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Inaugural Lecture Series 44

# UNDERSTANDING SMALL FARMER ADOPTION BEHAVIOUR: THE NIGERIAN EXPERIENCE

by J. ADE. ALAO



UNIVERSITY OF IFE PRESS

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**An Inaugural Lecture delivered at the University of Ife on January 24, 1980**

Inaugural Lecture Series 44

**University of Ife Press. Ile-Ife. Nigeria**


Printed Offset by Bosude Printers Limited, SW8/910, Bateye Street, Oke-Ado, Ibadan.

About eighty years ago, Gabriel Tarde, and eminent rural sociologist, who devoted most of his intellectual career to the study of the spread of new ideas from whatever source to their ultimate users, once said:

> Our problem is to learn why given one hundred innovations conceived at the same time- innovations in the form of words, in mythological ideas, in industrial processes, in agriculture etc., ten will spread abroad, while ninety will be forgotten.

This statement is as pertinent today as it was then. In order to find answers to this and similar questions, an increasing number of rural sociologists in many countries of the world have continued to expand the frontiers of knowledge in this field. The overall objectives of this lecture is to share with you our understanding of this problem as it relates to Nigerian agricultural development. The specific objectives are:

(a) To introduce you briefly to the subject matter of rural sociology, its development to the present time and its role and importance in agricultural and rural development.

(b) To intimate you with some of the highlights of the empirical research findings on the adoption behaviour of Nigerian farmers.

(c) To discuss the gap between knowledge and application of research results in the subject matter area of Rural Sociology and on farmers fields.

(d) To draw policy implications and make recommendation for greater impact of the discipline on Nigeria's agricultural and rural development.

## I WHAT IS RURAL SOCIOLOGY?

Landis reported that in 1937, a group of leading rural sociologists began a study to learn the outstanding contributions of rural sociological research and to formulate the most fruitful direction of research for the future. The group came up with the following definition of rural sociology:

> "Rural Sociology is the study of all forms of human association, the factors influencing the origin, development, structure and functioning of these forms and their cultural products in the rural enviornment".

All sociology is a unity. There are many branches of it, such as Applied Sociology, Medical Sociology, Political Sociology, Industrial Sociology and Rural Sociology. The fundamental facts and principles apply generally. But some sociologists study social phenomena that are present only in, or are largely confined to the rural environment, to groups of person who live in rural communities and who engage predominantly in, or whose life activities centre around agricultural occupations. Such sociological facts and principles as derived from rural social relations are referred to as Rural Sociology or simply the Sociology of Rural Life. It is the only branch of Sociology that has clearly mapped out for itself this distinctive area of intellectual endeavour.

## II. DEVELOPMENT OF RURAL SOCIOLOGY OVERSEAS

The initial efforts made at crystalising rural sociology as a specialist field of study started in the United States in the first decade of this century. According to Capener (1975), the discipline or rural sociology was born in a setting and time when rural to-urban migration was dominant. It started with nation-wide sample of village centred communities initiated by Brunner *et al.* in order to identify the social problems of the rural communities and to persuade government to give them attention. This led to the appointment of a Rural Life Commission by President Roosevelt under which funds,



men and materials were provided for the rapid modernisation of rural areas. Concurrent with this move was the rapid development of rural sociology as an academic discipline in many American Universities. In Europe, although there was old traditional interest in the problem of rural organisation, rural sociology did not actually make a start until after World War II (Kotter 1967).

In West Africa, particularly in the former British colonies, the development could be broken into two distinct eras: the colonial and the post-colonial. The colonial era was characterized mainly by individual sporadic research efforts that had a rural sociological component. With the advent of University education in Nigeria in 1948, Regional Research Institutes, among which was the West African Institute for Social and Economic Research, were set up in close association with the University Colleges. But the regional institutes were dissolved when Ghana became independent and the West African Institute for Social and Economic Research became the Nigerian Institute for Social and Economic Research. This was the first institutional base for conducting rural sociological studies. The early studies included village and Farm Surveys and investigations into land tenure problems.

Among the pioneer scholars who have made significant contribution to foundations of research in rural sociology in West Africa, (they were known at the time as social anthropologists, economists or simply social scientists) is N.A. Fadipe who has been aptly described by Akiwowo (1975) as the Father of Sociology in West Africa; he in 1939 completed a one-thousand page manuscript for his Ph.D thesis on *The Sociology of the Yoruba.* This was later published posthumously on his behalf by F.O. Okediji and O.O. Okediji both renowned names in Sociology. Daryll Forde edited a series of ethonographic surveys of Africa from a grant made by the Secretary of State under the Colonial Development and Welfar Acts. These were published in several parts. Part III of this was an 80-page document on *The Ibo and Ibibio-speaking Peoples of South-Eastern Nigeria.* Part IV of it was an over-a-hundred-page document on the *Yoruba Speaking Peoples of South-Western*

*Nigeria*. Both were published in 1951. Peter Lloyd's studies include "The Integration of the New Economic Classes in the Local Government in Western Nigeria". (1953). *The Yoruba Land Law* (1962) and *Africa in Social Change* (1967).

The work of Prothero includes "Land Use at Soba, Zaria Province, Northern Nigeria" (1957), and "Migratory Labour from North Western Nigeria" which was a study of men who seek employment away from home during agricultural slack periods of the year. Baldwin (1958) wrote his book on the *Niger Agricultural Project* which was an evaluation of the early planned programmes of change in agriculture.

Galleti, Baldwin and Dinna (1956) studied the *Nigerian Cocoa Farmers*. The first avaialble research work on voluntary associations in West Africa was written by Kenneth Little in 1957. Between 1949 and 1957, C.W. Roling had carried out extensive studies on Land Tenure in Nigeria on a provincial basis covering, Kano, Plateau, Ondo and Ijebu provinces of Nigeria.

