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AN EVALUATION OF PACKAGE RESULT DEMONSTRATIONS IN
VILLAGES WITH AND WITHOUT FIELD DEMONSTRATIONS
IN MINNA DIVISION, NIGERIA

by

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CHAPTER I

INTRODUCTION

In Nigeria, as in many developing countries of Africa and the Third World, agriculture remains the main economic factor that people depend on for their livelihood. Agriculture in Nigeria had been the largest foreign exchange earner until 1972 when petroleum took the lead.

Isong¹ issued a note of warning that petroleum would be exhausted one day and the country would again have to rely upon agricultural exports. Eicher, et. al.² cited that attempts made to reduce the size of the urban unemployment labor force through employment expansion programmes in modern industries without a concentrated effort to make the rural life more attractive are likely to fail. These programs fail because rural to urban immigration will be increased by higher wages being paid to those employed in the industries, giving rise to decreased probability of securing urban employment.

Priority was given to the development of agriculture in Nigeria's 1970-74 National Reconstruction and Development Plan, mainly due to the fact that there were still as many as 70 to 80% of the labor force working on farms.³

¹Isong, C. "Nigeria Pays in Full," West Africa, No. 2856, March 10, 1972, p. 269-270.

²Eicher, C., Zalla, T., Kocher, J. and F. Winch. Employment Generation in Africa Agriculture. Institute of International Agriculture Research Report No. 9 East Lansing, Michigan State University, 1970.

³de Benko, Eugene, Canadian Journal of African Studies, Vol. III, 1970, p. 190.

Out of a total number of 225 million acres of arable land available, only 22 million acres were cultivated in 1971.⁴

The present level of subsistence agriculture cannot keep pace with the high birth rate which results in an annual increase of 1.1 to 1.4 million people. For Nigeria to move out of the "developing" into the "developed" classification, the standard of farming and the level of productivity must be improved constantly. As more labor is needed to produce goods and services, fewer people on the farms will be needed to shoulder the responsibility of production. This could be accomplished through intensive education of farmers and their families to enable them to adopt new and improved inputs of modern agriculture. American farmers with the help of education, research and extension programs channeled through the local extension workers, in less than a century, have set a world record in agro-industrial development.

Fundamentally, for any developing nation to achieve these objectives, there is a need to create a desire for farmers to improve their practices by demonstrating the values of techniques and practices that can increase income and bring better living to the rural people. The age-old traditional farm practices no longer suffice. One of the main reasons why crop yields produced by Nigerian farmers are generally low is due to the small amount of fertilizer applied per acre of cropped land and a lack of knowledge and understanding of other recommended practices.

I. STATEMENT OF PROBLEM

In view of the awareness and interest of the Nigerian government

⁴Okezie, J. O., Agricultural Education at the International Level, Report of the West African Conference on Agricultural Education at the Intermediate Level, Zaria, Nigeria, Ahmadu Bello University, December, 1971, p. 16-18.

in developing agriculture, substantial encouragement has been given to research, technological innovations and development of extension services. Thus, extension workers are faced with the responsibility of diffusing the knowledge of these innovations to farmers. A large percentage of farmers cannot read or understand printed materials, therefore, the need to reach them through package result demonstrations.

This research is primarily conducted to investigate the effectiveness of package result demonstrations designed to meet the "felt-needs" of farmers. This investigation is aimed at evaluating the effectiveness of package result demonstrations on farmers who have had the opportunity to be demonstrators compared to non-farmer demonstrators in Minna Division, North Western State of Nigeria.

II. PURPOSE AND OBJECTIVES

It is the purpose of this study to compare the effectiveness of a result demonstration educational program in villages with and without package result demonstrations in Minna Division, North West State, Nigeria. Research indicates that when farmers are convinced that certain recommended practices are applicable to a local situation they will adopt such measures. Many farmers are not readily convinced by verbal claims and reporting of the results of research. They cannot argue with actual results and performances which they themselves have seen and demonstrated. The result demonstrations are conducted by farmers themselves under the supervision of the extension staff. By working closely with these demonstrators, extension educators often uncover and develop characteristics of co-operation and leadership which can be employed to advantage, not only in that particular demonstration program, but also in other extension and community activities.

Objectives of this study were:

1. To determine factors influencing the adoption of improved and recommended practices by farmers in villages with and without field demonstrations in Minna, 1974.
2. To determine those extension functions which should be given specific attention as perceived by extension workers.

III. LIMITATIONS

An opinion questionnaire was administered to a sample of Nigerian farmers for this study. They registered their opinions and feelings about field result demonstrations. The extension workers likewise reported their activities with the farmers with regard to the field demonstrations. The reliability of the information given by the farmers interviewed and the extension workers could not be verified objectively.

