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**The Downplayed Majority  
in AgResExtension: Imperatives for  
Enhanced Productivity**

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**FUNAAB INAUGURAL LECTURE Series No. 57**  
**Wednesday, July 11, 2018**

Series No. 57:  
Professor Samson Olusegun Apantaku

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**INAUGURAL LECTURE**

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This 57th Inaugural Lecture was delivered under  
the Chairmanship

of

**The Vice-Chancellor**  
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*Published 11th July, 2018*

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**ISBN:978-978-55528-4-3**

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Series No. 57: 

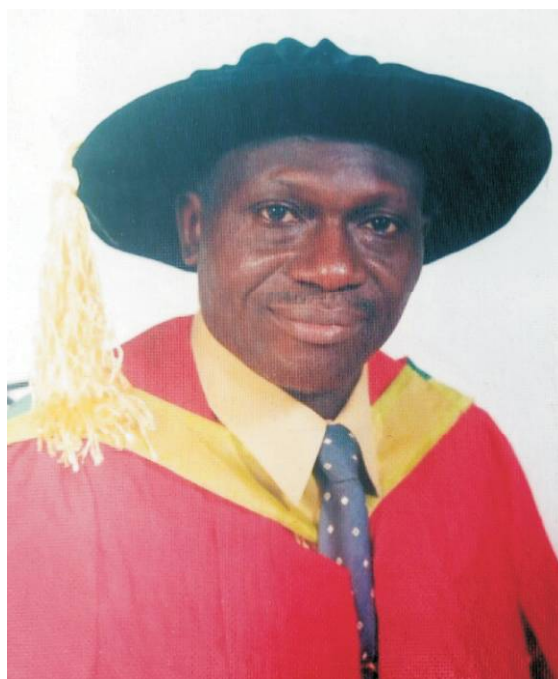
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**THE DOWNPLAYED MAJORITY IN  
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ENHANCED PRODUCTIVITY**

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### **1.0 PREAMBLE**

I feel highly honoured and privileged for this opportunity to present my humble contribution to knowledge in the noble and humane specialty of Agricultural Extension and Rural Development, through the Federal University of Agriculture, Abeokuta's (FUNAAB) 57<sup>th</sup> Inaugural Lecture. To God be the glory. This lecture focuses on (active) participation and participatory processes (methods, techniques and approaches) in developmental and educational programmes, specifically in agricultural research and extension. Farmers are often downplayed and neglected in the research-extension-farmer triangle. **Therefore, this inaugural lecture showcases farmers' participatory agricultural research and extension as imperatives for enhanced productivity.**

I have had the opportunity to interact and work with several Professors, extension workers, farmers and students in Nigeria and especially in the United States. My Professors at Southern Illinois University at Carbondale, (SIU-C) USA, instructed us with one philosophy at the back of their minds: we the students have innate potentials, knowledge, ideas, experience, skills and attitudes which may not be demonstrated, activated or visible except the Professors deliberately plan and implement activities to bring out such potentials to reality. During my Masters' degree internship, the Jackson County Extension Agent (SIU-C located in Jackson County) also taught us the same principles about farmers in extension service: that farmers have experiences (in planning,

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implementing, monitoring and evaluating extension programmes) which the extension agent may not even imagine. We were also taught that it was the same with agricultural research. Farmers have both indigenous knowledge and modern experiences in agricultural research which may help them and the researchers. These are the foundations of the participatory process ideology.

I also got exposed to and fascinated by participatory ideology and processes in educational programmes and development through two of my Professors (Tom Stitt and James Legacy) in two graduate courses, Programme Administration, and Special Problems in Agriculture at SIU-C. In the last lecture of each of these courses, we were asked to set ten examination questions, with stern instruction that all of us must be part of the decision and contribute actively to draw up the questions. We were only two (2) “blacks” in the class of twenty-four (24). We all eventually participated in drawing up the questions, but we didn't take the Professors serious (especially the white Americans students), thinking they wouldn't use our questions. In the real examination, all the questions came out, with minor editing, rearrangement and renumbering. Most of the students didn't perform well, but we all gladly accepted the results because the questions were our questions. There was no complaint or grudge. This was participatory evaluation. Participatory agricultural research and extension (**PARE**) has similar features and more.

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God was the first user of the participatory process. Gen. 1:26, states “And God said let us make man in our image....” He didn't say “I” or “I will...”. He involved and ensured the participation of the other spiritual beings that were probably with Him. We should emulate Him.

The above experiences in the concept and implications of participation (as I shall discuss later), coupled with my parental upbringing, have shaped, directed and influenced my disposition, attitude, behaviour and approach to life, my profession, students, colleagues and other clientele

### **2.0 INTRODUCTION**

Mr. Vice Chancellor Sir, the philosophy of extension is “helping people to help themselves”. Extension and all its specializations are about help. That is why those of us in extension education “world of work” are more caring and helpful. It is due to our training. Research is also about help. Who are we helping? – The farmers. One way to help the farmers, our people, is to develop their capacity to help themselves. One sure way to achieve this is through participatory agricultural research and extension (PARE). PARE, which is about participation, emphasizes a demand-driven and bottom-up approach rather than the traditional top-down. When agricultural research and extension are implemented through the top-down approach, “things” are “covered up”, but when participatory bottom-up approach is used, those “things” are “opened up”, and the reality can be seen. The resultant effect of PARE is enhanced agricultural technology (innovations) transfer, adoption and ultimate increase in productivity. Participation implies and is about empowerment,

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democracy, ownership, active involvement, partnership, having a voice, choice, inclusion (being included), joint decision making, sharing experience, respect, recognition and acceptance by all stakeholders.

It is well known that agriculture is crucial and the mainstay of the economic development of most third world countries. Researches on the causes of development and underdevelopment have identified agriculture as key to the economic emancipation of ailing States. It is in the agricultural sector that the battle for long-term economic development would either be won or lost. However, how we go about the contest for economic development using agriculture as weapon, and how we hope to win, indeed, remain a moot issue. Agriculture and rural development are considered as imperatives for national development. In Nigeria, agriculture is estimated to be the largest contributor to non-oil foreign exchange earnings. Agriculture sector grew at 3.68% and contributed 20.89% to Real Gross Domestic Product (GDP) in the 2<sup>nd</sup> quarter of 2014. Within this period, crop production sector grew at 3.56% and contributed 18.55% to Real GDP, livestock sector grew at 4.54% and contributed 1.56% to Real GDP. Crude Petroleum and Natural Gas Sector grew at 5.14% and contributed 10.76% to Real GDP at the same period (National Bureau of Statistics (2015)).

Nigeria has a larger proportion of its population, especially the rural populace, engaged in agriculture. This makes agriculture and the rural sector major policy concerns in the country. In recent years, Nigeria has



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been offhand with agriculture, yet the sector still accounts for a significant proportion of her gross domestic product. The sector's share in gross domestic product has been significant, although far away from what it ought to be (Dim and Ezenekwe 2013; Apantaku, *et. al.* 2014, Apantaku, *et. al.*, 2008; Apantaku, 2006).

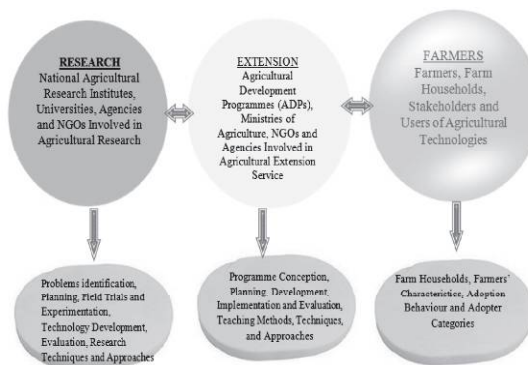
The status and contribution of the agricultural sector in Nigeria is far below its potentials and expectation. This became obvious with the 2014/2015 glut in world crude oil production and supply, and its attendant effect on national foreign earning and economy. Various postulations have been made on the causes and solutions to the problems of the agricultural sector. Very brilliant researches have been conducted and papers published to address the problems, but the expected effects on production are nothing to write home about. Therefore, there is a need for us to change our approach to agricultural research and extension of emanating innovations and technologies (Apantaku, *et. al.*, 2003; Apantaku and Ashimolowo, 2006; Wikipedia, 2015). Research and extension in the Research-Extension-Farmer Linkage (REFL) come to fore in this case (see Fig. 1). In the linkage, the ultimate user (customer) of the products and services of research and extension is the farmer (customer). This could be likened to the democratic process. In the democratic process and society or system, there are four (4) key levels/players: executive, legislature, judiciary and electorate. The target of the first three is the masses (electorate). The electorate in the REFL is the farmer. The good of the farmer (customer) must always be

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sought, therefore it is imperative for them to be in the forefront of agricultural research and extension.

Farmers' participatory agricultural research is a research approach in which farmers take part actively as partners, from conception, problem identification and prioritization, research design, to field experimentation and trials, data collection, evaluation and technology design and production. In some cases, they may participate in the general administration, financial, book and record keeping of the research project. Participatory agricultural extension, similarly, is an extension approach in which farmers actively participate as partners, in extension programme conception, planning, implementation, financing, monitoring and evaluation. All extension teaching methods (individual, group and mass methods – (print, radio, TV) etc) are implemented using participatory approach in which farmers are involved actively in all facets of the programme.



**Figure 1: Research Extension Farmers Linkage.**

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### **3.0 FEATURES AND SOLUTIONS TO CHALLENGES OF NIGERIAN AGRICULTURE**

#### **3.1 Features of Nigerian Agriculture**

Nigeria is an agrarian country with about 70% of her population engaged in agricultural production and provides subsistence for two-thirds of Nigerians who are low income earners. Nigeria has a total land area of about 91.07 million hectares, 77% of which is cultivable (agricultural) and 13% under forests and woodland. About 44% of the cultivable lands are under cultivation (arable and permanent crops) and the rest under permanent pastures. Of the total 30.85 million hectares under arable and permanent crops, 28.2 million hectares or 91.4% are arable lands while the rest are under permanent crops. The country is characterised by diversity of physical and agro-ecological conditions signifying huge agricultural potentials but production is still very low and subsistence (Eboh, *et. al.*, 2004; Apantaku, *et. al.*, 2006b; Apantaku, 1996; Abiodun, *et. al.*, 2013).

There are several agricultural institutions and policies aimed at: attaining food security, increasing production and productivity, generating employment and income, and expanding exports and reducing food imports thereby freeing resources for critical infrastructural development and delivery of social services. Despite the efforts of the Ministries of Agriculture, Agricultural Development Programmes, Research Institutes and other government institutions these aims have not been achieved (Apantaku, 1990; Nwajiuba, 2012;

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Wikipedia, 2015;

Encyclopedia of the Nations (2015). In summary, Nigerian agriculture is characterized by huge potentials (capable of making her to be self-reliant in food production), subsistence poor production, policy somersault, several agricultural research and extension institutions and programmes which are poorly funded. Whereas there are brilliant researchers, academics and well trained extension personnel, productivity is still low. Others characteristics are unnecessary bureaucracy and corruption, ineffective research and extension services, and inappropriate agricultural technology and practices. All these have negatively affected the sector and farmers' productivity potentials.

### **3.2 Challenges of Nigerian Agricultural Sector**

The challenges plaguing and bedevilling the agricultural sector are multifarious. The list includes:

- 1 Corruption, tribalism, ethnicism, religiosity and nepotism from and of the highest order (which have affected all sectors of the Nigerian economy and life), leading to funding problems; personnel incompetence; inadequate health services; poorly-funded and defective educational system (from primary to tertiary levels).
- 2 Low yielding crop and livestock varieties; low productivity and yield gaps.
- 3 High cost of inputs and inadequate subsidies.

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- 4 Fake, adulterated poor quality agrochemicals and inputs (tractors, equipments, parts, etc).
- 5 Poor and unacceptable rural infrastructure/amenities (road, transportation, water and electricity supply) leading to rural-urban migration. Others are:
- 6 Inadequate and unsatisfactory loans and credit facilities and operating systems.
- 7 Low levels of managerial, entrepreneurial and technical capacities.
- 8 Insecurity and conflicts.
- 9 Poorly motivated agricultural research and extension personnel with low morale.
- 10 Climate change.
- 11 Outbreak, unsatisfactory prevention and control of pests and diseases.
- 12 Over-dependence on crude oil (mono-economy).
- 13 Poor storage and processing facilities/systems
- 14 Poor value-addition to produce
- 15 Marketing problems and issues.
- 16 Depleted soil; outdated agronomic practices; and land tenure problems (Apantaku and Idris-Adeniji, 2016; Apantaku and Oyegunle 2016; Omima, 2013; Alabi, 2013).
- 17 Ineffective and inappropriate research and extension services, systems and approaches, leading to inappropriate technologies, low levels of adoption, lack of sustained use of modern inputs

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and technologies, and low productivity (Eboh *et. al.*, 2004; Apantaku, *et al.*, 2013; Apantaku and Enitan, 2006).

There has been inadequate and ineffective research and extension service to both large and small scale farmers. Most research foci and findings do not address farmers' *felt and real* problems. Where relevant findings exist, there is inadequate funding of extension services to rural farmers for effective transfer of the emanating technology. There is also the problem of top-down research and extension approach which do not actively involve and put into consideration the felt needs of the farmers.

**When research and extension works are based or started on faulty foundation, there is bound to be failure.**

There are numerous arrays of agriculture researchers, so many brilliant Professors and other ranks, winning competitive research grants, conducting and publishing great articles. However Nigerian agriculture is not moving fast enough. In fact, it is slow, as the level of production is not commensurate with the number of researches and technologies developed. It is the same with extension and extension related programmes. There is little to show for the efforts in terms of production. I can say our agricultural research and extension services are on the run, but have refused to move significantly, just as Okuneye (1995) noted on Nigerian agriculture. Adedoyin (2005) and Apantaku (2014) therefore advocated a participatory approach to agricultural extension and research management (bottom-up approach).