## III DEVELOPMENT OF RURAL SOCIOLOGY AS AN ACADEMIC DISCIPLINE IN NIGERIA

The last two decades marked the beginning of increased emphasis on the study of rural sociology in Nigeria. At the University of Ibadan, the first course in Rural Sociology in the Faculty of Agriculture started in the 1962/63 academic session, within the department of Agricultural Economics (known at that time as the Department of Agricultural Organisation). It has remained under the aegis of Agricultural Economics at the University of Ibadan until about three years ago, when a separate Department of Agricultural Extension Services was established. The Rural Sociology courses were taken over by this new department. At Ahmadu Bello University, Zaria and University of Nigeria, Nsukka, rural sociology is housed within Agriculture Economics.

In October 1966, with the departmentalisation of the Faculty of Agriculture in the University of Ife, a new department of Extension Education and Rural Sociology was established



as one of the five departments in the Faculty of Agriculture. It is the first department of its kind in Africa. Thanks to the foresight and the noble ideas of our founding fathers who conceived and brought it to fruition. It is this timely act which provided the impetus for the teaching and research of Rural Sociology in this University.

In spite of the serious limitation of inadequate funding and understaffing, the department has made modest but significant contributions to the field of Rural Sociology, in research, teaching and public service. Between 1966 and now, the few staff members of the department,--the maximum has been six at any one time--past and present have put out over a hundred research publications and monographs. Through the establishment of the Isoya Integrated Rural Development Project, the department has assisted the Faculty of Agriculture in translating research results in the technical subject matter areas of agriculture to farmers for adoption. Our introductory course attracts students from almost every faculty in the University because of the realisation that knowledge of rural sociology is indispensable to anyone in any field of learning that has regular contacts with rural people. In the new five-year programme in the Faculty of Agriculture, there is a Rural Sociology and Extension track that makes it possible for some of the Agricultural students to specialise in this important field.

The department's post-graduate programme offers M.Sc. and M.Phil. in the combined fields of Extension Education and Rural Sociology and a Ph.D. programme is possible in either Extension Education or in Rural Sociology. It is the first among the few departments in Africa that offers post-graduate degree programmes at these three levels in the field of Extension Education and Rural Sociology.

## IV THE IMPORTANCE OF RURAL SOCIOLOGY IN AGRICULTURAL AND RURAL DEVELOPMENT IN NIGERIA

The intellectual perspective of Rural Sociology focusses on rural communities and rural people who constitute about 80 percent of the population of Nigeria, according to the 1963

census. Although the proportion of the rural population might have gone down in recent years, the absolute number of rural inhabitants is greater now than ever before. If Nigeria is to plan effectively for the modernisation of her agriculture and of the rural communities, an understanding of the organisation of these rural communities, their structure, social relationships, forms of associations and interaction patterns, social values, and norms, family organisations is a *sine-qua-non* if we are to march forward together to achieve economic and social progress.

In the field of agricultural development, if we are to achieve self sufficiency in the production of food and fibre, we must seek to understand the farmer and his social environment and determine those factors which may influence the adoption of agricultural innovations on crops, livestock, forestry and fisheries etc. so as to be able to manipulate the factors for maximum advantage to the farmer and to the country as a whole.

The last two decades of course have seen a rapid exodus of rural youths and young adults to the urban centres with attendant consequences such as the:

(a) reduction in annual output of both food and cash crops

(b) continued deterioration of rural roads and rural communities;

(c) increased slums of unemployed and unemployables that have swelled the population of our towns and cities etc.

If we are to stem and contain the rural-urban drift, we need to study the factors that are associated with it.

All the above form a proper subject matter of study for rural sociology. Therefore, training in the discipline of rural sociology is important to agriculturists, lawyers, pharmacists, teachers, engineers, demographers and politicians.



## V HIGHLIGHTS OF RESEARCH FINDINGS ON ADOPTION BEHAVIOUR OF FARMERS

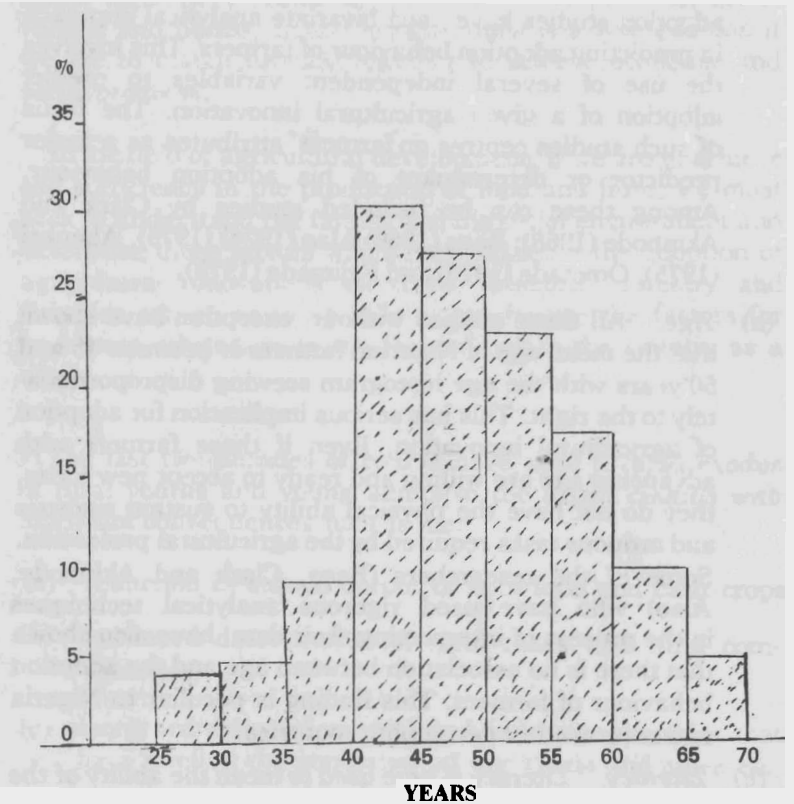
I shall devote the next few pages on the highlights of our research findings on the adoption behaviour of Nigerian farmers.

1. **Farmers' Attributes:** An overwhelming proportion of adoption studies have used bivariate analytical approach in predicting adoption behaviour of farmers. This involves the use of several independent variables to predict adoption of a given agricultural innovation. The focus of such studies centres on farmers' attributes as a major predictor or determinant of his adoption behaviour. Among these can be included studies by Clark and Akinbode (1968); Basu (1969) Alao (1974) (1975), Ahonkai (1975), Omotade (1976) and Fajimade (1979).