Another important limitation of this study was the sampling procedure. Owing to physical difficulties and the lack of personal data about the farmers and extension workers in Minna it was not possible for the investigator to closely control the sampling procedure or the method used in administering the questionnaires.

The assessment of the economic situation of respondent farmers was not feasible within the limitations of this study. It would be inappropriate in studying this point to rely on questioning farmers about their financial situation or trying to guess it from their way of living.

IV. DEFINITIONS

Division - The word Division is used in this study as synonymous to an administrative district, comparable to the county in the United States of America.

Demonstration Village - The term Demonstration Village is used to designate the villages included in this study in which package result demonstrations were conducted and completed during the period between 1970 and 1973.

Demonstration Farmer - The term is used to designate the farmers who are from demonstration villages and who were interviewed in this study.

Farmer Demonstrator - This term is used to designate the demonstration farmers who participated in the activities of the package result demonstrations.

Control Village - The term designates the villages in which no result package demonstration was conducted, but are included in this study.

Control Farmer - Control farmers are those farmers who had not conducted result demonstrations and were interviewed in control villages.

Package Result Demonstration - This is a way of showing people the value of new practices which have been tested by research investigation. It involves the application of the new practice and the analysis of results. It is designed to show that the recommendations are locally applicable and are profitable.

CHAPTER II

REVIEW OF LITERATURE

Result Demonstrations

Gilbertson⁵ and Gallup, noted that many extension agents inferred that result demonstration was the most effective educational technique used to accomplish behavior change of the least informed and most skeptical farmers.

Although there is an extensive body of literature on the use of result demonstrations in agriculture, the greater portion of it is merely descriptive. Few attempts have been made to evaluate the effectiveness of such demonstrations as an educational technique or to analyze the impact of the demonstration within the total diffusion process.⁶

Marsh,⁷ Erickson and Graham,⁸ in their studies in North Carolina and Illinois respectively, found in general that farmer demonstrators were

⁵Gilbertson, H. W. and Gladys Gallup, Result Demonstration Manual for Extension Workers. Agriculture Handbook 123 United States Department of Agriculture, Washington, D.C., 1957.

⁶Bailey, Wilfred C., Mississippi Community Fertilizer Education Experiment: Final Report. Preliminary Reports in Sociology and Rural Life, No. 7. Mississippi State Agricultural Experiment Station, State College, Miss. 1959.

⁷Marsh, C. P., An Evaluation of the Farm and Home Development Approach to Agricultural Extension Work in North Carolina. Extension Evaluation Series, No. 3 North Carolina State College, Raleigh, N. C. 1962.

⁸Erickson, D. E. and F. P. Graham, Making Profitable Farm Business Changes through Education. Circular 966. University of Illinois Cooperative Extension Service, Urbana, Ill. 1967.

significantly different from other farmers in the surrounding neighborhood with respect to net worth, increase in annual earnings, uses of sources of information, leadership participation, etc. at the end of a demonstration program.

In the result demonstration program carried out by Blackmore, Dimit, and Bound,⁹ 20 randomly selected neighboring farmers around each 25 farmer demonstrator farms, were interviewed. In the total sample of 500 non-farmer demonstrators, they found that the average number of recommended practices adopted were related to the distance of the farmer from the nearest demonstration farm, increasing from one mile to the second mile range, remaining fairly constant for the two- to five-mile range, but declining beyond that point.

In an attempt to evaluate the effectiveness of the result demonstration program, Bailey¹⁰ cited four factors that contribute to its potency in inducing a change: (1) characteristics of the demonstrations, (2) characteristics of the demonstrators, (3) characteristics of the audience, and (4) characteristics of the community or the total social milieu in which the demonstration program is carried out.

Result demonstration has been, ever since Seaman A. Knapp started the Farmer's Cooperative Demonstration Work in Texas in 1903, a well-known and effective method used in all fields of extension work. In fact, it was the method that extension workers, in every country, found themselves obliged to use in the early days of their extension programs. The

⁹Blackmore, J. M., R. M. Dimit and E. L. Baum. Test-Demonstration Farms and the Spread of Improved Farm Practices in Southwest Virginia. Report No. P55-3. Tennessee Valley Authority, Agricultural Economics Branch, Knoxville, Tenn., 1955.

¹⁰Bailey. Result Demonstrations and Education. Journal of Cooperative Extension, 2, 1964, p. 13-20.

crucial problem that faces extension workers in the beginning of their work is the lack of confidence on the part of the rural population in the recommended practices and sometimes even in extension workers themselves. The result demonstration method is believed to be the most effective teaching method in convincing people of the advantages of a practice and in establishing people's confidence in the devotion and competency of extension workers.

The effectiveness of the result demonstration as a teaching method, especially in extension and adult education, stems from the fact that all activities involved in this method are based on fundamental concepts derived from widely accepted theories of learning, adult education, and behavioral change. The result demonstration method had been the only way that provided detailed mental and physical activities through which an individual had to go during the adoption process.