### **3.3 Solutions**

Several authorities have proffered solutions to the mirage of problems

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identified above. However, one major approach to solve these chronicles of problems is having the right political, agricultural research and extension leadership. The right and competent people have to be put in appropriate places (government ministries, departments and agencies). Corruption in all facets has to be tackled headlong. Leaders in all levels of government and their agencies need to provide appropriate leadership. Honest, patriotic and caring leadership is an utmost priority that Nigeria can never do without. In fact, any real and lasting solution to the problems of food and agriculture in Nigeria can only be possible under an incorrupt, patriotic and caring leadership. Situations where public funds are shamelessly embezzled by government officials have always added more to the hardships, sufferings and grievances of Nigerian masses (Orji, 2013).\ Most of the leaders we have now are irresponsible, unaccountable, and irresponsive to yearnings and needs of the masses. There is a challenge for researchers in behavioural psychology to delve into researches which will aim at changing our technocratic and governmental leaders on honesty. When the problems of corruption and nepotism are tackled, the right and competent experts and personalities will be in charge in of all Agencies, Departments, Units and Sub-Units of Agriculture Ministry. With this in place, most of the challenges enumerated above will be drastically reduced.

As argued in the foregoing, one technical aspect where change is needed is in research and extension. There is an urgent need to review the way and processes adopted in conducting research and extension services.

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The approach being recommended in this case is Participatory Agricultural Research and Extension (PARE).

### **4.0 RESEARCH**

Research is simply the process of arriving at dependable solutions to problems through planned and systematic collection, analysis and interpretation of data. It involves the identification of the critical aspects of the dynamic environment, making intelligent forecasts and utilizing those forecasts. There are three types of research in the field of agriculture, namely: Basic, Applied and Adaptive research.

(i) Basic or Fundamental Research is a continuous process of using the abstract principles of pure natural sciences to find out the why, how, and wherefore of all operations in agricultural production and management, and their basis in sciences. This type of research results into discoveries of new methods, technologies, techniques, varieties and strains. A basic researcher generates knowledge with little concern for its possible applications.

(ii) Applied Research is application of technologies derived from practice and also from the basic (fundamental) research to the improvement of specific materials or conditions, whereby new insights are found. The results lead, for example, to a higher genetic potential in the form of high yielding or disease resistant varieties, new cropping patterns, new cultural practices, or better approaches to farm



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organization. Therefore, the applied researcher is primarily concerned with the application of models and theories to specific problems (Conroy 2005; Apantaku, 1998).

(iii) Adaptive (or Developmental) Research aims at reaching a research output that is suited to specific ecological and socio - economic conditions of the farmers. It is usually carried out on the farmers' farm, with the farmers providing the land or space. By common practice, adaptive research quite generally becomes a part of the applied research system (ISNAR, 1984; Mettrick 1993; Schulz 2000; Apantaku and Apantaku, 1999).

Agricultural Research has agriculture as its primary aim and it is farmer-centred. Examples include: Participatory Research, Farming System Research (FSR), Adaptive Agricultural Research (AAR), and Participatory Rural Appraisal (PRA), to mention but a few.

(a) Participatory Research: This is probably the most vigorous area of development at present. Under this approach, the farmers are involved right from the time of the definition of research agenda, the conduct of research, the evaluation of results and dissemination of the findings. The researchers' role is seen as widening the range of technologies available to the farmer by drawing on formal science. The farmer in turn provides specific local knowledge and in the final analysis is the one who adapts technologies to his own circumstances. Participation involves more than

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respect for indigenous knowledge but a sharing of ways of knowing.

(b) Farming System Research (FSR): This is a means of integrating the farmer into the research process and providing feed back from farmers to researchers and policy makers.

(c) Farmer – Back – to – Farmer

Rhoades and Booth (1982) while explaining farmer-back-to-farmer model noted that, to date, attempts at team research had been multidisciplinary rather than interdisciplinary. The belief is that successful agricultural development must begin with farmers' perception of the problem and end with farmers' evaluation of the solution. This model is shown in Table 1.

**Table 1:** Farmer - Back - to - Farmer Model

<b>Activities</b>	<b>Goals</b>
Diagnosis of problem	Common definition of problem
Interdisciplinary team research	Identify and develop a potential solution
Interdisciplinary team testing and Adaptation	Better fit the proposed solution to farmer's needs
Farmer evaluation	Understanding of farmers' acceptance

**Source:** Rhoades and Booth, 1982.

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### **(d) Farmer Group**

The farmers meet on a regular basis to discuss farming problems, implementation procedures for on-farm trials and alternatives for farming systems improvement (Norman, 2002).

### **(e) Adaptive Agricultural Research (AAR)**

This is an alternative to farming system research. Experimenting cultivators which is a methodology for AAR is based on the notion that cultivators do research and scientists need to be aware of this.

### **(f) Participatory Rural Appraisal (PRA)**

The rural people are involved not only as source of information, but also in analysis, planning and dissemination of information. They mostly comprise groups of rural people working together to create and manipulate a pictorial presentation of some processes or set of circumstances with readily available materials.

## **4.1 Participatory Research**

The underlying assumption of PR is that ordinary/oppressed people are knowledgeable about their social realities and are capable of articulating this knowledge. With this assumption, promoters of PR argue that it is a process of knowing and acting (Pant, 2011). Participatory methodologies have become important in public agricultural research in recent years. These approaches aim to overcome the barriers that separate researchers from the economically and socially disadvantaged

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community members they serve, engaging all in the collaborative identification and study of local problems, with the ultimate goal of taking action to improve local conditions. There are two major sets of goals associated with participatory research. One is *functional*: to improve the efficiency of research by involving intended beneficiaries in different stages of the process thereby generating more relevant and appropriate research products, such as crop varieties or management practices. This in turn should accelerate and increase adoption. The other goal is *empowering* intended beneficiaries: supporting the formation of groups capable of assessing their own needs and addressing them either directly or through demands on research organizations (Morris and Bellon, 2004).

There are two distinct perspectives that can be useful in understanding the term local participation in collaborative resource management. The first perspective is to use participation as a means to improve the efficiency of management interventions, resulting in changes that are sustainable and approved by a large number of people. The second perspective is to apply participation as an end, seen as necessary for equity and empowerment of suppressed groups. It further explains that, while the perspectives are often mixed and not easily distinguished from each other, it is important to bear them in mind when analyzing participatory approaches, because participation as an end in itself leads to empowerment. Pretty (1995) developed a typology of local participation based on seven scales ranging from sharing of information

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to transfer of power and responsibilities (Table 2). Pretty argued that in levels A to E of the typology, power and total control of decisions belong to other stakeholders rather than the local people, and most decisions are made prior to community involvement. Manipulative participation (A) is the extreme form of no local participation. At scales F and G, there is full participation in which all stakeholders are involved, and self mobilization (G) is the ideal form of total participation in which all basics are carried out bottom-up. In these two forms of participation, local people have power and control and may influence the decision-making process. Drawing on Pretty's typology, similar scales of participation can be found in the literature (Agarwal 2001; Mannigel 2008).

### **4.1.1 Typology of Participation**

There are few models of characterizing participation. There is the Pretty's typology of participation as depicted in Table 2. Another model and categorization of participation is presented in the findings of International Service for National Agricultural Research (ISNAR) study in which Merrill-Sands and Kaimowitz (1989) and Biggs (1989) identified four distinct types of farmers' participation:

**Contract Participation:** Scientists contract with farmers to provide inputs, land or service. In this approach, the farmers' role is passive and participation is not an explicit objective. The investigating researchers, usually manage the trials themselves so as to maintain tight control over

the variables. Multi-location testing is an example of contract participation. Contract participation is not a client-oriented research.

**Consultative Participation:** Scientists consult farmers about problems and then develop solutions. This type of participation has been likened to “doctor-patient” relationship. Researchers use formal and informal surveys to define farming systems and diagnose priority problems. They then design experiments to test various solutions or to understand the identified problems better. The emphasis is adapting technology to the socio-economic as well as the agro-ecological conditions facing the farmers. They involve the farmers mostly in the diagnosis and later in the evaluation of proposed solutions (Conroy, 2005).

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**Table 2:** Pretty's Typology of Participation

Passive Participation (A)	People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without listening to people's responses.
Participation in information giving (B)	The information being shared belongs only to external professionals. People participate by answering questions posed by extractive researchers using questionnaire surveys or such similar approaches. People do not have the opportunity to influence proceedings as the findings of the research are neither shared nor checked for accuracy.
Participation by consultation (C)	People participate by being consulted, and external agents listen to views. These external agents define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision making and professionals are under no obligation to take on board people's views.
Participation for material benefits (D)	People participate by providing resources such as labour in return for food, cash or other material incentives. Much of farm research falls in this category as farmers provide the fields but are not involved in experimentation or the process of learning. It is very common to hear this process called participation, yet people have no stake in prolonging activities when incentives end.
Functional participation (E)	People participate by forming groups to meet predetermined objectives related to the project which can involve the development or promotion of externally initiated social organization. Such involvement tends not to be at early stages of project cycles or planning, but rather after major decisions have already been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
Interactive participation (F)	People participate in joint analysis which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple objectives and make use of systematic and structured learning processes. These groups take control/ownership over local decisions, and so people have a stake in maintaining structures or practices.
Self-mobilization (G)	People participate by taking initiatives independent of external institutions to change systems. Such self-initiated mobilization and collective action may or may not challenge existing inequitable distributions of wealth and power.

**Adapted From:** Pretty *et. al.* (1995)

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**Collaborative Participation:** Scientists and farmers collaborate as partners in the research process. Researchers actively draw on farmers' knowledge and experimentation in seeking solutions to the identified constraints. Regular meetings are held between farmers and the researchers to understand current farming practices, set priority among research problems, develop potential solutions, monitor progress and jointly review results.

**Collegiate Participation:** Scientists work to strengthen the farmer's informal research and development systems in rural areas. The emphasis is on increasing the ability of farmers to carry out research on their own, as well as request information and services from the formal research system. This mode of participation is often used with large-scale commercial producers, but less common with resource-poor farmers.

**Table 3:** Participatory and Conventional Research: a Comparison of Process.

	Participatory Research	Conventional Research
What is the research for?	Action	Understanding with perhaps action later
Who is the research for?	Local people	Institutional, personal and professional interests
Whose knowledge counts?	Local people	Scientists
Topic choice influenced by?	Local priorities	Funding priorities, institutional agendas, professional interests
Methodology chosen for?	Empowerment, mutual learning	Disciplinary conventions. 'Objectivity' and 'truth'
Who takes part in the stages of research process?	Local people	Researchers, scientists



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Problem identification	Local people	Researcher
Data collection	Local people	Researcher, enumerator
Interpretation	Local concepts and frameworks	Disciplinary concepts and frameworks
Analysis	Local people	Researcher
Presentation of findings	Locally accessible and useful	By researcher to other academics or funding body
Action on findings	Integral to the process	Separate and may not happen
Who takes action?	Local people, with / without external support	External agencies
Who owns the result?	Shared	The researcher
What is emphasized	Process	Outcomes

**Adapted From:** Cornwall and Jewkes (1995).

These various types of farmers' participation are not mutually exclusive. Different methods are appropriate for different institutional settings and for different research problems and objectives. Researchers can use them together or sequentially (Asby, 1990). Participatory research is primarily differentiated from conventional research in the alignment of power within the research process. In Table 3, Cornwall and Jewkes (1995) present two ideal-type representations of participatory and conventional research in order to draw out the issues involved.

### 4.2 Participatory Agricultural Research

If change in decision-making and behaviour of the farmers on innovation that could transform agriculture will be greatly achieved, the

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concerned local people must be involved in the development and implementation of the innovations with the local people themselves cooperating with the researchers as co-partners (Hagmann *et al.* 2002). Participatory methodologies have become important in public agricultural research in recent years. The approach aims at overcoming barriers that separate researchers from the targeted group whom their research focused on. Participatory research methods (PRMs) engage all stakeholders in collaborative identification and study of local problems with the ultimate goal of taking action to improve local conditions and practices (Gaventa 1988; Chamber 1997). It aims at the participation of the researched people in the research process, thereby filling some of the power gaps between the researcher and the researched (Katsui, 2007). In this method, the researched people are active research participants rather than passive object of the research. The research participants can share their own *idea-inputs* based on their experiences, with the research creating relevant knowledge for them. (See Plates A1, A2).

According to Courtois *et al.* (2001), Ceccarelli *et al.* (2003), and Moris and Bellon (2004), participatory research is a method used to improve communication among researchers and clients thereby improving technology design, acceptability, production and adoption. Participatory approaches in international agricultural research are mostly utilized at the level of applied and adaptive research or even technology transfer i.e. "downstream" application (Becker, 2000). Participatory research is also primary, seen as a means to obtain (qualitative) data about local people's

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knowledge and demand to assimilate and consider this information in scientific research and a better way of technology transfer and adaptive research. It is now increasingly recognized that a demand-driven process where the end users participate in design and implementation rather than in just the final testing of a new technology will better serve the rural community, particularly those members of the community such as rural women, who have traditionally been at a disadvantage. Becker (2000) further stated that participatory research is to a large extent considered as a means to improve the conventional technology development process. The role of research institutions as providers of solutions and expert knowledge for local people is rarely challenged and epistemological questions about the theoretical assumptions underlying the understanding of different forms of knowledge have been largely avoided.

Most agricultural researches have been conducted using the wrong approach, especially the "top-down" approach instead of the participatory "bottom-up" approach that ensures farmer participation in the development of technologies that are meant to solve their problems and the researchers had to step it down to the farmers own system and level. (Apantaku *et al.* 2003). The use of "top-down" approach sometimes provide what may look like very good solutions to the problems encountered by the rural people. However, rural people mostly neglect these solutions due to the fact that they do not meet their felts needs. The methods through which the solutions have been provided

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were basically conventional or purely academic approach instead of the participatory "bottom-up". Aiyelaagbe (2013) reported that one of his collaborative studies in intercropping of fruit trees developed improved technology for fruit cultivation. The technology produced higher yields. Journal papers had been published from the research *at tax payers' expense*. But when it was extended to farmers, they rejected the package. The researchers had to step it down to the farmers' own system and level. I commented that it was rejected because the research that produced the technology was *top-down*. The package and adoption case would have been different if it was developed using PAR..

Rural people believe PRM gives them direct involvement, participation and opportunity to contribute their own quota to the development of innovation that could transform their community and their main occupation which is agriculture. Technologies developed through PRM are readily adopted by the farmers. From the foregoing and studies conducted, agricultural technologies, practices, products or innovations emanating from PARE are readily and sustainably accepted and adopted. In the same vein, sustainable transfer and use (adoption) of agricultural technologies and innovations result in sustained and enhanced production.