(a) *Age:* All these studies without exception have shown that the mean age of Nigerian farmers is between 45 and 50 years with the age histogram scewing disproportionately to the right. This has serious implication for adoption of agricultural innovation. Even if these farmers with advancing age are willing and ready to accept new ideas, they do not have the physical ability to sustain rigorous and arduous tasks required by the agricultural profession. Some of the researchers (Basu, Clark and Akinbode, Alao) who have used rigorous analytical techniques in the process of interpreting their data, have also shown that there is no association between age and the adoption behaviour of farmers. This finding is peculiar to Nigeria and several other developing countries.

(b) *Literacy:* Literacy is here used to mean the ability of the farmer to read and write in any language. When they are all summed together, a relatively high percentage (40 percent) of our farmers are able to read in and/or write at least one of the Nigerian languages, Arabic, Hausa, Yoruba, Igbo, Edo, Urhobo, etc. Most of these studies except that of Clark and Akinbode showed a positive but indirect association between literacy and

FIG. 1: AGE HISTOGRAM OF NIGERIAN FARMERS






adoption of innovations. This is as it should be since a good proportion of the innovations put out to farmers are announced in poster, agricultural newsletters and in some other forms of written word. It has also been shown that some of them who are not literate can understand a display of instructions by line diagrams.

(c) *Education:* It is self-evident that a high proportion of our farmers have not been exposed to formal education. In any case, neither in this country nor in many other countries have research studies on adoption and diffusion of innovations established any relationship between farmers' formal schooling and adoption of innovations. Where such a relationship has been established (Coughenour 1960), it was through a set of intervening variables.

(d) *Family Size:* This is defined here to include both the number of wives and the absolute number of children that are available to contribute to farm labour. Some others have simply referred to this as family labour Alao (1971) and Omotade (1976). The size of the family in this sence has positive relationship with adoption of innovations by farmers.

(e) *Social Participation:* Nigerian farmers who participate actively in the life of the communities through membership in and leadership of social organisations such as farmers' cooperatives, thrift and credit societies, village improvement unions are found to adopt more agricultural innovations than those who do not. The position is supported from research findings of Clark and Akinbode (1968), Alao (1971) Ahonkai (1975), Omotade (1976) and Adetunji (1979).

(f) *Mass Media Exposure:* Mass media exposure for a farmer was indexed by his access to and use of various mass media such as radio, rediffusion, agricultural newsletter, newspapers and television, and invariably in that relative order of importance (Alao, 1971). All the studies so far conducted in Nigeria have shown a positive strong

relationship between adoption of innovations and mass-media exposure by farmers. I must point out however that the media constitute a predisposing factor to farmers' adoption only to the extent that the media carry agriculturally relevant information treated in the way that could be understood by farmers.

(g) *Extension Contacts:* One of the most important institutions created to serve the needs of farmers is the Agricultural Extension Service. The main function of this institution is to serve as a linkage between research agencies and the farmers. The professional members of staff of such an institution should have enough technical competence to be able to comprehend the research activities of their counterparts in the Research Stations; translate the technical research reports into a form that could be understood by farmers; and then convey the message to the farmers through appropriate and effective channels of communication.

In spite of the relatively small ratio of trained extension staff to farmers in Nigera which is estimated at 1:5000 farm families, the extension agents are the most important source of information to farmers on agricultural innovations, irrespective of the stage the farmer is in the adoption process. Research carried out by several individuals, at various places and at different times in Nigeria have repeatedly confirmed the dominant importance of extension agents as a primary source of information to farmers on agricultural innovation (William 1969, Alao 1971). This finding is significant in the sense that it contradicts what was found in adoption studies in other countries. This is that the relative importance of sources of information varies depending upon the stages of adoption. For instance, at the awareness stage, the mass-media are theoretically supposed to be the most important source of information to farmers followed by friends and neighbours, extension agents and salesmen and commercial sources in that order of importance. This finding emphasizes the importance of extension staff contact with farmers for rapid



adoption of agricultural innovations. Thus there is a peculiar situation in Nigeria which may be attributed to the limited ability of the farmers to read and write, the non-availability of written materials on agricultural innovations and the awkward times of the day when farmers radio programmes are slotted which makes it impossible for farmers to listen to these programmes.

## 2. Stages of Adoption Process

Traditions of adoption research have conceptually categorised the adoption process into stages. These stages vary from three to six depending on the author. "There is no complete agreement among rural sociologists as to the number of stages in the adoption process, although there is general concensus on the existence of stages, and that adoption is seldom an 'impulse' decision (Rogers, 1962-80). Ryan and Gross (1943) and Wilkening (1953) utilised four stages of adoption - these are:

(i) awareness
(ii) conviction
(iii) trial acceptance and
(iv) complete adoption

In 1954, the North Central Rural Sociological Committee in the United States, after an extensive review of research literature described five stages of adoption. Beal *et al.*, (1957) Copp *et al.*, (1958) also utilised five stages in their research. Later studies by Wilkening (1956) and by Oeser (1958) utilised only three stages while Lawidge and Steiner (1961) postulated six stages.

In Nigera, research effort to purposefully identify stages in the adoption process has been minimal. I personally believe that it is futile in our own country's stage of development to enter into unending intellectual controversy which does not yield positive results to the farmer. Even though we have not gone out purposely to determine the stages in Nigeria, the by-product of other studies has revealed that Nigerian farmers can identify at least three stages in the adoption process

These are:

(i) awareness
(ii) trial
(iii) adoption

My study on the diffusion of poultry farming in Western Nigeria, (1975) which was replicated in Bendel State the same year by one of my students using identical research instruments, demonstrated clearly that the farmers are able to distinguish clearly between the time they first heard of a particular innovation and the time they adopted the innovation, whether on trial basis or on complete adoption.