Examination of literature dealing with the result demonstration, as a method of teaching in extension and adult education by Leagans,¹¹ Kelsey and Hearne¹² and Smith and Wilson¹³ outlined the procedure and activities needed to be performed in carrying out a well conducted and successful result demonstration. The main steps are: (1) preparation step, (2) the execution step, (3) the checking step, and (4) the result step.

¹¹Leagans, J. P., Extension Education in Community Development, New Delhi: Directorate of Extension, Ministry of Food and Agriculture, Government of India, 1961, p. 99-107.

¹²Kelsey, L. D. and C. C. Hearne, Cooperative Extension Work Ithaca: Comstock Publishing Associates, 1963, p. 394-399.

¹³Smith, C. B. and M. C. Wilson, The Agricultural Extension System of the United States, New York: John Wiley and Sons, Inc., 1930, p. 235-270.

Concept of Needs

Maslow¹⁴ proposed that the needs of man develop in the following sequential order from lower needs to higher needs:

1. Physiological needs, e.g. hunger, thirst.
2. Safety needs, e.g. security, order.
3. Belongingness and love needs, e.g. affection, identification.
4. Esteem needs, e.g. prestige, success, self-respect.
5. Need for self-actualization, i.e., the desire for self-fulfillment.

A person who is lacking food, safety, love and esteem would most probably hunger for food more strongly than for anything else. Physiological needs rank first in the hierarchy of needs. They must be adequately satisfied before the next higher needs can emerge in the development of the individual. Maslow speaks of the desires of human beings as means to an end rather than ends in themselves. These desires set up the upper limits of the gap that represents "needs." We want money so that we may have an automobile. In turn we want an automobile because the neighbors have one and we do not wish to feel inferior to them, so that we can retain our self-respect and so that we can be loved and respected by others.¹⁵

Maslow mentioned certain pre-requisite conditions for basic need satisfaction. It is appropriate to mention them in this discussion, especially for their significant importance in this study, where freedom and action is a basic assumption. Such conditions are "freedom to speak,

¹⁴Maslow, A. H., Motivation and Personality, New York: Harpers and Brothers Publishers, 1954, p. 80-92.

¹⁵Ibid., p. 59-66.

freedom to do what one wishes so long as no harm is done to others, freedom to express oneself, freedom to investigate and seek for information, freedom to defend oneself, justice, fairness, honesty, orderliness in the group."¹⁶

Importance of People's Needs in the Adoption of Innovations

The adoption of a new practice can be simply defined as the act by which a person begins a new practice and ceases using an old one that the new practice replaced. Efforts to make people adopt new practices, in free-choice societies, are successful only to the extent that they are satisfying important needs and are effective in meeting these needs. Since people are free to adopt or reject the practice, they only become interested in it when it meets the needs which they themselves recognize. Feeling a need for the practice motivates people to be interested in it and to explore the possibility of adopting it.

The Adoption Process

Change is a process which people are undergoing all the time. People everywhere change language, domestic animal breeds, tools, ways of growing crops, forms of political organization, and other aspects of life. Not all changes mean progress. While some changes have led to catastrophic results, most planned changes have led to better situations, or at least, were designed to lead to better situations.

It is the main concern of extension education workers to help in rural development and to induce people to cease using traditional ideas or practices and use new ones which have proved to have better advantages

¹⁶Ibid., p. 92.

in life. Conditions under which people accept or resist change becomes a matter of deep concern for everyone interested in bringing about changes in people's lives. Spicer stated that, "people resist changes that appear to threaten basic securities; they resist proposed changes they do not understand; they resist being forced to change."¹⁷

It is in the area of people's acceptance of change that many researchers have been working to understand the nature of the process by which people denounce old ways and practices and adopt new ones for replacement. This process is known by rural sociologists and extension educationalists as the "adoption process." Rogers¹⁸ defined the adoption process as a mental process through which an individual passes from first hearing about an innovation to final adoption. This concept emphasizes the mental activity that takes place in people's minds and ends up with a decision to adopt or reject the innovation.

Beal et. al.,¹⁹ and Copp et. al.²⁰ conducted two research studies and finally agreed that there are five stages in the adoption process--awareness, interest, evaluation, trial and adoption.

Lionberger²¹ and Rogers²² agreed that adopters were classified in

¹⁷Spicer, E. H., Human Problems in Technological Change: A Case-book, New York: Russel Sage Foundation, 1952, p. 118.

¹⁸Rogers, E. M., Diffusion of Innovations, New York: The Free Press of Glencoe, 1962, p. 77.

¹⁹Beal, G. M. et. al., "Validity of the Concept of Stages in the Adoption Process," Rural Sociology, Vol. XXII, 1957, pp. 166-168.