Mr. Vice Chancellor Sir, drawing from the foregoing, I developed a diagrammatic scheme/flowchart for farmers' participatory agricultural research model presented in Figure 2 for Nigeria. The two major

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partners in the model are researchers and farmers, with extension workers serving as guide and aid to the farmers. The researcher(s) from the National Agricultural Research Institute (System) – NARI(S) is the engineer and facilitator of the process. A select-group of farmers, chosen by the farmers association, with the link and aid of Extension Sub-Programme of ADP(s) in the study area and some extension workers shall serve as research partners. All aspects of the research process, starting from initial meetings, felt needs and problem identification and prioritization, design of research, up to data collection, analysis, development of appropriate technologies, and evaluation of the whole process are **jointly** implemented by the partners. The farmers and other partners, depending on their level of formal education, may or may not participate in the report writing. It must be emphasized here that the process requires specialized training for all the partners in the process.

### **5.0 PARTICIPATORY AGRICULTURAL EXTENSION**

#### **5.1 Background**

A major role of agricultural extension in developing countries has been to disseminate technologies generated by public sector research organizations through appropriate dissemination strategies such as demonstrations, field visits, farmers' meetings, use of media, etc. The theory behind this approach had been the 'diffusion of innovation' model suggested by Rogers (2003). The model of technology transfer is often viewed as the linear model as it assumes a linear relationship between research, extension and farmer with organized publicly funded science

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as the source of innovation. This kind of extension models are usually top-down structures, often located within the Ministry of Agriculture. One of the examples is the *Training and Visit (T&V) system* promoted by the World Bank in 1970s. This system had been established



**Plate A1: Farmers in various participatory agricultural research activities.**

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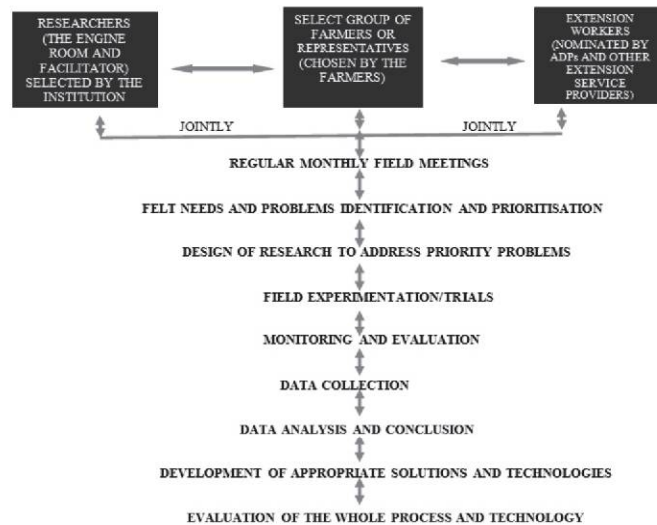
**Plate A2: Farmers in participatory research activities**

as public sector service extension services and became a major model for providing and managing extension in many developing countries. The T&V system had experienced apparent success in some countries, at least for a period of time. However, there are indications that T&V had many shortfalls. One of them is that it was essentially a supply-driven and top-down system, promoting agricultural messages that had been designed and developed by research scientists, with limited input from the technology users (farmers). The system was finally abandoned in late 1990s (Hoffmann, *et. al.*, 2009; Hoffman, *et. al.* 2009b; Ban and Hawkins, 1992; Scoones and Thompson, 2000).

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New approaches such as *Farmer Field Schools (FFS)*, *Farmers Business School (FBS)* and the *Agricultural Knowledge and Information System (AKIS)* have been developed. Direct farm level links were stressed between researchers and farmers. More recently, the notion of extension as part of a wider system has emerged (Sulaiman, *et. al.*, 2006).



**Figure 2: Model for Participatory Agricultural Research**

### 5.2 Participatory Agricultural Extension Process

Participatory agricultural extension entails dissemination of new information, ideas, technologies, innovations with the involvement of all stakeholders (most especially farmers). The farmers are involved and participate as partners and collaborators in all aspects of the extension service and process. Extension as a service can be defined as reaching



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out to target groups. Dissemination, which is often used to describe these kind of activities, can be defined as the spreading of information. In participatory extension, the objectives of extension and dissemination are generally to reveal new insights to farmers to solve practical implementation problems, to provide adult training and to make means of production available through their involvement in information delivery/dissemination (Apantaku, *et. al.* 2003; Apantaku and Ashimolowo, 2006; Ban and Hawkins, 1992; Hoffmann, *et. al.*, 2009; Hoffmann, *et. al.*, 2009b). Over the years, the modalities of conducting agricultural extension and dissemination have changed. Progressively, new approaches and orientations were adopted. In practice, national agricultural extension systems vary from one country to another.

In order to better capture the complexity of information flows and the pluralism of actors, many authors now use another vocabulary. Observers of agricultural innovation processes now often prefer to use other terms:

- ***Participatory technology development and dissemination (PTDD)*** which clearly addresses the involvement of farmers.
- ***Scaling up*** which clearly indicates that the source of innovation comes from 'below' and not from 'above'.
- ***Agricultural knowledge and information systems (AKIS) and networking for innovation*** (Engel & Salomon, 2002; Rees, *et. al.*, 2000). This perspective is sensitive to the complementary roles and collaboration between different agricultural service providers.
- ***Uptake pathways and entry points***: (Rees, *et. al.*, 2000) believed

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that this terminology raises awareness about the multiplicity of actors that can be involved in technology dissemination.

- ***Learning for sustainability (LforS)***: The LforS extension approach developed gradually with characteristics such as conscientization (awareness raising), formation (capacity building), stimulation (social mobilization), monitoring (of activities), and evaluation (impact assessment) to ensure sustainability and ignoring the fact that the life-worlds of peasants and farmers not only contain problems but also offer a rich source of potentials, manifested in popular knowledge, competencies and experiences which are neglected systematically when problems are overemphasized.
- ***Extension by Farmers Associations***: The farmers associations emerged from spontaneously organized groups for self protection and development of peasants' interest.
- ***Farmer Field School and Farmer Business School***: This approach is based on the assumption that decision-making of farmers will be improved when they have skills for gathering, processing and interpreting information which will reduce uncertainty and thus farmers will be enabled to take better decisions. Farmers Field Schools are ways of training farmers to strengthen their decision-making capacity. The FFS consist of groups of people with a common interest, who get together on a regular basis to study the “how and why” of a particular issue or problem (Braun, *et. al.*, 2000). FBS entails the business aspects.
- ***Farmer to Farmer Extension (F2FE)***: This approach sees farmers as promoters and mechanisms of communication through dialogical

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methods to foster the sharing of learning experience and knowledge (Apantaku and Oyegunle, 2016). In Rwanda, the FFS combined with the farmer promoter approaches have been efficiently used to greatly enhance productivity, in what is referred to as *TWIGIRE MUHINZI*. (Rwanda Agriculture Board, 2016). (See Plates A3).

### **5.3 Characteristics of Participatory Agricultural Extension (PAE)**

Effective participatory agricultural extension may be characterized by the following.

- Integration of community mobilization for planning and action with rural development, agricultural extension and research.
- Based on equal partnerships between farmers, researchers and extension agents who can all learn from each other and contribute their knowledge and skills.
- Strengthening of rural people's problem-solving, planning and management abilities.
- Promotion of farmers' capacity to adapt and develop new and appropriate technologies/ innovations (usually agricultural technologies and practices, but also social institutions, health, water and sanitation, and other rural development domains).
- Encourage farmers to learn through experimentation, building on their own knowledge and practices and blending them with new ideas. This takes place in a cycle of action and reflection which is called 'action learning'.

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- They recognize that communities are not homogenous but consist of various social groups with conflicts and differences in interests, power and capabilities. Researchers assist farmers and extension agents in joint experimentation and learning processes and contribute their technical



**Plate A3: Farmers in various participatory extension activities**

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knowledge to find solutions to the problems identified by farmers:

*'Participatory extension is like a school of trying, where you try out ideas and share your experience with others.'*

(Hagmann, *et. al.*, 1999).

Mr. Vice Chancellor Sir, also based on the foregoing, I developed a flowchart/diagrammatic model for participatory agricultural extension, as presented in Figure 3. The process involves three partners - the extension workers (who are the engineers and facilitators of the process, and are selected by the ADPs and other extension service providers), a select-group of farmers (selected by their peers to stand for them), and others farmers who may or may not be part of the select-group of farmers or those who were in the select group but dropped out of the programme. The partners shall **jointly** participate in all aspects and stages of the extension process as equals. Except that the extension workers initiate and start the process, the farmers participate as equal and collaborating partners. Farmers shall participate in organization of demonstrations and actually be the people to demonstrate, present extension programmes on radio and TV to fellow farmers, assist in determining the content and structures of printed/written extension materials, plan and design monitoring and evaluation programme, and feedback processes. The PAE approach requires regular specialized training for both extension workers and farmers. The process may first be jointly implemented by the extension agents and a select-group of farmers; and later between the select-group of farmers (serving as extension agents)

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in collaboration with the actual extension workers and other farmers (who did not participate initially or dropped out).



**Figure 3: Model for Participatory Agricultural Extension**

### 5.4 Characteristics of Nigerian Farmers which are Favourable for PARE

*Nigerian farmers are imbued with some characteristics which are in favour of their effective participation in participatory agricultural research and extension (PARE). The characteristics are listed below. The farmers (are):*

1. Students by choice, and therefore want and are willing to learn (and learn fast) and share their experiences,
2. Have greater authority,
3. Have greater and more experiences, including effective indigenous technical knowledge (ITK),
4. Self motivated,

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5. Appreciate, enjoy, and like being respected, (Remember that PARE is about respect).
6. Appreciate, enjoy, and like being recognized, (Remember that PARE is about recognition).
7. Significant numbers now have secondary and tertiary level of education (Apantaku, 2006b).
8. Like to participate in learning and development programs and activities designed by them, and
9. Enthusiastic and will do everything possible to make a success of any project or programme in which they are collaborating partners (Apantaku, 2006; Scoones and Thompson, 2000).

### **5.5 Indigenous Technical Knowledge (ITK)**

ITK is more concerned with the relationship between indigenous knowledge and science as well as the way they can cooperate in the generation and exploitation of technology to the benefit of the rural populace. It stresses experimentation and the generation of knowledge as an on-going process. Some authorities have referred to farmers as ecologists and experimenters. Howes (1979) suggested a number of uses of ITK in development as follows:

- (i). It can be used in compiling an inventory of resources in an area, for example, soils, vegetation, diseases and pests, how farmers solved certain problems in the past, etc,
- (ii). Serves as a basis for environmental monitoring and an early warning system, such as pest problems or environmental

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degradation,

- (iii). Functions as the 'eyes' and 'ears' of science for providing feedback to scientists through the traditional type of on-farm trial,
- (iv). Works as a corrective measure to an outsider's failure, and
- (v). Serves as source of preliminary hypotheses.
- (vi). ITK serves as idea, knowledge and skills repository which can assist western agricultural research and local development programmes such as extension service (Apantaku, 1998; Apantaku, 1999b).

### **6.0 EFFECT OF PARTICIPATORY AGRICULTURAL RESEARCH AND EXTENSION (PARE) ON TECHNOLOGY TRANSFER-ADOPTION AND LEVEL OF PRODUCTIVITY**

Mr. Vice Chancellor Sir, the beneficial effects of PARE on technology transfer and ready adoption of agricultural technology and innovation developed thereafter cannot be overemphasized (Apantaku and Ashimolowo, 2006; Apantaku, *et. al.* 2003; Apantaku, *et. al.*, 2014). The Neuchatel group (2007) stated that extension is merely seen as a vehicle for spreading scientific and technical progress and technology transfer. But this is a narrow and highly unsatisfactory description. The dissemination of knowledge is not a one-way street from scientists to producers. Farmers' own knowledge must be collected, analysed, capitalized on, propagated and disseminated. Producers of agricultural



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products need more than just technical information. There is rarely a “one size fit all” solution to address the mix of technical, economic, commercial, social and environmental aspects that farming problems consist of. The essence of agricultural extension is to facilitate interplay and nurture synergies within a total information system involving agricultural research, agricultural education and a vast complex of information-providing businesses.

Neuchatel group (2007) emphasized that participatory agricultural research and extension could have positive impacts on transfer of technologies by ensuring:

1. Appropriateness in communication and information dissemination;
2. Appropriateness of facilities delivery;
3. Effective marketing channels;
4. Interrelationship and share of information, skills and knowledge among teeming farming population;
5. Effective identification of difficulties on the use of new technologies;
6. Direct exchange between producers as a way of diagnosing problems, capitalizing on existing knowledge;
7. Exchange of experiences, disseminating proven improvements, and even fashioning common projects;
8. Relationships between producers and service providers (including public extension services); and
9. Building producers capacity to take individual and collective

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initiatives.

Agricultural extension workers and facilitators must be adept in participatory techniques, and resourceful in drawing on a mix of communication methods and technologies around market opportunities, increasing producers' incomes and total farm management. Facilitation demands high-calibre human resources mix and developing know-how to people-skills through initial and continued training of farmers and field workers, at the same time. However, farmers must have the opportunity to present their views on the recruitment and development of extension workers.

Participation is about empowerment. Agricultural development organizations are now realizing the problems of non- adoption or limited impact caused by top – down and linear development approaches. Farrington (1994), Apantaku and Ashimolowo, (2006), and Apantaku, *et. al.* 2014) emphasized that the impact of agricultural research and extension has not yielded the expected results and attributed this to the linear top-down approach of technology transfer.

Simon de Boef and Thijssen (2007) observed that recently donor development agencies have put their weight behind the promotion of participatory development. This is because participatory research and extension serve the following purposes:

1. As instrument or process by which development initiatives can be more effectively implemented.

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2. Means of empowering people by helping them to acquire skills, knowledge and experience to take greater responsibility for their development.

Participatory research and extension strengthen the communities to carry out activities with limited assistance from outsiders by:

1. Building the capacity of local institutions to plan and manage their own development
2. Conducting research and extension using a participatory technology development process, which develops technologies that fit the diverse, complex farming system of small holder farmers (IIRR, 1998). These in turn influence and increase adoption of technologies and greatly enhance farm productivity (Syngenta, 2012; Apantaku and Apantaku, 1998; Apantaku and Apantaku, 2000).

The effects of participatory agricultural research and extension on technology transfer and use can be summarized as follows:

1. The main objective of extension and research changes from technology transfer to the empowerment of farmers.
2. Analysis of needs and priorities are no longer set by outsiders but by farmers facilitated by outsiders (extension agents and researchers).
3. The primary location for research and demonstration shifts from research stations to farmer's field and conditions (Apantaku,

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1998b; Apantaku, 1999a).