From these two studies, three other very important results emerged. The first is that there is a gap of 3-4 years from the inital awareness by farmers (in the case of poultry farming) and the final adoption. This is what is referred to in rural sociological literature as the 'adoption period' that is the length of time it takes an average farmer from hearing about a new agricultural practice and his final adoption. We recognise that the adoption period varies from one innovation to the other depending on the characteristics of the innovation, and from country to country depending on the social-cultural and economic context of the country. The second important result is the finding that there is a maximum adoption year. This is the year when the highest number of farmers adopted the innovation throughout the life of the innovation. This peak year did not occur until ten years after farmers started adoption of poultry farming. (See Fig. 1, Alao 1975). The third result derived from the theoretical notions of early sociologists with research perspective on the adoption and diffusion of innovations. Tarde (1903) first suggested that the adoption of new ideas followed a normal, S-shaped distribution over time (Rogers 1962:28). In the two studies mentioned above, our analysis included cummulative awareness and adoption curves by farmers over time, and it reaffirmed Tarde's eight decades old prediction. Adoption of innovations by farmers in Nigeria did follow a normal S-shaped distribution over time. (See Fig. 2 Alao 1975). From this figure, we can



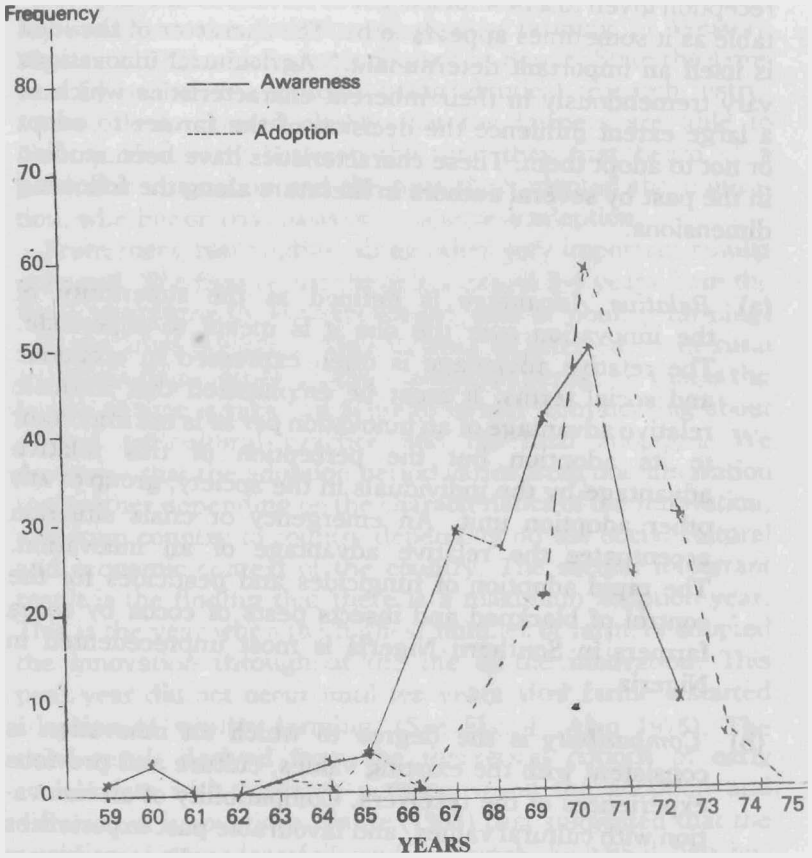
clearly trace the adoption period of any individual farmer and that it falls between theree to four years.

**3. Characteristic of Innovations:** Barnet (1953) writing *Innovation, The Basis for Cultural Change* posits that 'the reception given to a new idea is not so fortuitous and unpredictable as it sometimes appears to be. The character of the idea is itself an important determinant." Agricultural innovations vary tremendously in their inherent characteristics which to a large extent influence the decision of the farmer to adopt or not to adopt them. These characteristics have been studied in the past by several authors in literature along the following dimensions:

(a) *Relative Advantage* is defined as the superiority of the innovation over the one it is meant to supercede. The relative advantage is often expressed in economic and social terms. It must be emphasized that intrinsic relative advantage of an innovation *per se* is not important to its adoption but the perception of this relative advantage by the individuals in the society, group or any other adoption unit. An emergency or crisis situation accentuates the relative advantage of an innovation. The rapid adoption of fungicides and pesticides for the control of blackpod and insects pests of cocoa by cocoa farmers in Southern Nigeria is most unprecedented in Nigeria.

(b) *Compatiblity* is the degree to which an innovation is consistent with the existing values, culture and previous experiences of the receivers. Compatibility of an innovation with cultural values, and favourable past experiences of a farmer with previous innovations predisposes him to rapid adoption of a new one; whereas unfavourable experiences with previous inovations will certainly discourage farmers from trying a new one. Another dimension of compatibility is seen in Package Recommendations. There are new agricultural practices

