowen Journal of Agriculture*. 2 (1): 92-102. Available at: http://www.ajol.info/viewissue.php

Oloruntoba, A, (2006): 'Perceived Professional Competencies of Agricultural Extension Agents in Ijebu-Ode Zone of Ogun State Agricultural Development Agents in Ijebu-Ode Zone of Ogun State Agricultural Development Program, Nigeria' *Journal of Agricultural Sciences, Science, Environment and Technology*- ASSET Series C 1(1): 93-102

Oloruntoba, A. and Adegbite, D.A (2006): 'Improving Agricultural Extension Services through University Outreach Initiatives: A Case of Farmers in Model Villages in Ogun State, Nigeria'. *The Journal of Agricultural Education and Extension* 12(4): 273-283 Available at: http://www.journalsonline.tandf.co.uk

Oloruntoba, A. and Adeola, A. O (2006): 'Determinants of Households' Participation in Social Forestry in Arid Zone of Northern Nigeria'. *Journal of Food, Agriculture and Environment* 4(2): 320-326 Available at: http://www.world-food.net/article.pdf

Oloruntoba, A. and Ajayi, M.T (2006): 'Gender and Research Attainment of Academics in Nigerian Agricultural Universities'. *Journal of Higher Education in Africa* 4(2):83-98 Available at: http://www.codesria.org

Oloruntoba, A., Ashimolowo, O. R and Solomon, V.A. (2007): 'Rice Farmers' Perceptions of Agricultural Credit in Nigeria' *Journal of Agriculture and Rural Development* 1:106-119. Available at: http://www.gjard.net

Oloruntoba, A. (2008): 'Agricultural Students' Perceptions of Farm Practical Year Programme at University of Agriculture, Abeokuta, Nigeria' *Agriculturae Conspectus Scientifcus* 73(4):1-8. Available at: www.agr.hr/smotra

Oloruntoba, A, and Akindele, S.O (2009): 'A Study To Provide Basis for the Sustainable Management of Eriti Community Forest for the Protection of Eriti Watersheds' Federal Republic of Nigeria, FADAMA II Critical Ecosystem Management Project, Abuja, Nigeria 132pp

Olowu, T. A. (1991). The Effect of Television Farm Programme on Farmers' Knowledge of Improved Farm Practices in Oyo State: A Proceedings of the National Conference of the Ibadan Socio–Economic Group. Akinwumi, J.A and Olowu, T.A (eds.), 151-156

Phillip, D.O.A., **Oloruntoba**, A., Fakoya, E., Phillip, B., Ashaolu, O., and L. Alogba (2006): 'Agricultural Price Haggling: A Case Study of Beef Retail Pricing in Ogun State of Nigeria' *China Agricultural Economic Review* 4(4): 494-507

Perry, G.A. and Smith, M.F (2004): A simulation exercise to teach Principles of Bovine Reproductive Management. *Journal of Animal Science* 82: 1543-1549

Resnick, L.B. and Chi, M.T (1988): Cognitive psychology and science learning. In M. Druger (ed) Science for the fun of it. A Guide to Informal Education. National Science Teachers Association, Washington, D.C

Ryan, M.R and Campa, H (2000): Application of Learner-based Teaching Innovations to Enhance Education in Wildlife Conservation. *Wildlife Society Bulletin* 28: 168-179

Solomon, O; **Oloruntoba,** A and M.T Ajayi (2009): 'Assessment of Small Scale Oil Palm Farm Situations and Farmers.' Preference for Training in South West, Nigeria' *Journal of Agricultural Sciences, Science, Environment and Technology* ASSET Series C 4(1): 166-176

Staudt, K (1975).' Women Farms and Inequalities in Agricultural Services. *Rural Africana* 29: 81-94

Swanson, B.E (1996): 'Strengthening Research-Extension-Farmer Linkages. In: Swanson, B.E; R.P.Bentz and A.J Sofranko (Eds). Improving Agricultural Extension: A Reference Manual' pp165-172

Swierczek, F.W and Carmichael, L (1985) 'The Quantity and Quality of Evaluating Training'. *Training and Development Journal*, January 1985, pp95-99

Warren, M. (1998): Practising what we Preach: Managing Agricultural Education in a Changing World. *Journal of Agricultural Education and Extension* 5 (1): 53-65

World Bank (1995): Staff Appraisal Report of India. Document of the World Bank Report No 13517. A HRD, March 9, 1995, South Asia Department of Agriculture Operations Division, Washington, D.C

White, B.Y and Fredericksen, J.R (1998): Inquiry, Modeling, and Metacognition: Making Science Accessible to all Students. *Cognition and Instruction* 16: 3-18

Youdeowei, A and Kwarteng, J (1995): 'Development of Training Materials in Agricultural Extension', UK Sage Publishing

Young, D.B (1997): Science as Inquiry. In A. Costa and Liebmann, (ed) Envisaging process as Content: towards a Renaissance Curriculum. Corwin Press, Thousand Oaks, CA pp120-139

Zinnah, M.M, Steele, R and Annor-Frempong, F (2001): Assessment of Tertiary Agricultural Education in Ghana. Proceedings of the 17th Annual Conference, Association of International Agricultural Extension Education, AIAEE, Baton Rouge, Louisiana, USA, April 4-7, pp 383-391

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