4. The menu of technology is no longer fixed but rather flexible with a lot of options coming from farmers experience, situation, and needs.
5. Information dissemination process changes from the linear transfer of precept, messages and technological packages, to a dynamic process based on joint analysis and farmers' choices.
6. Farmers' behaviour change from having messages to either adopt or reject to applying principles, using methods and choosing from basket or experiment.
7. The outcome of the process changes to a wider choice for farmers and enhanced adaptability.
8. Effective and efficient use of production, labour, capital, knowledge, and other resources.
9. The mode of diffusion changes from extension worker to farmer, to farmer to farmer.
10. The role of the extension worker changes from that of an informant, technical supervisor or teacher to a facilitator, catalyst or advisor.
11. These ultimately lead to the joint achievement of the goals of the research and extension organizations and the farmers which are ready technology transfer and adoption, enhanced agricultural productivity and higher standard of living of the farmers (Apantaku, 1998b; Apantaku and Ashimolowo, 2006; Apantaku, *et. al.* 2003; Apantaku, *et. al.* 2014).

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### **7.0 CONTRIBUTIONS TO KNOWLEDGE**

Mr. Vice Chancellor Sir, my specialization is Agricultural Extension and Rural Development which encompasses and circumnavigates a wide range of closely related areas, hence my contributions to knowledge cut across. Our expected *tripodal* responsibilities (in contribution to knowledge) are in teaching, research and extension/community development. I have published 78 papers in international and national outlets; supervised 288 postgraduate and undergraduate research projects. Most scholars tend to neglect the aspect of teaching and students research work. I have actively participated and collaborated in extension and community development.

#### **7.1 Participatory Agricultural Research**

##### **7.1.1 Farmers' involvement in problem identification and prioritization**

More recently, experiences have shown that researchers have now realized the importance of and are concerned about farmer-participatory research which has hitherto not been given adequate attention. The submissions of various authors in development effort in the developing countries show that the development agents usually bring finished package to the rural farmers without giving them the opportunity of being involved either in the diagnostic, design or implementation stage (Apantaku, 2016). This study investigated farmers' involvement in agricultural problem identification and

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prioritization in Ogun State (Apantaku, *et. al*, 2003).

The study found out that the average score of most of the respondents on their level of involvement in agricultural problem *identification* was 15 out of the maximum obtainable score of 40, while the average score of the respondents on level of their involvement in agricultural problem *prioritization* was 8 out of the maximum obtainable score of 40. The average score of respondents on level of their involvement in agricultural problem *identification and prioritization* was 23 out of the maximum obtainable score of 80. This is low and implies that extension agents and researchers have not adequately involved farmers in the identification and prioritization of their (farmers) own problems. Probably the technologies disseminated to them were based on problems of some other farmers in some other places or simply top-down from researchers. About 37.5 % of the farmers responded “yes” to the question seeking to know if they had been involved in problem identification, only 20% said “yes” to the same question on problem prioritization while only 28% responded “yes” to the question seeking to know if they were ever involved in both problem identification and prioritization. Another implication of this low involvement is that the rate of adoption of disseminated agricultural technologies would continue to be poor because the farmers were not party to the identification and prioritization of the problems/needs on the basis of which the technologies/innovations were generated.

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About 96.4% and 97.3% of the respondents showed willingness to be involved in problem identification and prioritization respectively. The average score of the respondents on the willingness index was 35.5 out of the maximum obtainable score of 40. This indicates that farmers are very willing to learn and participate in the process of their own agricultural problem identification and prioritization. They will actively participate if the researchers and extension agents are willing to incorporate them into the system (Apantaku, *et. al*, 2003). (See Plates 1-6).

Table 4 revealed that a good majority of the technologies disseminated were not based on farmers identified problems and felt needs. Only 37.27% of the 220 farmers indicated that the technologies disseminated were based on their identified problems and felt needs. Apantaku (1999a) found out that most of the technologies developed by the University of Agriculture, Abeokuta researchers were not based on farmers' problems. **The major constraints which may hinder farmers' involvement in problem identification and prioritization as indicated by the farmers are listed in Table 5** (Apantaku, *et. al*, 2003).

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**Table 4: Distribution of Respondents by Whether Technologies and Innovations Disseminated Were Based on Their Identified Problems and Felt Needs. (n=220)**

Technologies disseminated	Based on felt needs and identified problems- (Yes)*	%
Planting of improved variety of maize e.g TZSR – W. e.t.c	172	78.2
Planting of improved variety of cassava e.g TMS 30572, 30555	142	64.5
Growing of cassava + maize mixture on heaps/ridges	92	41.8
Use of herbicides (Primextra, gramoxone, e.t.c.)	100	45.5
Use of fertilizer to improve soil fertility	74	33.6
Planting on Straight line of 0.9 x 0.9m on rows and between rows	56	25.5
Storing maize grain in silos	42	19.1
Construction and use of cribs	86	39.1
Use of pesticides on the field and in the store	176	80.0
Generally, the technologies and information disseminated were based on your felt need/problems.	82	37.27

\*Multiple response (more than one technology identified)



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**Table 5: Distribution of Respondents by Constraints Militating Against Farmers Involvement in Problem Identification and Prioritization (N = 220)**

Constraints	Yes*	%
Poor motivation and encouragement of farmers to participate by researchers and extension officers	205	93.2
Lack of willingness of researchers and extension agents to involve farmers in problem identification	200	90.9
Inefficient and ineffective linkage between researchers, extension officers and farmers	130	59.1
Lack of formal education by farmers	128	58.2
Lack of adequate knowledge of research and extension processes by farmers	136	61.8
Lack of interest in participatory problem and needs identification by farmers	39	17.73
Lack of confidence to work as partners with researchers and extension agents	40	18.2

\*Multiple

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**Plate 1: A farmer participating in poultry research,  
administering a treatment**



**Plate 2: A farmer involved in participatory research collecting  
data**

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**Plate 3: A farmer explaining the result of disease control in cassava (Result Demonstration)**



**Plate 4: Farmers showing the result of disease control in cassava (Result Demonstration)**

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**Plate 5: Young farmers disseminating agricultural information  
on radio**



**Plate 6: Young farmers disseminating information on soymilk  
consumption on radio**

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### **7.1.2 Participation of farmers in participatory poultry production research**

In spite of the abundance of poultry technologies developed by researchers, poultry productivity in Nigeria is still far from its maximum potential. One of the shortcomings is the approach of research that generated the technologies. Were farmers involved in the technology generation? The study analysed farmers' participation in poultry research in Lagos State (Apantaku, 2006b).

Findings indicated that under what could be classified as contract participation, 20% of the researchers indicated that, in some of the researches conducted, they requested farmers to provide some birds and the feeds/feed ingredients they used for feeding them. Other inputs such as drugs, water, disinfectants and housing repairs materials were provided by the farmers. Eighteen percent of the farmers indicated they participated in this. In most cases, the researcher bore the cost of the materials. Farmers also participated by managing the pen house with strict instructions from the researchers. The management practices included watering, feeding, cleaning, pest and diseases prevention and control, and security. Nineteen percent (19%) and 20% of the farmers and researchers respectively indicated this.

In consultative participation, 28% of the farmers indicated that they participated in identification of poultry problems and development of solutions to address the problems with the researchers, while 30 % of the

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researchers said the same thing. The diagnosis and identification of priority problems and felt needs followed a similar pattern, with 26% and 30% of the farmers and researchers indicating this. Another consultative participation element was the evaluation of the perceived effectiveness of proposed solutions jointly by farmers (22%) and researchers (25%).

In what may be termed collaborative participation, 9% of the farmers indicated they were involved in intensive and continuous interaction with the researchers on execution of the research programme. The researchers discussed with farmers on what, why and how of the research. This element was indicated by 9% and 10% of the farmers and researchers respectively. Farmers were also asked to look out for their perceived relationship between breeds and feeds and level of poultry productivity. This is making the farmers to investigate in their own ways if feeds and breeds affect productivity. This occurred in few researches conducted. However, the proportion of respondents that indicated this was very low - 7% of farmers and 10% of researchers. About 6% of the farmers indicated that researchers involved them in monitoring of research progress and review of research results. Here, farmers participated in monitoring if the research was accomplishing its aim and if the results and performance of the birds so far is good or not. Farmers (6%) also participated in observing the experiment, taking, recording and safekeeping of research data for the researcher. The farmers were trained to do this by the 2 researchers who indicated they did this.

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Under what could be classified as collegiate participation, one researcher invited 2 poultry farmers to a seminar on poultry research. During the seminar, the farmers were able to learn few things about poultry research. This was quite inadequate as it was not a deliberate seminar to strengthen the farmers' capacity to carry out research.

The average score of the poultry farmers on their level of participation in participatory poultry research (PPR) was 6/30. This is low, indicating that poultry farmers were not allowed to participate well in PPR by the poultry researchers. It was only 11% of the farmers that indicated that they have participated in one form of poultry research or the other before. It is the responsibility of the researchers to involve farmers in their research. A similar trend was obtained on the level of poultry researchers' use of PPR with an average score of 8/30. Only 25% of the researchers indicated that they have used farmer-participatory poultry research before. These scores are low and in line with the farmers' average score on their level of participation in PPR. Participatory technology research and development still lags behind in the livestock sector, where there is a considerable scope for greater and better farmer participation (Conroy, 2005). It should be noted that none of the socioeconomic characteristics of both the farmers and researchers had any significant relationship with the level of use or participation.

An average score of 26/30 was obtained on poultry farmers' willingness to participate in PPR, while the average for poultry researchers was

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22/30. A total of 93% and 95% of the farmers and researchers respectively indicated that they are willing to participate in and use PPR. This is quite encouraging. It shows that both researchers and poultry farmers are willing to try the farmer-participatory poultry research. Therefore, there are potentials for farmer participatory approach in poultry research. The farmers will definitely participate if invited to do so and the researchers will invite farmers to actively participate in their research, if the conditions are right. The research may be on-farm or on-station. It may be in form of contract, consultative, collaborative or collegiate participation, which is intended to develop the capacity of the farmers to carry out informal research on their own. Livestock farmers will gain even greater benefits from their livestock if they are given a greater say in research and technology development (Apantaku, 2006b). (See Plates 1 & 2).

The constraints indicated by researchers are inadequate researchers' motivation by their organizations to use PPR (90%), extra funds and inputs required (80%), farmers not having the formal training (in poultry or animal science) to enable them participate (80%) and inadequate skills of researchers in using PPR (75%). Others are that extra efforts and time are required by researchers to implement PPR (60%), poor attitude and lack of interest of researchers in using PPR (30%) and poor attitude and lack of interest of farmers to participate in PPR (15%). However, the constraints identified by farmers are low encouragement, poor attitude and motivation of researchers (83%), their inadequate knowledge and



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skills in poultry research methods (79%) and poor remuneration of farmers in participating in PPR (78%). Others are conflicts with their other farm activities (65%), extra time required to participate in PPR (55%), extra energy and efforts required (46%) and inferiority complex of farmers in working with learned researchers (18%).

The research organization needs to motivate and encourage the researchers to use PPR. This may be done through extra funding, especially for on-station trials. Seminars and workshops may be organized on farmer-participatory research methods. On the part of the farmers, the research and extension organizations may organize workshops for them on PPR. Some token may be paid to the farmers for their participation in PPR.

### **7.1.3 Use of participatory agricultural research methods among researchers**

The study examined Federal University of Agriculture Abeokuta agricultural researchers awareness and usage of participatory research methods, described the types of participatory research methods used, and assessed level of usage of participatory research methods, and identified the factors hindering the use of PAR.

The respondents' awareness of participatory research method was high (93.3%). They could have been aware or heard about participatory research methods during their employment in research. But it was also

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important to know whether they had used the method before in their research or not. However, only 28.5% of the respondents are using or had used PRM. The awareness and effective professional usage of PRMs by the researchers will allow for mutual understanding between targeted people and the researchers so as to collaborate and bring a lasting solution to the felt needs and problems of the targeted people (Apantaku, *et. al*, 2014).

Table 6 shows that 86.7% of the 28.5% of respondents who used PAR used participation by consultation, which involves discussion with concerned people while external agents listen to their views and these external agents then define both problems and solutions, and may modify these in the light of people's responses. This is like doctor-patient relationship in which problems are identified. Interactive participation method, functional participation and participation for material benefits were also used by 76.7%, 73.3% and 73.3% of the respondents respectively. These methods usually involve people in the research process. It may be in form of joint analysis of farmers' production issue or forming groups to meet predetermined objectives related to the project which can involve the development or promotion of externally initiated social organization.

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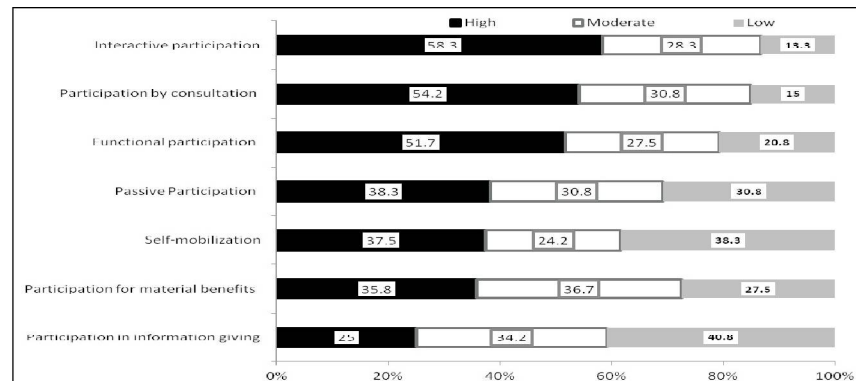
**Table 6. Types of Participatory Research Methods Used by FUNAAB Researchers**

Types of Participatory Research	Used		Not used	
	Freq	%	Freq	%
Participation by consultation	104	86.7	16	13.3
Interactive participation	92	76.7	28	23.3
Functional participation (collaborative/collegiate)	88	73.3	32	26.7
Participation for material benefits	88	73.3	32	26.7
Passive participation	79	65.8	41	34.2
Self–mobilization	77	64.2	43	35.8
Participation in information giving	55	45.8	65	54.2

Source: Apantaku, *et. al.*, 2014.