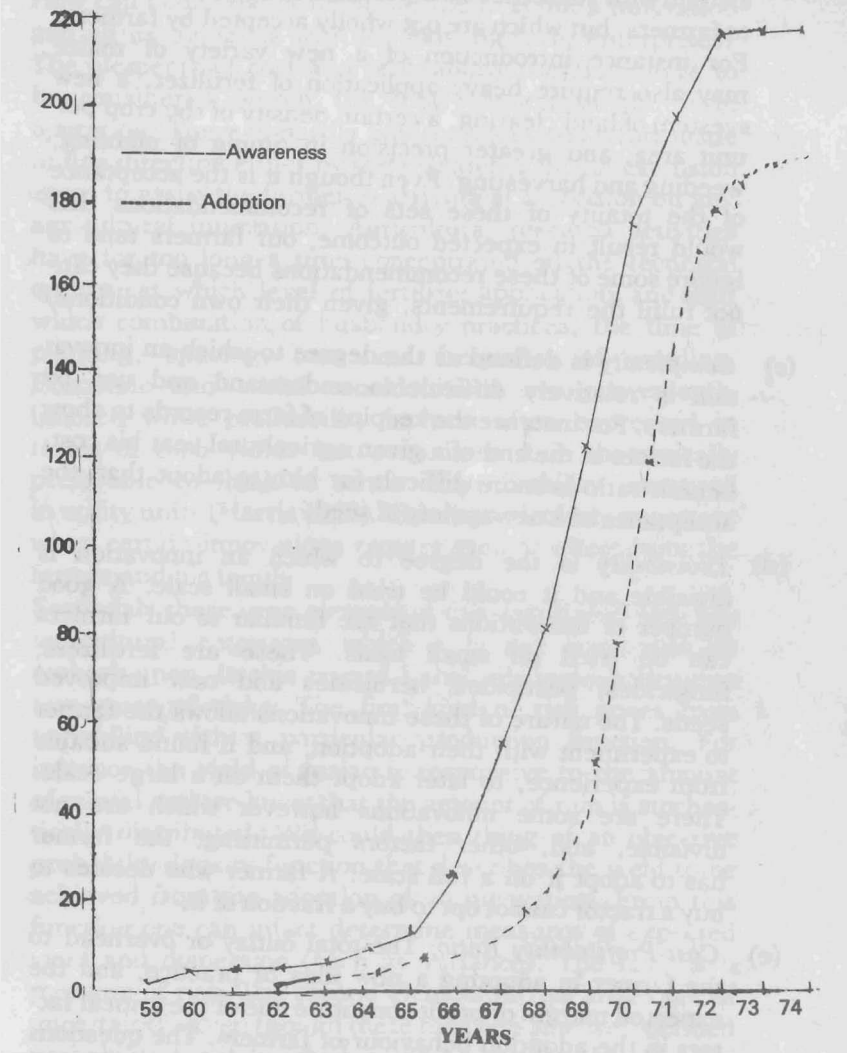
FIG. 2: ANNUAL RATE OF AWARENESS AND ADOPTION OF POULTRY FARMING IN EKITI DIVISIONS, ONDO STATE






Cummulative Frequency

figure 3: CUMMULATIVE RATE OF AWARENESS AND ADOPTION OF POULTRY FARMING IN EKITI DIVISION, ONDO STATE



which are to all intents and purposes internally consistent with the other in a package of recommendations to farmers, but which are not wholly accepted by farmers. For instance introduction of a new variety of maize may also require heavy application of fertilizer, a new syestem of land clearing, a certain density of the crop per unit area, and greater precision in timing of planting, weeding and harvesting. Even though it is the acceptance of the totality of these sets of recommendations that would result in expected outcome, our farmers tend to ignore some of these recommendations because they cannot fulfil the requirements, given their own conditions.

(c) *Complexity* is defined as the degree to which an innovation is relatively difficult to understand and use by farmers. For instance the keeping of farm records to show the farmer at the end of a given agricultural year his cost-benefit ratio is more difficult for him to adopt than the acceptance of a new variety of seed.

(d) *Divisibility* is the degree to which an innovation is divisible and it could be tried on small scale. A good number of innovations that are familiar to our farmers can be tried on small basis. These are fertilizers, fungicides, pesticides, herbicides and new improved seeds. The nature of these innovations allows the farmer to experiment with their adoption, and if found suitable from experience, to later adopt them on a large scale. There are some innovations however which are not divisible, and, other factors permitting, the farmer has to adopt it on a full scale. A farmer who decides to buy a tractor cannot opt to buy a fraction of it.

(e) *Cost-Profitability Ratio:* The total outlay or overhead to the farmer in adopting a new idea or practice, and the expected margin of profit constitute one of the critical factors in the adoption behaviour of farmers. The questions that come to the mind of the farmer after he has adjudged an innovation as potentially good are 'How much is it going to cost?' 'Is it going to result in substantial improvement in my economic and social well being?' How can I combine or integrate the in-coming innovation and all its demands with my existing farm enterprises? The elements of cost and profitability therefore have to be considered within the total context of the farm operation. There is hardly any conscientious effort made in this direction either by the researcher or the extension agent to assist the farmer in arriving at a decision on any agricultural innovation. Agricultural research activities have for too long a time concentrated on the technical optima: at which level of fertiliser application, and with which combination of husbandry practices, the time of planting, spacing, time and frequency of weeding. Economic and social considerations are conveniently ignored while profitability is most often expressed in terms of cash yields but sometimes it is theoretically preferable to think in terms of profitability measured in utility units (Harris 1969). This is particularly important when certain innovations require greater effort from the farmer and his family.

Secondaly there is an element of risk associated with any agricultural enterprise which a farmer may wish to embark upon. In this regard I shall distinguish between tow types of risks: The first kind of risk arises from variability with a particular production function. For instance the yield of maize is responsive to the amount of rainfal and we know that the amount of rain is stochastically distributed. We could then thing of an objective probabilty density function that describes the yield to be achieved from the adoption of an innovation. From this function one can infact determine measures of expected yield and dispersion (such as variance). The later is a measure of risk. The second element of risk arises out of uncertainty. Even though there may be some well defined probability function which could be used to describe the risk that is involved, the information about that probabi- element of uncertainty in the mind of any potential innovator about the nature of the true probability density

function. The perception and evaluation of this uncertainty risk by the individual adopter is an important determinant of innovativeness.

## 4. Community Structure and Adoption of Innovation

The first half of a century of research in the field of adoption of innovations has concentrated on individual level variables and attributes of the innovations themselves as recognised dimensions of study, and little attention was paid to structural and contextual factors (Harris 1967). Linton (1952), observed that if we know what a society's culture is, including its particular system of values and attitudes, we can predict with a fairly high degree of probability whether the bulk of its members will welcome or resist a particular innovation. Duncan, Burton and Kreitlow (1954) discovered among 38 rural neighbourhoods in Wisconsin that heterogeneous neighbourhoods (ethnic and religious) have significantly larger farm practice adoption score than homogenous neighbourhoods. Hoffer (1960) found that farm practice adoption rates were higher in communities favourable to change than those that were not; also the extension work was most effective when organisations in the community were used for educational purposes. Also, van de Ban (1960) in his study of the influence of locality groups on the adoption of new farm practices in 47 Wisconsin townships concluded that the social structure and culture of locality groups are the major factors influencing the adoption of new farm practices. He also observed that a farmer with a high level of education, on a large farm, and with high networth, but living in a low level adoption township adopted fewer new agricultural practices than he would have if he farmed and lived in high level adoption township. The differential rate in the level of adoption was attributed to religious differences. The low adoption townships had a population that were mainly of Calvanistic Dutch origin (82%) and are characterized by greater social isolation and strict information social norms. The high adoption townships had



a population that were Lutheran and are characterized by free individual action. All these empirical findings lend weight to Durkheim's (1933) who postulates in *Suicide* where he argued that individual or psychological variables do not alone explain the suicide rate in a society, but that the rate is determined by the social structure of the society. In his exposition on egoistic suicide,* he demonstrated with facts and figures that a cursory glance at European suicide map shows that in purely Catholic countries like Spain, Portugal, Italy, suicide is very little developed, while it is at its maximum in Protestant countries like Denmark and Prussia. When you observed the map of a given country and used the regions of the country as your unit of analysis, suicides are found to be in direct proportion to the number of Protestants and in inverse proportion to that of the Catholics. He showed that in Switzerland, Catholic cantons show four and five times fewer suicides than Protestants of whichever nationality.

In more recent times, Fliegel's study of Agricultural Innovations in Indian villages also showed that high adoption villages have the following characteristics: relatively high level of living; lack of factionalism and disputes; presence of formal social organisations; several religious structures; a diversity of religious tradition in the village; presence of a number of political parties and the presence of a number of voluntary organisations.

In Nigeria, Clark and Akinbode (1968) discovered that several village factors were found to have positive influences on the adoption of agricultural practices by farmers. The village have been free of major personal, political and tribal conflicts, and several tribes of peace-loving, agriculturally oriented people are present while levels of education, literacy and social amenities are above average and a high proportion of the village people participate in church activities, while there are farmer cooperatives that are actively and honestly operated as well as access roads and market facilities.

Using a more refined and more sophisticated research

*Emil Durkheims, *Suicide* pp.152-155

instruments, Alao (1971) selected sixty-five rural community items to construct Guttman scales which resolved the individual community attributes to three dimensions of community structure. These are structural differentiation, social solidarity and centrality. The largest scale was that of Social Differentiation scale which had in it 30 and 32 scale items for two points in time for 1960 and 1970 respectively. The study demonstrated concretely that community structure exerts contextual influence on all the other dimensions of explanatory variables in adoption study such as size of farm, innovation proneness, social participation, mass media exposure, cosmopolitism. Each of these dimensions were also indexed by a set of intercorrelating indices.

Factor analysis from the studies above showed that nine important individual level and community level factors are closely associated with adoption of innovations in Nigeria. These are:

(a) family size;
(b) social participation;
(c) literacy;
(d) community structure;
(e) innovation-proneness;
(f) farmer-extension agent contact;
(g) mass-media exposure;
(h) cosmopoliteness and
(i) participation in agriculturally relevant teaching and learning experiences.

A summary of our findings on adoption behaviour of Nigerian farmers can be expressed simply in the following four points:

1. A small cluster of individual factors and innovation characteristics are associated with adoption of innovations by Nigerian farmers;
2. Individual level variables alone is not adequate for the study of farmers adoption behaviour in Nigeria;
3. The social structure of farmers village communities explain a high variance of differences in adoption behaviour of farmers;



4. Some of the factors known to be associated with farmers adoption behaviour especially in the developed countries are not useful predictors of adoption of innovations by Nigeria farmers.

## VI THE GAP BETWEEN KNOWLEDGE AND APPLICATION

We have often been told that there is a widening gap betwen the current farm practices among Nigerian farmers on the one hand, and the available research results about what are possible as epitomised by numerous agricultural innovations contained in the publications emanating from our research institutes and the Universities. There is an apparent gap between the level of production of our farmers, and the production figures already achieved from the research stations. The agricultural scientists feel that farmers have only to seize the golden opportunity by adopting new varieties of crops and livestock, new farm practices, new tools and techniques and they could thus double or quadruple their production. Some of us, such as rural sociologists, agricultural extension teachers and administrators are not so optimistic. We do recognize of course that there is an apparent gap between research findings on experimental and research stations on the one hand, and the current practices on the farm level on the other. But we are also aware that a sizeable number of the research findings which account for the greater part of this perceived gap are not relevant to the social, economic, technological, cultural and the physical environment of the farmer. In a keynote address delivered by Professor Ajibola-Taylor, Director of I.A.R. & T., (1978) to the first National Workshop on the role of Agricultural extension and Research Liaison Services in improved technology transfer in agriculture, commented:

> Research in itself is valueless in a development context if it is not extended to the users. But let me hasten to say also that the 'extension' of half baked, ill-digested and inappropriate technology is even more harmful than no transfer.

Therefore any proposal for the rapid adoption by farmers of irrelevant innovations is to say the least pretentious, and is illusory in purpose and intent and should be given quiet repose on the pages of the papers where they have been published. I am yet to see an agricultural innovation which is socially desirable, culturally compatible and economically feasible to the majority of small African farmers which has laid wasting unadopted because of the conservative and lazy nature of the farmer. David Hopper (1962) also declared "I know of no country where highly productive and profitable technology that is tested, proven and made available to the cultivators, along with its requisites for use, and yet languishes unadopted because farmers are traditional." Again quoting from Professor Ajibola–Taylor's keynote address, and I am yet to see an entomologist, that I know him to be, put so succinctly the case in point:

> "Agricultural research, and Development in Nigeria since colonial times, .....had unwittingly regarded the Nigerian farmer as conservative and resistant to change. For many decades that theory was being sustained while the experiments on *Mucuna* green manures, ridging versus no ridging etc. were going on here on Moor Plantation...Even our early teachers repeated these notions to us, discrediting the age-old and time-tested views and practices of the Nigerian farmer. It has taken a few decades for us to learn that we (agricultural scientists) have something to learn from our farmers and that Nigerian farmers are no more conservative than the Irish, Scottish, (or American) farmers who would carefully weigh his options and balance them against his experiences of environment and his requirement and take decision on a rational and self-sustaining basis".

For a long time, the peasant African farmers have sustained the agricultural economy of their countries through their small scale production. In Nigeria, except for the last decade, agricultural exports constituted the greater bulk of the total exports and have contributed most to the foreign exchange earnings of the country. Also up to the outbreak of civil war



in the country in 1967 and the consequent disruption of food crop production, the rate of increase in food crop production had kept pace with the rate of increase in population (Oluwasanmi, 1966).