Out of the few (28.5%) of the researchers who had used PAR, the interactive participation method usage was rated (first) high by 58.3% and moderate by 28.3%. Participation by consultation was rated second, by 54.2% of the respondents as highly used, while functional participation was rated third by 51.7% of the respondents. (See Figure 4). This implies that interactive participation method is widely used. This could be because it tends to involve interdisciplinary methodologies that seek multiple objectives and make use of systematic and structured learning processes so that the concerned groups could take control/ownership over local decisions, and so have a stake in maintaining structures or practices. Participation in information giving was rated low by 40.8% of the respondents. It could be probably because the information involved in this type of method is not originated from the target audience.

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**Fig 4. Level of Usage of Participatory Research Methods Used by Respondents**

The major factors hindering the use of participatory research method among the respondents were fund constraints (94.2%), time, researchers' expertise and farmers' personality/response, as shown in Table 7. Good funding is required to conduct a quality research, but more funds are required to conduct participatory research because of various stakeholders that must be involved in it. Another salient factor indicated by 92.5% of the respondents was educational status of participants. The educational status of the users of participatory methods is important. All the stakeholders (especially farmers and other rural people) require some form of formal education to be able to participate well, but this is not an excuse not to use it.

Some of the techniques and activities involved in PRM require formal education so that users are able to handle or use the participatory tools

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effectively. 85.8% of the respondents indicated that income was a factor that can hinder the use of participatory research methods. The financial benefit that could be derived from the research could also influence the kind of participatory methods that the researchers will be willing to use. Time constraint was also indicated by 75.8% of the respondents as a hindering factor. It requires a longer time to plan and implement.

**Table 7. Factors Hindering the Use of Participatory Research Methods**

Variables	Yes		No	
	Freq	%	Freq	%
Inadequate funding	113	94.2	7	5.8
Educational status (all participants)	111	92.5	9	7.5
Income/financial benefit	103	85.8	17	14.2
Time constraint	91	75.8	29	24.2
Farmers' personality/response	88	73.3	32	26.7
Lack of expertise (researcher)	68	56.7	52	43.3
Age of researcher	58	48.3	62	51.7

Source: Apantaku, *et. al.*, 2014.

### 7.1.4 Research on target agencies' awareness and implementation of Universities'

#### agriculture-based research recommendations

In most cases, the agencies, institutions or even individuals to whom recommendations of research are meant for are not aware of such recommendations, not to talk of implementing them. We assessed research target agencies' awareness and implementation of Universities' agriculture -based research recommendations. The research recommendations emanating from the Departments of Agricultural

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Economics and Agricultural Extension of the Federal University of Agriculture, Abeokuta, University of Ibadan, and Obafemi Awolowo University, Ile-Ife, were extracted from their lecturers' publications. Awareness and implementation of the recommendations by the target of the researches were abysmally low. There is a need for an effective linkage mechanism between research and research reports and the target agencies or individuals. A need also arises for a shrewd participatory research and extension process (Apantaku, *et. al.*, 2002a).

### **7.2 Participatory Agricultural Extension**

#### **7.2.1 Use of participatory extension methods by extension agents in Ogun State**

Increase in agricultural production depends primarily on the acceptance of cultural and technological changes at farm level. To adopt and successfully use these technologies, farmers must properly understand and own them. This requires effective extension approach by the agricultural extension agents. The use of participatory extension teaching methods by extension agents was analysed.

Table 8 highlights participatory extension methods used by village extension agents (VEAs). All the VEAs indicated that they have allowed participation of farmers in method demonstration (MD), result demonstration (RD) and group discussion (GD) at least once. Majority (100%, 91.7% and 100%) of the VEAs also indicated that they frequently make farmers participate in MD, RD and GD respectively. Participation of farmers in MD entails the VEA making the farmers to

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actually carry out the steps and activities involved in what is being demonstrated, assisting the VEA while demonstrating and explaining the steps to other farmers with the guidance of the VEA. The VEA is expected to have demonstrated the steps to the farmer(s) before other farmers are gathered for the MD. Farmers' participation also entails planning and organizing the venue, providing materials for the MD and refreshments after the demonstration. The same applies to RD.

**Table 8: Distribution of respondents according to frequency and active use of participatory approach in agricultural extension methods (PAEMs)**

Village Extension Agents (n=12)				Farmers (n=120)		
Extension Method	Used at Least Once	Frequently Used	Actively Involved Farmers	Participated at Least Once	Frequently Participated	Actively Participated
	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)
Method dem.	12 (100)	12 (100)	6 (50)	110 (91.7)	90 (75)	38 (31.6)
Result dem.	12 (100)	10 (91.7)	7 (58.3)	101 (84.5)	42 (35)	18 (15)
Group discuss.	12 (100)	12 (100)	10 (83.3)	105 (87.5)	88 (73.3)	46 (38.4)
Field Trip/Exc.	2 (16.7)	2 (16.7)	2 (16.7)	8 (6.7)	5 (4.17)	3 (2.5)
T.V	0 (0)	0 (0)	0 (0)	2 (1.67)	0 (0)	1 (0.83)
Radio	0 (0)	0 (0)	0 (0)	1 (0.83)	0 (0)	0 (0)
Role paying	2 (16.7)	2 (16.7)	2 (16.7)	3 (2.5)	0 (0)	2 (1.67)
Extension pubs.	10 (83.3)	5 (41.7)	0 (0)	3 (2.5)	0 (0)	1 (0.83)
Lecture	4 (33.3)	3 (25)	2 (16.7)	5 (4.2)	4 (3.33)	2 (1.67)

dem=demonstration, discuss=discussion, Exc.=Excursion, pubs.=publications

Source: Apantaku and Ashimolowo, 2006.

freq.= frequency

Group discussion should be essentially participatory, but there have been instances where the VEA took over the discussion session allowing

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for little or no farmers' participation. In GD, farmers participate by identifying and prioritizing problems and issues to be discussed, presiding over the sessions, recording, talking, asking and answering questions. It also involves farmers planning, organizing, making material and financial contributions towards the GD. About 16.7% of the VEAs said that they have used participatory field trip/excursion (FT) and role-playing (RP) at least once. The same proportion also indicated they frequently use farmers participation in FT and RP. Farmers' participation in FT include planning, suggesting places to visit, writing and sending mails/letters, organizing for transportation and meals. In RP, farmers suggest issues which may be role-played, plan, advertise, come for rehearsals, take and act roles. None of the VEAs use radio and TV. This is probably because the use of radio and TV for dissemination of extension messages is limited to the officials of the Communication Department at the headquarters of Ogun State Agricultural Development Programme. The use of radio and TV could be participatory. Farmers could be invited to discuss pertinent issues on radio, trained to present programmes and actually present the programmes, On the TV, farmers could also be trained to present and actually present programmes or could be invited to discuss issues. They may also participate by demonstrating some activities in their farm on TV.

About 83% and 33% have used participation of farmers in extension publications (EP) and lecture (LT) respectively at least once, while



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41.7% and 25% indicated that they frequently use participatory EP and LT respectively. Farmers could participate in EP by identifying and suggesting problems and issues of paramount importance to them and assessing the validity and reliability of the publications before final publication. Snaps of their activities and farms may be taken and used in the EP. For LT, farmers may participate by planning, organizing the lecture venue and session and suggesting issues and topics of the lecture. Farmers may also be speakers at the lecture. Farmers may also participate in the evaluation of all the teaching sessions discussed above by responding to questionnaire, interview and making comments. It is one thing to frequently use these extension methods with participation of farmers, but it is another thing to make them participate actively. Majority of the VEAs indicated that they made the farmers participate actively only in MD, RD, and GD (See Table 8; Plates 3 & 4). Farmers may just be invited to the extension teaching sessions just to make up the numbers, merely present and not actively doing things and being involved actively in the activities. The active participation of farmers in extension teaching sessions is the responsibility of the VEAs.

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**Table 9: Distribution of respondents according to frequent and active use and participation in participatory extension programmes**

Extension Programme	Village Extension Agents (n =12)			Farmers (n =120)		
	Used at Least Once	Frequently Used	Actively Used	Participated at Least Once	Frequently Participated	Actively Participated
	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)	freq. (%)
Planning of extension prog.	8 (66.7)	6 (50)	3 (25)	74 (61.7)	34 (28.3)	14 (11.7)
Supervision	9 (75)	3 (25)	3 (25)	34 (28.3)	18 (15)	11 (9.2)
Monitoring and evaluation	6 (50)	3 (25)	2 (16.7)	14 (11.7)	11 (9.2)	10 (8.3)
Cost sharing	9 (75)	7 (58.3)	5 (41.7)	85 (70.8)	72 (60)	69 (57.5)

Source: Apantaku and Ashimolowo, 2006.

prog. =programme

The second part of Table 8 shows the distribution of farmers according to their frequent and active participation in PAEMs. Most (91.7%, 84.5%, and 87.5%) of the farmers indicated that they have participated at least once in MD, RD, and GD respectively, while 75%, 35% and 73.3% said they frequently participated in MD, RD, and GD respectively. About 32%, 15% and 38% indicated that they actively participated in MD, RD and GD respectively. It is interesting to note that 2 of the farmers indicated that they have participated in participatory extension radio and TV programmes. Even though none of the VEAs indicated that they have ever used radio and TV, the 2 farmers may have been selected at one time or the other by the officials of the Communication Department at the OGADEP headquarter to participate in the programme. It is only the department that has responsibility to use the mass media. When PAEMs are used, one is almost sure of faster and more effective farmers' acceptance of whatever decisions or technologies that are derived from

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such participatory programme. This ultimately leads to increased production. (Apantaku, 2016; Apantaku and Idris-Adeniji, 2016; Apantaku, 1999a; Apantaku, *et. al.*, 2003; Apantaku and Ashimolowo, 2006; Scoones and Thompson, 2000).

Table 9 shows the distribution of VEAs and farmers according to their frequent and active use and participation in participatory planning, supervision, monitoring and evaluation and cost sharing of agricultural extension programmes. Most of the VEAs indicated that they have involved farmers at least once in the four programmes, 50% and 58.3% indicated they frequently use participatory planning and cost sharing of extension programmes respectively, while 41.7% said they actively use participatory cost sharing. These programmes are different from extension teaching methods or sessions. Farmers could participate in planning extension programmes by identifying and prioritizing problems and felt needs, planning the calendar of work and activities (Apantaku *et. al.*, 2003, Apantaku, 1999a; IIRR, 1998). They could participate in supervision, monitoring and evaluation (M&E) by determining criteria and standards of performance, going out on supervision and M&E visits with the VEAs and other officials of OGADEP, asking questions and making comments and suggestions. About 58% of VEAs and 57% of farmers indicated that they frequently use and actively participated respectively in participatory cost sharing. In cost sharing, farmers provide materials, tipping VEAs and making some financial contributions towards the success of the programme.

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Fewer (41.7%) proportion of the VEAs are willing to use participatory approaches in extension teaching methods and other programmes. However, most (95%) of the 120 farmers are willing to participate in extension teaching sessions and other programmes. The onus now is on extension agents to brace up and incorporate participation of farmers in all aspects of their programmes. (See Plates 5 & 6).

Table 10 shows the distribution of respondents according to constraints which might affect their use and participation in PAEMs. Effective implementation of PAEM requires extra efforts in planning and preparation and VEAs domiciling in the village or cell of operation. The expected enhancement in productivity outweighs these extra costs. The farmers identified the following as constraints which militate against their participation in PAEMs. These are lack of motivation from VEAs (95%), poor knowledge of what to do and expected in PAEM (90%), time requirements (38.4%), cost implications (31.6%), low education (23.3%) and inferiority complex (15%).

The average score on VEAs level of use of PAEMs was 12/30 while the average score for farmers on their level of participation in PAEMs was 9/30. These are quite low. This indicates that most of the VEAs do not adequately use PAEM whereas the farmers are willing to participate. None of the socioeconomic characteristics of both VEAs and farmers has any significant relationship with the level of use and participation

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respectively in PAEMs. This means that the farmers and VEAs socioeconomic characteristics do not influence their participation in and use of PAEMs.

**Table 10: Frequency distribution of respondents based on constraints affecting the use and participation in PAEMs**

VEAs (n=12)		Farmers (n=120)	
Constraints	freq. (%)	Constraints	freq. (%)
Poor incentives from OGADEP	10 (83.3)	Lack of motivation from VEAs	114 (95)
Transportation problems	5 (41.7)	Time consuming	46(38.4)
No conducive accommodation in the village	10 (83.3)	Costly	38(31.6)
Time consuming	8 (66.7)	Inferiority complex	18 (15)
Costly/lack of fund to execute it	9 (75)	Low education	28 (23.3)
Inadequate skills in participatory techniques	10 (83.3)	Inadequate knowledge of what to do and expected in PAEM	108 (90)

Source: Apantaku and Ashimolowo, 2006.

### 7.2.2 Stakeholder-groups' willingness to counterpart-fund agricultural extension service

The World Bank component of the tripartite funding arrangement (with Federal and State Governments) for the Agricultural Development Programmes in Nigeria ceased in 1995. This had resulted in huge financial burden and responsibilities on Nigeria's Federal and State Governments. Most of the ADPs were unable to cope with their primary responsibilities of providing agricultural extension services in their domain. Many of them have developed coping strategies and are still unable to cope. Therefore, there was a need to identify alternative means and donors locally to sustainably fund extension services using

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Osun State as the study area (Apantaku, *et. al.*, 2002b).

All the organizations (farmers' organizations, community based associations, religious associations and non-governmental organizations) were willing to counterpart-fund extension. About 78% of the 36 FOs studied responded “yes” to willingness to counterpart – fund extension. Each of the FOs indicated willingness to donate an average of N3300/year, CBAs to donate an average of N4250 each, the 5 NGOs indicated they can donate an average of N7350 each, while the 5 ROs indicated they will donate an average of N6040 per year each. These pledges are quite substantial. With very careful and skillful planning and mobilization, most, if not all of the FOs, CBAs, NGOs and ROs will pledge and counterpart-fund extension. With time and successful disbursement and felt impact of extension service, the amount pledged and donated will be increased (Apantaku, *et. al.*, 2002b).

A significant relationship also existed between their income level and willingness to counterpart-fund extension service. This indicated that the higher the level of income of the organizations, the higher their willingness to counterpart-fund extension. It is opined that with more income, there is the possibility of the organizations pledging and donating more fund to counterpart-fund extension service.

Most of the identified donor-organizations do not perceive problems in the counter-part funding arrangement, either with the donors or

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managers of such funds. About 20% of the 76 organizations contacted felt that inability of donors to fulfill promise due to unforeseen circumstances might be a problem, while about 20% also felt that commitment of funds to different programmes might constitute a problem. They felt that some programmes (other than extension) might come up, which the organizations may deem more important than extension. In such cases those programme(s) may take priority over extension. Other problems cited are bureaucracy in processing and releasing funds (17%), group members' inability to pay their contributions on time (17%) and low income of the group during a particular year (16%).

### **7.2.3 Research on feasibility of private integrated extension service**

Poor funding of the ADPs as a result of the withdrawal of World Bank counterpart-funding of extension service in Nigeria reduced effectiveness of extension services to farmers. Hence, there is a need for private sector involvement. As a result of the foregoing, the study investigated the feasibility of private integrated extension service in Ogun State.

We concluded that farmers in Ogun State have access to Ogun State Agricultural Development Programme (OGADEP) extension service, but still do not have the desired impact from their service; farmers are willing to pay for and patronize private integrated agricultural extension

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services (PIAES); most private agro-allied companies are not willing to establish PIAES as a means of assisting farmers' production or contributing to agricultural development; and extension specialists/workers and subject matter specialists are willing to establish PIAES in Ogun State. We also asserted that willingness of farmers to pay for and patronize PIAES does not have significant relationship with their socio-economic characteristics; farmers' access to OGADEP extension service has no significant relationship with their willingness to pay for and patronize private integrated agricultural extension services; farmers' access to input service has significant relationship with their willingness to pay for and patronize private integrated agricultural extension services; and private integrated agricultural extension service is feasible in Ogun State, Nigeria (Apantaku, *et. al.*, 2005). It was recommended that experienced extension specialists, extension workers, and subject matter specialists should be encouraged by government and farmers' groups to establish PIAES; provision of input services should be added as a direct responsibility of extension service provided by OGADEP; a little more sensitization work needed to be done by interested individuals, groups, NGOs and private companies to actualize PIAES. An organizational modality and structure was recommended for PIAES. The modality for registration, implementation, standards monitoring and evaluation were discussed.



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### **7.2.4 Assessment of community empowerment and women involvement**

#### **components in National FADAMA II project in Ogun State**

The objective of the National Fadama Development Project II was to increase sustainably the incomes of Fadama users – (those who depend directly or indirectly on Fadama resources) farmers, fishers, pastoralists, hunters, gatherers and service providers, through empowering communities to take charge of their own development agenda and by reducing conflict among Fadama resources users and supporting improved management and increased food production (Hansen and Allen, 2006). The NFDP-II ensured grant disbursement to Fadama User Groups (FUGs) through an umbrella “Fadama Community Association” (FCA). Access to grants, planning, execution and evaluation of projects were implemented with community-driven development (CDD) approach, especially participation, equity and empowerment of beneficiaries. Intended beneficiaries were required to form groups (FUGs) merged into a FCA. The FCA meets to draw up local development plans (LDPs). LDPs are prioritized list of specific tasks and objectives, activities and projects to be executed and for which grants will be requested in the year. This is done *participatorily* and with all members of the FCA making contributions. The LDPs are sent later to the local fadama development committee (LFDC) for approval and further processing to State Fadama Development Committee for fund release (PCU, 2003). One of the key components of NFDII was empowering communities, women involvement, capacity building,

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advisory services and environmental protection and awareness (OGSFDO, 2005). The project was earmarked to be implemented with the community driven development (CDD) approach. This was in the memorandum of understanding (MOU) with the World Bank and other donors. Therefore, I decided to assess the community empowerment and women involvement components of CDD in Fadama II (Apantaku, 2008).

The NFDP II successfully achieved the community empowerment and women involvement components of CDD in its implementation. The involvement of beneficiaries and especially women in the project was high. They actively participated in preparation of local development plans, appointment of personnel, award of contracts and monitoring and evaluation of projects (See Table 11). The NFDP II has impacted on the level of income of members and contributed to community development. Socioeconomic characteristics of respondents have no relationship with their level of involvement. Some of the constraints facing the participants are long bureaucracy and delay in releasing funds, too frequent and long meetings and insect pests attack (See Table 12). It was recommended that annual awards should be given to the best gender sensitive Fadama Community Association (FCA) and Fadama User Group (FUG) in the local government council area. Awards should also be presented to the best members-empowered (community empowerment) Fadama Community Association (FCA) and Fadama User Group (FUG) in the local government council area. This

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recommendation is to encourage the FCAs and FUGs to continue to actively empower women and their members generally and even perform better. The State Fadama Development Office should organize frequent workshops for facilitators and representatives of the FCAs on organization of brief but effective meetings. This office should also develop faster and more effective means of processing Fadama groups' request for funds to ensure timely release. The extension agents and subject matter specialists covering the area of study should make more concerted efforts to address the problem of insect pests attack (Apantaku, 2008).

**Table 11: Distribution of Respondents According to Level of Involvement in Different Areas of Decision Making by Gender and Generally**

Area of Decision Making	Level of Involvement in Decision Making		
Local Dev. Plan	Low	High	Total
Male	12	86 (87.75%)	98
Female	18	124 (87.32%)	142
Total	30	210 (87.50%)	240
$\chi^2 = 1.37$ Contingency of Coefficient = 0.09 $\alpha = .86$ (Not Significant)			
Project Evaluation	Low	High	Total
Male	18	80 (81.63%)	98
Female	32	110 (77.46%)	142
Total	50	190 (79.17%)	240
$\chi^2 = 2.83$ Contingency of Coefficient = 0.14 $\alpha = .72$ (Not Significant)			
Appointment of Personnel	Low	High	Total
Male	20	78 (79.59%)	98
Female	36	106 (74.65%)	142
Total	56	184 (76.67%)	240
$\chi^2 = 2.01$ Contingency of Coefficient = 0.11 $\alpha = .62$ (Not Significant)			
Award of Contracts	Low	High	Total
Male	12	86 (87.75%)	98
Female	22	120 (84.51%)	142
Total	34	206 (85.83%)	240
$\chi^2 = 2.13$ Contingency of Coefficient = 0.19 $\alpha = .48$ (Not Significant)			

Overall average of high involvement = 82.37% (for both male and female)

Source: Apantaku, 2008.

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**Table 12: Distribution of Respondents According to Constraints**

**Encountered and Contribution of Fadama II to Community Development**

<b>Constraints/Needs of Respondents in Fadama II</b>	<b>Freq. (%)</b>
Long bureaucracy and delay in releasing funds	180 (75)
Insect pests attack	157 (65.42)
Too frequent and long meetings	154 (64.17)
High labour cost	70 (29.17)
Scarcity of some tools, equipments and inputs	39 (16.25)
Break-down of some equipments	36 (15.00)
Need for more funds	7 (2.92)
Inadequate transport system (vehicle)	4 (1.67)
<b>Contribution of Fadama II to Community Development</b>	<b>Freq. (%)</b>
Empowerment and capacity building	221 (92.08)
Sustainable food production	220 (91.67)
Job creation	218 (90.83)
Income generation	218 (90.83)
Road rehabilitation	170 (70.83)
Provision of social amenities	168 (70.00)
Reduction in rural-urban migration	58 (24.17)

**Source:** Apantaku, 2008.

### 7.2.5 Alternative internal sources of fund for extension service in Ogun State

Due to the cessation of World Bank funding for extension service in Nigeria, there was need to identify alternative sources of additional funding for public extension service. The study was underpinned on the concepts of community organization, social action, community development and participation (Apantaku, *et. al.*, 2000). The

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respondents were small-scale farmers, large scale farmers, wealthy citizens (non-farmers), agro-allied/ agro-based/ multinational companies, and local government chairmen. We found out that farmers (who are the ultimate beneficiaries of extension service) the private sector, and local government councils were willing to contribute significant amount of fund to counterpart-fund extension service. An amount equal to about 1/3 of the actual amount of money released for extension yearly, since the cessation of World Bank counterpart funding could be realized through alternative local sources (Apantaku, *et. al.*, 2000). Some concerns perceived and identified by donors, which might affect the management of the process, are injudicious disbursement of funds, inappropriate prioritization of extension activities, embezzlement by farmers, and ineffective mobilization and organization to sensitize people to participate and donate.

### **7.3 Rural Development**

#### **7.3.1 Relevance of village health workers and traditional birth attendants in**

##### **primary health care (PHC) in Oyo State**

Primary health care is usually provided by local government hospitals, health centers, dispensaries and maternity centers in rural and urban areas. It may also be provided by some secondary schools, colleges, polytechnics and universities. The PHC institutions' personnel may include few or no doctors, few nurses and midwives, environmental health officers, community health extension workers, village health

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workers (VHWs) and traditional birth attendants (TBAs). The VHWs and TBAs operate in their host communities, usually where there are no local government health care institutions. In the rural areas, there are very few and distant local government health care institutions. Rural residents die from common and easy-to-treat ailments. Most of the local government PHC institutions are sited at the local government area headquarters. This makes the involvement of VHWs and TBAs in PHC in rural areas imperative (Bare, 2001). The components and programmes of health services based on primary health care include: Education and information dissemination and diffusion concerning prevailing health problems and the method of preventing and controlling them; Promotion and education on proper, adequate and balanced diet/food intake; Information and education on preparation and drinking of safe water; Education and enforcement of cleanliness and basic and environmental sanitation; Maternal and child health care, including family planning. VHW and TBA are involved in: Immunization against the major infectious disease; Prevention and control of locally endemic and epidemic disease; Appropriate treatment of common diseases, ailments and injuries; Provision of essential drugs and supplies; and Advise and counseling on mental and psychological health. The methods prescribed to disseminate the information and execute the programmes and tasks above shall be compatible with the people's (clients) culture, customs, norms and religious beliefs.

The study concluded that the clients of the services provided by VHWs and TBAs cut across the strata of age, gender, marital status and level of

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education; VWHs and TBAs play tremendous role and provide essential services in the primary health care delivery system of the rural people; they provide health education on various issues, assist in immunization, treat common ailments and diseases, take deliveries and provide maternal and antenatal health care; and each VHW and TBA treats and consults with an average of 31-40 and 21-30 clients respectively per month. The residents have a positive and satisfactory attitude toward the services provided by the VHWs and TBAs and need the services provided by the VHWs and TBAs. There is no significant relationship between demographic characteristics of the clients and their attitude and demand towards the services provided by the VHWs and TBAs. The VHWs and TBAs face some problems in the discharge of their duties. Some of these are irregular supply of drugs, unsatisfactory monitoring, supervision and evaluation by higher health officers from the local government and primary health care centers and poor remuneration (Apantaku, 2005a). Recommendations made included that: the *modus operandi* of the VHWs and TBAs should be carefully examined by the local government council authorities with a view to revamping, reorganizing, rejuvenating and refocusing on the services provided by them, so as to make the best use of them; local government council health officers who are supposed to supervise and monitor the VHWs and TBAs should be enforced to take the services provided by the VHWs and TBAs more serious and supervise, monitor and evaluate them appropriately; regular (quarterly) training should be organized by the local government council for the VHWs and TBAs on current issues,

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ailments and diseases' symptoms, diagnosis and treatments; drugs and other essential supplies should be made available for the work of the VHWs and TBAs; the incentives and remuneration accruable to the VHWs and TBAs should be reviewed upwards; and all essential infrastructures needed by them to perform their job should be provided (Apantaku, 2005a).

### **7.3.2 Influence of community-based associations on rural community development**

The inability of government to cater adequately for the needs of the rural people has led the local people themselves to come together to initiate development efforts to develop their communities and themselves economically, socially and politically. We investigated influence of community-based associations in promoting community development in rural areas of Southwestern Nigeria. The roles played by the CBAs included: physical, social and infrastructural development of the community; social stability and prevention of crime in the community; development and nomination of local indigenes for political positions; and promotion of unity among members of the CBAs and among members of the community. Others are welfare and economic relief to their members; and participation in government development programmes. Local and State government should identify and give formal recognition and publicity to performing CBAs (who have made remarkable contribution to the community) (Apantaku and Fakoya, 2000).



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### **7.3.3 Research on features and effects of climate change on rural household health**

Recently, global attention had shifted to the issue of changes in climatic pattern and its attendant effects. Human activities through the ages have altered the ecosystem and modified the climatic system. This is in addition to the population pressure which had made the impact of climate change more feasible now. While the consequence of climate change varies across continents, countries and ecological regions, the effects vary depending on the pre-existing climatic factors. Some regions have witnessed prolonged drought, famine, flooding, irregular and excessive rainfall, landslide, among other effects as signals of climate change.

Findings concluded that there had been climatic change in the study area (Table 13). This had effects on the health status of the rural people (Table 14). The study also revealed that access to quality health services was not available as patronage of traditional health care (local herbs) is still rampant in the rural communities. The treatment mechanisms included visit to local medicine shops and hawkers, traditional herbs, chemist and pharmacy shops, and hospitals. There is a need to design and adopt strategies to combat the health challenges arising from the changes. It was recommended that: concerted efforts should be put in place to ameliorate the effects of the changes on rural household through programmes and policies of the different levels of government; health facilities and services should be made available, accessible and affordable so that the rural people would have easy access to them. The

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health institutions should be stocked with the needed drugs, qualified and adequate personnel; there is a need for increased access to education, public enlightenment programmes and sensitization on prevention of climate change and mechanisms for treating associated health problems; orientation of the people should be tailored more towards preventive health medicine, good sanitation and proper hygiene so that the effect of the changes would reduce; activities contributing to climate change should be minimized especially deforestation, bush burning, improper waste management, environmental/e-pollution, drainage and channel blocking and other industrial activities; materials such as insecticide-treated mosquito nets, drugs and vaccines for treatment should be made readily available. To ameliorate effects and reduce climatic change, there is need for

**Table 13: Features and Elements of Climate Change**

Statements	SA	A	D	SD
Rainfall pattern has changed in the area.	31 (25.8)	57 (47.5)	0.00	32 (26.7)
Rainfall amount is on increase.	63 (52.5)	0.00	57 (47.5)	0.00
Temperature is not stable in the area	32 (26.7)	57 (47.5)	0.00	31 (25.8)
Sunshine intensity is stable in the area.	32 (26.7)	31 (25.8)	57 (47.5)	0.00
There is prolonged drought in the area in the last few years.	32 (26.7)	57 (47.5)	31 (25.8)	0.00
There is incidence of flood.	0.00	0.00	120 (100.0)	0.00
Late appearance and duration of harmattan has been stunted.	32 (26.7)	88 (73.3)	0.00	0.00
Period of dry season has increased	0.00	88 (73.3)	32 (26.7)	0.00
Sunshine intensity has increased	31 (25.8)	57 (47.5)	32 (26.7)	0.00
Very high temperature when it should be mild	0.00	120 (100.0)	0.00	0.00
Incessant and elongated non-stop rainfall when it should be less	0.00	56 (46.7)	64 (53.3)	0.00
Dusty and cloudy atmosphere when it should be clear	0.00	89 (74.2)	31 (25.8)	0.00
Unusual timing of onset and cessation of rains/hamattan	31 (25.8)	57 (47.5)	32 (26.7)	0.00

Source: Apantaku, *et. al.*, (2013).