The lack of relevance to the farmer of agricultural research findings in this country stems from several factors:

First, is the failure of most agricultural scientists to start off their research from the level of the farmer. Many agricultural scientists find it difficult to adapt their research interests to the kinds of problems one encounters at the farm level. Admittedly, most of them as pioneers in their respective fields had their training wholly or in most part in advanced countries with centuries of agricultural research experience, advanced technology and agricultural overdevelopment. The tendency on the part of some of us on returning home is to wish to continue with the level of sophistication of research with which they had their Ph.D. degrees. There was a case of an African mycologist who was trained by his home University several years ago with facilities of electron microscope. When he returned to his country, there was not a single electron microscope, but he insisted that his institution should buy him one, failing which he could not consider undertaking any "worthless" research.

Second, I have no apologies to make when I say that some of my colleagues in the Faculty of Agriculture in this University and certainly in the Faculties of Agriculture of other Nigerian Universities are not familiar with the structure of a typical farmer's farm in the immediate environment of their institutions. The scientist is as distant to the farmer, who he (the scientist) claim to be benefiting by his research, as the moon is from the earth. This is why Professor Ajibola-Taylor made a passionate plea about two years ago that:

> Our (agricultural) scientists should not be farmer-shy, they should draw farmers into their trial processes early, so that with them they can observe experience and even experiment together .

Lack of relevance also comes about because a substantial proportion of the research studies are conceived and executed

outside the context of the farmers' social, economic and cultural realities. Most recommendations do not take into consideration the technical competencies of the farmer, his economic conditions, which loom large in his decision to adopt or not, and the level of economic risk of the innovation.

In calling for intellectual relevance, Oluwasanmi (1971) entreated the young men and women who had just earned their Ph.D. degrees in agricultural sciences that "you should have your head in the ivory tower, but your two feet must be firmly rooted in the farmers' farms."

Third, many agricultural research stations do not have social anthropologists and extension specialists on their establishment - who have the necessary competencies to understake studies of socio-economic and cultural factors that may influence the adoption of an agricultural innovation by farmers and can also communicate the research results to the farmer in the language the farmer will understand. In most cases, there is no direct linkage between research and the farmer. Where Agricultural extension services exist, there may be no formal or informal cooperation and coordination of the activities of research and extension services which would have resulted in mutal advantage to each organisation.

Fourth, most of the research information already generated in the field of Rural Sociology on community structure, social organisations, factors influencing adoption of innovations by farmers' social action process etc., have not yet been applied on a wide scale to enhance the effective planning, execution and evaluation of agricultural and rural development programmes being carried out by the various ministries of Agriculture and Rural Development in the Federation. This is due to the tendency to underrate the sociological imperatives of a rural development programme. Many of the government agricultural development programmes and other crash programmes have crashed due to the extenuation of social, economic and cultural factors,which if considered would have ensured the success of the programmes.



## VII POLICY IMPLICATIONS AND RECOMMENDATIONS

The exposition on our research findings and problems already discussed calls for policy guidelines and concrete recommendations, and I am making the following:

1. In view of the agening farming population in the country, it would be illusory to think that the salvation of Nigeria in achieving self-sufficiency in food and fibre to satisfy the needs of our ever growing population will depend on the present generation of farmers - irrespective of their innovation proneness. Therefore, policy must be geared towards enticing young literate and educated Nigerians into farming so that the Nation's objective of self-sufficiency in food may be realisable in another decade.
2. The existing departments of Rural Sociology in those Universities with Faculties of Agriculture should be rapidly strengthened by encouraging young Nigerians to specialise in Rural Sociology both at undergraduate and graduate levels. This should be done along several demensions:
   (a) increase in the number of course offerings in the degree programme;
   (b) provision of scholarships for the study of Rural Sociology:
   (c) declaration of Rural Sociology as a priority area of need for the country;
   (d) incorporation of an introductory course in Rural Sociology in all colleges of education, colleges of technology and polytechnics.
3. Agricultural researchers in our research institutes and in institutions of higher learning should be organized into integrated teams for the most effective development of agricultural innovations meant for farmers' adoption. An integrated research team working on any foodcrop for instance should include a breeder, an agronomists, a rural sociologist, an economist, an entomologist, an extension specialist and a home economist.

4. Adequate financial provisions must be made for the dissemination of Rural Sociology research results to the professional staff members of the Federal and State Ministries of Agriculture. This could be achieved through workshops, short in-service training programmes, and seminars.

5. Essential services for the rapid modernisation of agriculture should be provided. These include provision of all season roads not only to the rural communities but also to the farmers' farms, adequate and timely provision of credit and loans to farmers; incentives in form of subsidy to farmers to encourage them to adopt new improved agricultural practices at a faster rate; storage facilities and efficient marketing and distribution networks.

6. Every Ministry of Agriculture should have within it a social accounting division. The professional personnel of this division should be made up fural sociologists agricultural economists and extension subject-matter specialists. The function of this division is to contribute knowledge and experiences in the formulation of agricultural policies, extension programmes and pilot sechemes by conducting baseline studies for social planning, social problem definition, translation of social problems into research designs and the reverse process of orienting findings toward action programmes, and evaluating the social consequences of each programme.

7. Since available research information in Nigeria has shown that farmers in group adopt more innovations and adopt them earlier than individual farmers do, the new corps of Nigerian farmers should be organized into multipurpose groups in order to achieve the double advantages of increased output and innovativeness.



## REFERENCES


ALAO, J.A. "Community Structure and Modernization of Agriculture: Analysis of Factors Influence the Adoption of Farm Practices Among Nigerian Farmers." Unpublished Ph.D. Thesis. Cornell University, Ithaca, New York, 1971.

ALAO, J.A. "Community Structure and Farm Practice Adoption." *Bulletin of Rural Economics and Sociology.* Vol. 8, No.2, July, 1973.

ALAO, J.A. "Characteristics of Farmers who Adopt Agricultural Innovations in Nigeria." *Journal of Rural Economy and Development.* Vol. 9, No.1, 1974.