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**Table 14. Health Status of Respondents Before, During and After Climatic Change**

Statements	Before		During		After	
	YES	NO	YES	NO	YES	NO
Common cold	95 (79.2)	24 (20.0)	120 (100.0)	--	95 (79.2)	25 (20.8)
Catarrh	57 (47.5)	63 (52.5)	89 (74.2)	31 (25.8)	89 (74.2)	31 (25.8)
Malaria	31 (25.8)	89 (74.2)	63 (52.5)	57 (47.5)	63 (52.5)	57 (47.5)
Fever	32 (26.7)	88 (73.3)	63 (52.5)	57 (47.5)	63 (52.5)	57 (47.5)
Dizziness	63 (52.5)	57 (47.5)	64 (53.3)	56 (46.7)	63 (52.5)	57 (47.5)
Rashes	31 (25.8)	89 (74.2)	63 (52.5)	57 (47.5)	63 (52.5)	57 (52.5)
Cholera	32 (26.7)	88 (73.3)	32 (26.7)	88 (73.3)	32 (26.7)	88 (73.3)
Water borne disease	32 (26.7)	88 (73.3)	32 (26.7)	88 (73.3)	32 (26.7)	88 (73.3)
Cough	57 (47.5)	63 (52.5)	57 (47.5)	63 (52.5)	88 (73.3)	32 (26.7)
Injuries / Accident	57 (47.5)	63 (52.5)	57 (47.5)	63 (52.5)	57 (47.5)	63 (52.5)
Pain	63 (52.5)	57 (47.5)	63 (52.5)	57 (47.5)	63 (52.5)	57 (47.5)
Asthma	25 (20.8)	95 (79.2)	25 (20.8)	95 (79.2)	25 (20.8)	95 (79.2)
Stomach upset	25 (20.8)	95 (79.2)	25 (20.8)	95 (79.2)	25 (20.8)	95 (79.2)

Source: Apantaku, *et. al.*, 2013

improved joint efforts and coordination between agencies, ministries and communities in the areas of rural health, rural development and environment (Apantaku, *et. al.*, 2013).

### 7.4 Agricultural Extension Education, Management and Subject Matter Extension

#### 7.4.1 Radio agricultural broadcast schedule and farmers' information seeking habit

The resort to radio as a medium of agricultural information dissemination is necessitated due to agricultural extension agents' poor motivation, low job satisfaction and unsatisfactory job performance. This has made extension individual contact method ineffective, because

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they hardly visit the farmers. They are poorly paid and not provided with the essential resources (transportation, funds, rural accommodation and instructional materials) needed to perform their duties (Apantaku, *et al.* (2008; Apantaku and Enitan, 2006; Apantaku and Apantaku, 1998). Therefore, radio as a mass medium fills this gap, at least to make farmers aware of new agricultural practices and other development information. They usually seek further information once the radio has been used to sensitize them. Therefore, we studied the influence of radio farm broadcast schedule on farmers' radio agricultural information seeking habit in Ogun State.

We concluded that: farmers perceive all farm broadcast schedules as satisfactory and positive; about 42.5% were long radio listeners, 37.8% medium listeners while 19.7% were short listeners; more than 71% were active seekers of radio agricultural information on each of the three farm broadcast programmes; farm size, income, educational and farming status had significant relationships with agricultural information seeking habit; socioeconomic variables had no significant relationships with listening habit; farmers' perception of farm broadcast schedule influenced their agricultural information seeking habit (See Table 15). The major constraints to farmers' radio listening and agricultural information seeking habit were faulty electric radio set, poor quality of transistor radio set, poor quality battery, high cost of battery and erratic electricity supply. Other less serious problems were occasional poor radio broadcast reception and uninteresting presentation of messages,

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and messages not addressing farmers' problems and needs (Apantaku, *et. al.*, 2009).

**Table 15: Table showing the relationship between farmers' perception of farm broadcast programme schedule and their agricultural information seeking habit**

Progm. Schedule	$\chi^2$ cal	df	C. Coef.	p < .05	Decision
<u>Day of Broadcast</u>					
Agbeafokosoro	11.29	1	0.212	0.004	S
Agbeloba	17.42	1	0.260	0.000	S
Boluyo	16.52	1	0.254	0.002	S
<u>Time of Broadcast</u>					
Agbeafokosoro	6.11	1	0.158	0.047	S
Agbeloba	11.93	1	0.218	0.003	S
Boluyo	12.54	1	0.223	0.002	S
<u>Duration of Broadcast</u>					
Agbeafokosoro	12.09	1	0.219	0.002	S
Agbeloba	11.88	1	0.217	0.003	S
Boluyo	12.54	1	0.223	0.002	S

**Source:** Apantaku, *et. al.*, (2009). S = Significant C. Coef. = contingency coefficient

### 7.4.2 Potentials of young farmers club as tool for disseminating agricultural technologies.

The low ratio of extension agents to farmers, as a result of many reasons, led to the search for potential manpower resources capable of serving as extension agents. The study determined the potentials of the young farmers club (YFC) members in secondary schools for disseminating agricultural technologies to farmers (their parents and neighbourhood farmers) in Ogun State. The YFC members' parents (farmers) are willing to receive and adopt agricultural technologies disseminated to them by their children. Members of the YFC are willing and enthusiastic about being used as auxiliary extension workers. Extension agents are equally enthusiastically receptive of the idea. In the past, members of the YFC

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have contributed immensely in agricultural information dissemination, agricultural development, community organization and development activities. Therefore, they have potentials to be effectively used as auxiliary extension workers (Apantaku, 2000). (See Plates 5 & 6). The Agricultural Development Programme, Extension Sub-programme and Ministry of Agriculture may liaise with the Ministry of Education to fashion out modalities to make it a reality (Apantaku, 2000).

### **7.4.3 Senior school agricultural science students' attitude towards agriculture as a career**

*Most of the senior secondary school agricultural science students in Ogun State did not like and would not practice agriculture as a career or occupation. Reasons adduced were drudgery involved in Nigerian agriculture, parents and peer influence, low prestige associated with farming, and low/slow cash return/profit from farming. Their willingness to practice agriculture may be improved if school farms are mechanized, subsidized inputs, and basic infrastructures and amenities are provided in the rural areas. Others are loans and credit access to farmers and school career guidance and counseling (Apantaku, 2004).*

### **7.4.4 Agricultural extension undergraduates' attitude towards extension work**

Senior (400 & 500 levels) agricultural extension and rural development (AERD) undergraduates of the Federal University of Agriculture, Abeokuta exhibited unfavourable and negative attitude towards extension work, even though they performed well in extension courses.

They had good knowledge of the roles of extension workers, but were not adequately aware of the various career opportunities and job choices available for AERD graduates in extension world of work. There were no relationship between their understanding of extension workers' roles, academic performance in extension courses, sex, parents' educational level, and their attitude towards extension work. Their attitude to extension work is influenced by their awareness of career opportunities and job choices in extension world of work, age, parents' occupation (farming or non-farming) and nativity/location of residence (living in or native of rural or urban area) (Apantaku and Apantaku, 1998c).

#### **7.4.5 Herzberg motivation-hygiene factors and job satisfaction of village extension agents**

The morale of extension workers was suspect. Therefore we investigated the relationship between Herzberg motivation-hygiene factors and job satisfaction of village extension agents (VEAs) in Ogun State ADP. The levels of job satisfaction, motivation and hygiene factors of VEAs were low. The motivation factors identified (in rank order) included opportunity for promotion and growth, opportunity for regular training and development, challenging and interesting work, recognition of accomplishment, a sense of achievement, and job responsibility (specific and increasing) being the last. The specific hygiene (maintenance factors) identified were (in rank order) attractive salary (being the first), good working conditions, job security, progressive policies, good administration, higher job status, good

interpersonal relationship with peers, high quality of supervision, and good interpersonal relationship with supervisors. The motivation and hygiene factors greatly influenced job satisfaction (Apantaku and Apantaku, 1998b).

#### **7.4.6 Poultry farmers' preference and use of commercial and self-compounded feeds**

For many decades, poultry farmers in Nigeria relied on commercial poultry feeds. Such feed sources are characterized by a continuously increasing feed cost and unsure feed quality (Ogunwolere and Onwuka, 1997). Between 1997 and 2007, while the prices of eggs increased by an average of 108% per annum, prices of feeds increased by an average of 197% resulting in dwindling profits to producers and causing many table-egg producing farms to fold up. Recent reports from parts of South Western Nigeria had shown that some farmers no longer patronize commercial feed millers as a result of problems associated with the use of their products. Some of the poultry farmers have decided to learn how to compound and mill their own feeds in order to avoid the consequences of patronizing dubious commercial feed millers. The study determined poultry farmers' perception, preference and use of Commercially Compounded Feeds (CCF) and Self Compounded Feeds (SCF) in Oyo State.

Most (84.2%) of the poultry farmers compound their own feed while the remaining 15.8 % buy from CCFs. About 86% preferred and used SCF



more than CCF. Majority (84.2%) of them perceived SCFs to be of better quality and more quantity than commercial compounded feeds. About 93% indicated that they observed and noted that there is no quality control mechanism in the poultry feed industry in their area. None of them was able to remember or mention the name of any government or private agency or officials that has visited them or the commercial feed millers they patronize for the purpose of quality control. Only one of the 4 commercial feed mill companies interviewed indicated that their mill was visited once about 12 years ago by officials of Nigeria Standard Organization (NSO), the government organization responsible for products' quality control nationwide. The result of the “t” test statistics conducted on the difference in quality of CCF and SCF as perceived by farmers showed a significant difference. The “t” calculated = 4.15 > tabulated “t” = 1.98 at = .05.

*It was revealed* that there is difference in average cost of commercial feeds and self-compounded feeds. CCFs can be purchased and available easily at all times, while ingredients for SCF can also be obtained or purchased with ease. The only intervening factor is the farmers' financial capability and not availability (Apantaku, *et. al.*, 2006).

The factors influencing choice of feed are: quality of feed, technical ability and knowledge on compounding and mixing feed and cost price of the feed were the most important factors that influence farmers' choice between CCF and SCF, with 68%, 66.7% and 60% of the farmers

respectively indicating the three factors listed above. The others were storability of feed (25%), cost and availability of transportation (20%), attitude of CCF vendors, dealers and retailers to their customers (15%) and availability of feed (10%). It was recommended that: Oyo State Agricultural Development Programme (the government agency responsible for agricultural extension service in the State), concerned and interested non-governmental agencies, research institutes and Universities should organize annual extension workshops and training for poultry farmers in the study area and other areas on feed formulation, feed ingredient selection, mixing and compounding; mixtures and additives and on establishment, operation and maintenance of feed mills; extension agents/agencies should mobilize farmers to organize themselves into feed-mill cooperative societies whereby about 5 – 10 poultry farmers could jointly establish a feed mill. This will help in cost sharing and make it easier for the farmers to finance the project; the Standard Organization of Nigeria (SON) should be revitalized, revamped and reorganized by government to monitor quality of agricultural products and inputs such as feeds and feed ingredients. A division of agriculture may be established in SON for this purpose; and the government should assist cooperative poultry feed millers with credit facilities, subsidy and less import duties on feed ingredients, mixtures and other feed inputs that are not available locally. This may help reduce cost price of both CCF and SCF (Apantaku, 2006).

## 8.0. CONCLUSION

Mr. Vice Chancellor Sir, participatory agricultural research and extension (PARE) is all about stakeholders' (especially farmers') empowerment, ownership, respect, participation, involvement, partnership, and acceptance. It is also about inclusion, democracy, having a voice and choice. In democracy, people make a choice. When their own willingly chosen (elected) representative or government is in place, they accept and support the individual and government. They stand by the individual or government, “come rain and come shine”. So when an agricultural technology, practice or innovation or any development programme is developed and disseminated through PARE and so demand-driven, it is easily and freely adopted and accepted long term. This is why I concluded that PARE leads to real agricultural and farmers' development, sustainability of agricultural innovation and technologies transfer and adoption. The ultimate impact of these is sustained enhanced productivity, increased income, better level and standard of living, real and demand-driven development, and national development. **However, the solutions proffered are not prescriptive but suggestive.**

These people, the farmers, can do it. Yes, they can. But we, the other major partners (researchers and extension workers) in PARE must be willing to assist, engineer and catalyze them to do it (participate actively). I know someone among you might be wondering or querying the reality of making farmers participate so actively in research and

extension; or the political, bureaucratic and institutional milieu not being favourably disposed to the practice. I ask - have you tried? Try first. I remember one instance vividly. Two years after President Bill Clinton's presidency in United States, there was a national TV programme which brought together Clinton and then incumbent President George W. Bush. Bush challenged him on one of his policies (aimed at emancipating the poor). The policy didn't quite work out, but Bush did nothing about the problem. Clinton replied by saying "I tried, but you did nothing". Most Americans applauded Clinton for the response. One legendary Reggae musician, Jimmy Cliff (in one of his very popular songs) encouraged us by singing "you can do it if you really want, but you must try and try and try and you will succeed at last". So we must TRY and agriculture shall succeed.

## **9.0 RECOMMENDATIONS**

### **9.1 Good governance, anti-corruption, tribalism, ethnicism, nepotism and religiosity**

Mr. Vice Chancellor Sir, all Nigerians must do everything possible to ensure responsive, responsible, accountable, honest, transparent, competent, tribalism nepotism-free and incorruptible governance at all levels (Local, State and Federal and private). Only Nigerians can do this for themselves and should not expect any external entity to come to our aid. All senior public officials, political appointees, elected officials should be counseled on the need for incorruptibility, honesty and accountability. There may be need for psychiatric and psychological

testing and evaluation before senior public and political office holders assume office to be sure their “minds” are “right”. This should be done at all levels of government, ministries, agencies, parastatals and institutions. The level of corruption everywhere in Nigeria calls to question the psychiatric state of our officials. If the challenge of corruption is solved, there would be a trickle-down effect on all other sectors of Nigerian economy. With the “right” and competent people in charge, all sectors shall be “right”. There may also be a need to rework, review, and edit the Nigerian political, administrative, and governance system and structure to bring out the best.

### **9.2 Institutionalization of participatory agricultural research (PAR) process**

All institutions in the National Agricultural Research System (Agricultural Research Institutes, Faculties of Agriculture and Universities of Agriculture) should establish Units (within existing Centers, Directorates, Faculties, Colleges) to oversee and ensure working mechanisms for PAR. Such Unit may also be directly under the Executive Director or Vice Chancellor's Office or as the case may be. The model I proposed in section 4.2 and Figure 2 may be adopted or adapted.

### **9.3 Institutionalization of participatory agricultural extension (PAE) process**

There is a need to institutionalize the PAE process in Agricultural Development Programmes (Extension Sub-Programme). All public and private agencies or institutions involved in extension service should also establish a Unit to oversee and ensure PAE. The model I proposed in Section 5.3 and Figure 3 may also be adopted or adapted. The capacity of all stakeholders in the PAE process should be enhanced to be able to participate effectively. Many of the stakeholders pretend to use the PARE approach, but its only lip service and are not honest about it, hence there is a strong need for the institutionalization of the approach in our agricultural research and extension organizations.

#### **9.4 Funding of participatory agricultural research and extension (PARE) process**

PARE is costly, but the ultimate benefits far outweigh the costs. Hence, special funds through special budgetary provision should be set aside for the stakeholders (researchers and extension organizations and workers) and Units established to oversee PARE in all concerned organizations. Adequate funding of agricultural research, especially those that are based on PAR approach, is a necessity for effectiveness.

#### **9.5 Sourcing for funds for extension service locally**

Management of ADPs should set up a committee which will plan and structure out modalities for sourcing and generating funds from identified and willing organizations, wealthy citizens (non-farmers,

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individuals, small and large scale farmers, local government councils and multinationals (agro-allied, agro-based, multinational companies) for servicing extension service. A Board of Trustee of the funds so generated, which will include representatives of the local donors, should be established. Regular training of the donor-organizations and other local donors on how to be more effective and efficient on capacity building, income-generating activities and recruitment of more members (especially for farmers' organizations, non-governmental organizations, community based associations, religious organizations, etc) should be organized. With more members and more income, their capacity to counterpart-fund extension will be sustained.

### **9.6 Motivation of researchers, extension agents and farmers.**

Researchers and extension workers need to be well motivated to perform efficiently. Funds should be provided to cater for operational costs, creating enabling environment, right working conditions, equipments and motivation of the researchers and extension workers. The salaries of the workers should be reviewed periodically and increased as appropriate.

In case of farmers, government should address problems such as inadequate land availability, difficulty in accessing loan and credit facilities, inadequate inputs availability and subsidies, poor veterinary services, difficult access to mechanization inputs (tractors and other equipments).

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### **9.7 Need for regular training of researchers and extension workers on PARE**

PARE require institutionalized regular training for researchers and extension workers to be effective. The regular special training should be organized on the intricacies and changing trends in PARE. The training may be conducted locally with resource persons from within the country or beyond. All agricultural researchers should be trained and encouraged to make use of participatory research methods in their research activities so as to achieve effective research and capacity building that could enhance adoption of technologies and increase agricultural production in the country. The same is applicable to extension workers.

### **9.8 Ban Quacks/Pseudos Working as Agricultural Extension Officers**

There are so many quack and pseudo agricultural extension personnel. They should be banned, while qualified graduates who have chosen to study agricultural extension must be employed. It is time for professionalization of agricultural extension and advisory services.

### **9.9 Adequate funding of education at all levels**

Education is the bedrock of all developments and development efforts. This requires consistent adequate funding. Government should adequately fund education at all levels (primary, secondary and tertiary). However, there should be effective process put in place to ensure such funds are not misappropriated. Budgetary provision for education



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should not be less than the 26% of annual budget which UNESCO prescribes. Adequate funding of education will positively affect research, extension and other development activities and initiatives.

### **9.10 Need for concerted effort on rural development**

The crux of agricultural production is based in the rural areas. The rural agrarian areas are terribly underdeveloped (Plates B1, B2). If we want people and our youths to farm and remain in farming, the *place of farming* (rural areas) must be provided with simple and basic social and infrastructural amenities. These include portable water supply, electricity, good road networks, security, educational facilities (at least primary school) and primary health care. This will also encourage agricultural extension workers to accept postings and stay in such rural areas. The local government councils should be empowered to function in some of these areas. Nigeria has the wherewithal to do it.



**Plate B1: Poor Rural infrastructure (No water, bad road)**

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**Plate B2: Rural Infrastructure Decay**

### **9.11 Youth development, making school agricultural science and agricultural extension profession attractive**

Youth development programmes in schools, such as the Young Farmers' and 4-H (Head, Heart, Hands, Health) and Agricultural Science Clubs should be resuscitated. Agricultural Science as subject in schools should be made more attractive, with farms mechanized and laboratories adequately equipped. School farms should not be used as site for inflicting punishment on students. *Students' attitude towards agriculture as a career and their willingness to practice agriculture (which is poor) may be improved if school farms are mechanized and school career guidance and counseling intensified. Basic infrastructures and amenities should be provided in the rural agrarian*

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*areas. Others are subsidized inputs, loans and credit access to farmers. These will encourage the students.*

### **9.12 Motivation of community development associations (CDAs)**

Due to the noble and remarkable roles played by community based associations, such as physical, social and infrastructural development of the community, social stability and prevention of crime in the communities, among others, Local and State government should identify and accord formal recognition and publicity to deserving CBAs. This will encourage them to continue to perform, and also make others to emulate them. CDAs, if well motivated, may also be a veritable tool in mobilizing people to participate in PARE.

### **10.0 ACKNOWLEDGEMENTS**

Mr. Vice Chancellor Sir, I give all glory, honour, adoration, and thanks to God Almighty for where He has taken me and the journey of my life so far. All I am now is by His Grace. I am from a humble background. My father was an ordinary agriculture civil servant and my mother a retired school teacher. My parents could only train me up to secondary school level. Financially, it was difficult to assist me further. But after secondary school, with God's goodness and mercy, I have been fortunate to enjoy Federal (Nigeria) and Illinois State (USA) governments' scholarships to train up to doctoral level. Probably, I would have been a downtrodden semi-literate now. So, I owe God the first acknowledgement. I deeply acknowledge my parents, Late Pa Kikelomo

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Apantaku and Mama Oluremi Apantaku for laying a solid educational foundation for me.

I am sincerely grateful to the two Vice Chancellors I worked with when I was Dean. They are Prof. Olaiya Balogun and Prof. O. B. Oyewole. Prof. Balogun has been kind to me personally, and challenged me to perform and achieve even beyond my expectation. Prof. Oyewole and our current Vice Chancellor, Prof. F.K. Salako have been pillars of support. I learnt more about different leadership styles under these three great men. Thank you very much and may God continue to bless you. I also acknowledge with gratitude the person of Professor Nurudeen Adedipe, the Vice Chancellor when I was appointed. He and Late Prof. A.G. Onibokun (my brother in-law) encouraged me to return to Nigeria from USA and facilitated my appointment at FUNAAB.

I started my academic career as a Federal Education Officer/Lecturer VIII at Federal College of Education at Isale-Igbein, Abeokuta, and before we moved to the permanent site at Osiele. I appreciate the Provost then, Alhaji Gani Belo for helping me to discover I could achieve and perform even in the face of hardships and seemingly impossibilities. That instinct which he sowed in me had been with me till today. I was transferred from FCE, Osiele to F.C.E (Special), Oyo as the foundation lecturer and Head of Department of Agriculture. Prof. Clem Bakare, who was the Provost, was a mentor and encouraged and assisted me to seek Federal Scholarship to study in United States. I thank you very much sir. To the glory of God, I won the scholarship to study at the great

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Southern Illinois University, at Carbondale (*Salukis*). I was fortunate to meet compassionate and non-discriminating white Professors. They include Professors James Legacy (my Masters and Ph.D major supervisor), Tom Stitt, Bill Gooch and Fred Reneau. Prof. Legacy ensured that I was awarded the Illinois Graduate Scholarship and appointed as Ag-Resource Person i/c Ag-Resource Unit of our Department. The scholarship and appointment were competitive. I emerged the best, but some racist elements within the department (in a 99% “*white*” dominated University) were to block both goodies, but he insisted. I owe them a debt of gratitude. I will also like to acknowledge my lecturers at the University of Nigeria, Nsukka, for giving me a solid foundation in academics. They are Professors S.O. Olaitan, J.U. Okorie, N.O. Agusiobo, SCOA Ezeji, T. Mba (Mrs), and N. Oyolu.

I appreciate and acknowledge the support of all my colleagues in the College of Agricultural Management and Rural Development (COLAMRUD). I thank the patriarch of the College, Prof. Bola Okuneye (who was my Dean at assumption of duty). Others are present and past Deans: Prof. Wale Dipeolu and Prof. Mrs. Bolanle Akeredolu-Ale; the Deputy Dean, Dr. R.Oyeyinka, my HOD, Prof. Eniola Fabusoro; and my friends and close confidants - Prof. Akin Omotayo, Prof. M.T. Ajayi, Dr. K.K. Bolarinwa, Dr. Mubo Awotunde, Prof. Siaka Momoh, Prof. O.J. Ladebo, Prof. Gbenga Fakoya, Prof. Kola Adebayo, Prof. Comfort Sodiya, Prof. (Mrs) O.R. Ashimolowo, Dr. O.A. Lawal-Adebowale, Dr C. Alarima, Dr. A.K. Aromolaran and Dr. Samson

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Ayansina. Most of them are also my research collaborators.

I owe my other colleagues and staff in the Department of Agricultural Extension and Rural Development a huge debt of appreciation. All of them are my research collaborators and personal friends. Special mention goes to Dr. O. Oyekunle, Dr. (Mrs.) P.B. Abdulsalam-Saghir, Dr. A.K. Aromolaran, Dr. S.O. Adegun, Dr. Mrs. O.A. Adeyeye, Dr. (Mrs.) O.O. Arowolo, Prof. T.O.A Banmeke, Prof. Mrs. M. Adegbite and Dr. (Mrs.) C.O. Adamu.

During my two-term tenor as Dean, I enjoyed and appreciate the tremendous support of the two Deputy Deans with whom I worked. They are Prof. I.A. Ayinde and Prof. A.M. Shittu. They were strong pillars of support and made administration of the College easy for me. All the Heads of Departments and College Officers that worked with me were fantastic and cooperative. Thanks to all staff of the Dean's office; and Mr. Jerry Onimisi (Senior Computer Technologist of Agricultural Economics and Farm Management). I am grateful for the sheer love and great attitude to work of all COLAMRUD members of staff (teaching and non-teaching). You all related to me as members of the same family.

I thank the Chairman (Dr. A. Oni) and members of ASUU-UNAAB; all my NAAT, NASU and SSANU friends; and Chairman (Prof. O. Smith) and members of Publication Committee, as well as the Editorial Board. I am indebted to members of St. Charles Grammar School Osogbo Old

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Boys Association (Charleans); Ijesha Sports Club, Ilesa, and Nigerian Forum for Agricultural Advisory Services (NIFAAS), African Forum for Agricultural Advisory Service (AFAAS) and Global Forum for Rural Advisory Services (GFRAS) for their support. I acknowledge all my past undergraduate and postgraduate project students for their support, positive attitude to work and scholarly followership.

I have collaborated with some foreign and local universities in research and as external examiner. I acknowledge and appreciate them for recognition accorded me. They include Northwestern University, Mafikeng Campus, Mbabatho, South Africa, University of Fort Hare, Alice, Eastern Cape, South Africa. I appreciate Prof. Tabukeli Ruhiiga of Northwestern University; and Prof. Aminur Rahim and Dr. SGF Yusuf of University Fort Hare in this wise. I recognize and thank my colleagues at Kogi State University, Anyibga (Agric. Economics and Extension Dept.) and Osun State University (College of Agric. Sciences, Ejigbo) for their words of encouragement.

I recognize the founder (Late Prof. Adepoju Onibokun) and all associate researchers of Center for African Settlement Studies and Development (CASSAD) for the opportunity and exposure to national and international development research. The research collaboration between CASSAD and United Nations Drug Control Programme (UNDCP) gave me a head start in research. I am also grateful to my cousin – Prof. Mrs. Yemi Onibokun for her encouragement.

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I thank my friends in FUNAAB – Professors Goke Bodunde, Late M.O Adedire, O.B. Kehinde, M. Ataiyese, Tope Popoola, O.M. Arigbede, E.S.A. Ajisegiri, J.K Adewumi, Binjo Adeofun, S.A. Oluwalana, Dr. Olusola Talabi (former Director, Health Services) and Dr. A. O. Amusan (Ag. Director, Health Center) among many others. I appreciate Prof. Remi Famiwole (Ekiti State University) and Dr. Ndubisi Amadi (Rivers State University of S.T) for their encouragement. I encouraged by your friendship and prayers. I recognize members of my neighbourhood (Gbonogun Central and Elite Estate Landlords Association).

I am eternally grateful to the Redeemed Christian Church of God (RCCG) Apapa and Jesus Embassy families and Kings Zone in Ogun State for their prayers. Special recognition goes to my first Pastor (Niyi Olaosebikan), Pastor i/c of Jesus Consulate Zone (Wole Oyenekan), Pastor i/c Jesus Planet Area (Julius Adeyemi), and all the Pastors, ministers, workers and members of RCCG Jesus Planet, Abeokuta. I thank my present Pastors - D. Atogolo and P. Aderounmu.

My work and activities were made easier due to the love, care, support and prayers of my dear wife and best friend - Dr. Mrs. Fadeke Sola Apantaku, and my darling, great and lovely children – Olumide, Ifeoluwa, Temiloluwa and Omolola. For my wife, it was not an easy task combining home-keeping with professional academic work. May God continue to love and stand by you all. I am greatly indebted and grateful



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