ALAO, J.A. "Diffusion of Fish Farming in Western State of Nigeria," in *Reader in Extension and Communication.* A Cross-Cultural Empirical Base for Planned Change.

ALAO, J.A. "Diffusion of Poultry Farming in Nigeria." *African Journal of Agricultural Sciences* AJAS, Vol. 5, No.2, 1979.

ALAO, J.A., & S.K.T. WILLIAMS, "Evaluation of USAID/ MANR Maize/Rice Project: The Case of the Farmers." *Journal of Agricultural Society of Nigeria.* Vol.9, 1973.

AHONKAI. O.I. "A Study of Factors Associated with Adoption of Poultry Farming in the Midwest State of Nigeria", 1975. Unpublished.

BALDWIN, K.D.S. *The Niger Agricultural Project.* Oxford University Press, 1957.

BARNETT, H.G. *Innovations: The Basis of Cultural Change,* New York, McGraw Hill, 1953.

BASU, A.C. "The Relationship of Farmer Characteristics to the Adoption of Recommended Farm Practices in Four Villages of the Western State of Nigeria." *Bulletin of Rural Economics and Sociology,* Vol.4, No.1, 1969; *Economics and Sociology,* vol. 4, No.1, 1969.

CAPENER H.R. "On Discipline in Search of Application." *Rural Sociology.* Vol. 40, No.4, 1975.

CLARK R.C. & Akinbode, I.A. "Factors Associated with the Adoption of Three Farm Practices in the Western State of Nigeria." *University of Ife Research Bulletin.* No.1. Faculty of Agriculture, 1968.

COPP, H. "Towards Generalizations in Farm Practice Adoption." *Rural Sociology,* 23, 1958.

COUGHENOUR, C.M. "The Functioning of Farmers' Characteristics in Relation to Contact with Media and Practice Adoption." *Rural Sociology.* Vol.25, 1960.

DUNCAN, J.A., KREITLOW, & BURTON, W. *Suicide.* A Study in Sociology Edited by George Simpson. The Free Press, New York, 1951. 5th Reprint 1968. Paper back edition.

FADIPE, N.A. *The Sociology of the Yoruba.* Ibadan University Press, 1970.

FAJIMADE, T.A. "Adotpion of Improved Rice Varieties and Agronomic Practices in Ilesha Division, Oyo State". Unpublished 1979.

FLIEGEL F.C. *et al., Agricultural Innovations in Indian Villages.* National Institute of Community Development. Hyderabad, 1968.

FORDE, DARYLL& ONES, G.I. *The Ibo and Ibibio-Speaking Peoples of South-Estern Nigeria.* International African Institute, London, 1951.

FORDE, DARYLL & JONES, G.I. *The Yoruba-Speaking People of South-Western Nigeria.* London. International African Institute, 1951.

GALLETI, R., BALWIN, K.D.S. & DINA S. *The Nigerian Cocoa Farmer.* Oxford University Press, 1956.

HARRIS, JOHN R. "Some Theory of Agricultural Innovation." Unpublished Manuscript. Institute for Development Studies, University College, Nairobi, 1969.

HOFFER, C.R. & GIBSON, G.L. "The Community Situation as it Affects Extension Work," in *Adoption of New Ideas and Farm Practices,* by H.L. Lionberger Ames, Iowa State University Press, 1960.

KETTER, H. "The Situation of Rural Sociology in Europe." *Sociological Ruralis,* vol.7, No.3, 1967.



LANDINS PAUL, H. *Rural Life in Process.* McGraw Hill Book Company, New York, 1940.

LAVIDGE, R.J. & STEINER, G.A., "A Model for Predicting Measurements of Advertising Effectiveness." *Journal of Marketing.* 25, 1961.

LINTON, RALPH. "Cultural and Personality Factors Affecting Economic Growth," in Bet F. Hoselitz (ed). *The Progress of Underdeveloped Areas.* Chicago University Press 1952.

LLYOD, PETER. *The Yoruba Law.* O.U.P. London, 1962.

LLYOD, PETER. *Africa in Social Change.* Penguin African Library Series, 1967.

LITTLE, K. West African Urbanization: A Study of Voluntary *Associations in Social Change.* Cambridge University Press, 1970.

OLUWASANMI, H.A. Agriculture and Nigerian Economic Development. O.U.P. 1966.

PROTHERO, R.M. "Land Use at Soba, Zaria Province, Northern Nigeria. *Economic Geographer* XXXIII. 1957.

PROTHERO, R.M. "Migratory Labour from North West Nigeria". *Africa* XXXVII, 1957.

ROGERS, E.M. *Diffusion of Innovations.* New York, The Free Press of Glencoe 1962.

ROLING, C.W. Report on Land Tenure: Kano Province, Government Printer, Kaduna. 1949.

ROLING, C.W. Report on Land Tenure: Plateau Province. Government Printer, Kaduna 1949.

ROLING, C.W. Report on Land Tenure: Ondo Province. Government Printer, Lagos 1952.

ROLING, C.W. Report on Land Tenure: Ijebu Province. Government Printer, Lagos 1957.

RYAN, BRYCE & GROSS NEAL C. "The diffusion of Hybrid Corn in Two Iowa Communities." *Rural Sociology.* Vol.8, 1943.

TAYLOR, AJIBOLA, T. *Proceedings of the Frist National Workshop on the Role of Agricultural Extension and Research Liaison Service in Improved Technology Transfer in Agriculture.* Feb. 1978.

WILKENING, EUGENE, A. "Adoption of Improved Farm Practices as Related to Family Factors." Madison, Wisconsin *Experimental Research Bulletin.* 183, 1953.

WILKENING, EUGENE A. "The Differential Characteristics of Accepters and Non Accepters of an Improved Agriculture Practice." *Rural Sociology.* Vol. 14, 1952.

WILLIAMS, S.K.T. "Source of Information on Improved Farm Practices in Selected Areas of Western Nigeria." *Bulletin of Rural Economics and Sociology.* Vol.4, No.1, 1969.

VAN DEN BAN, A.W. "Locality Group Differences in the Adoption of New Farm Practices." *Rural Sociology.* Vol.25, 1960.