²⁰Copp, J. H. et. al., "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology, Vol. XXIII, (1958), pp. 146-157

²¹Lionberger, H. F., Adoption of New Ideas and Practices, Ames, Iowa: Iowa State University Press, pp. 67-106.

²²Rogers, E. M., Diffusion of Innovations, New York: The Free Press at Glencoe, 1962, p. 77.

five groups: innovators who adopt first, but are a very small minority; early adopters; early majority; late majority; and laggards, or the individuals who are very slow and latest to adopt. It was concluded that the shape of the distribution curve of adopters is a normal curve.

Main Factors Associated with Adoption

It should be recalled that one of the main objectives of this study was to evaluate the adoption of the improved farm practices in Minna. It became helpful to review some of the work which had been done by various people on factors associated with adoption of innovations. Cultural factors with inherited values and attitudes influence the action of people. Age, education and other personal characteristics take a big share in influencing decisions and activation of farmers. Therefore, factors associated with adoption of innovations would be discussed under four categories: social, cultural, personal and economic factors.

Social Factors

Individuals do not exist in isolation but are embedded in social systems. Family factors were found to be related to the adoption of farm practices.

March and Coleman²³ found that in general the higher the adoption rate of a farm operator, the higher were the adoption rates of most of his close associates, in kin visiting, and work-exchange groups.

²³March, C. P. and A. L. Coleman, "The Relation of Kinship Exchanging Work and Visiting to the Adoption of Recommended Farm Practices," Rural Sociology, Vol. XIX, (September 1954), p. 291-293.

Cultural Factors

Hoffer²⁴ found that farmers who think themselves efficient and self-reliant were much more likely to adopt improved practices than those who did not. Spencer²⁵ found that adoption was negatively but significantly associated with high emphasis on security and traditionalism.

Personal Factors

It was a common feeling that elderly farmers would resist adoption of new practices or any change they feared might risk their security or prestige. Very young farmers were thought to be less inclined to undergo drastic changes in accepting new practices because their financial situation wasn't strong enough. Middle-age farmers were thought to be most tolerant for change to new ideas. Studies by Gross and Tares,²⁶ reported results which supported this line of reasoning.

In studying the influence of the farmer's level of education in adoption of farm innovations, one would be faced by the difficulty of measuring this level, because the majority of the farmers in the villages studied had no formal school education. Their literacy could only be based on the common languages of communication.

Economic Factors

Several studies concluded that farmers with high incomes in

²⁴Hoffer, C. R. and D. Stangland, "Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing," Rural Sociology, Vol. XXIII, (June, 1958), p. 112-120.

²⁵Spencer, G. E., C. E. Ramsey and R. A. Polson, "Values and the Adoption of Practices," Rural Sociology, Vol. XIV, (March, 1959), p. 35-47

²⁶Gross, N. C. and M. J. Tares, "Characteristics Associated with Acceptance of Recommended Farm Practices," Rural Sociology, Vol. XVIII, (December, 1952), p. 321-327.

general, adopted more new improved farm practices.²⁷ This theoretically would give farmers more increase in farm income which would lead to more adoption of farm innovations.

Level of living was found to be positively correlated with rate of adoption of new farm practices.²⁸ This was likely to be true because there was a direct relationship between level of living and farm income. High farm income provided opportunities for better levels of living, and high income was said to be associated with high rates of adoption of farm innovations.

From the foregoing discussion, one may become inclined to think of the result demonstration as a very suitable method for the application of principles of the transfer of learning. By those principles are meant, "transfer by identical elements, transfer by generalization and transfer by transposition of relationships. Teaching farmers recommended practices through the result demonstration method provides bases for transfer of learning."²⁹

²⁷Fliegel, F. C., "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices," Rural Sociology, Vol. XXI, (September-December, 1956), p. 284-292.

²⁸Fliegel, p. 284-292.

²⁹Klausmeier, p. 361-363.

CHAPTER III

PROCEDURES AND METHODS

The previous chapter was intended to help the reader follow the way in which the research problem was organized. The relevant psychological theories were outlined. The hierarchy of needs theory and its implications for motivating individuals and directing their actions and the importance of people's needs in the adoption of innovations was discussed. These theories could only be useful and effective when put into application through suitable teaching method. The result demonstration method, in this study, was the means through which the above theories were used. Also discussed was the soundness of the principles of the result demonstration as it related to the basic theories of learning and the principles of the transfer of learning.

Application of theories discussed in the previous chapter and the basic concepts of the result demonstration method provided the rationale for the construction of the questionnaire. The questionnaire was constructed in a way as to reveal information related to these theories and concepts. It is further based on a major assumption that statements by farmers, when asked by means of interview questionnaires, would express their opinion freely and independently, thus providing valid and reliable information.

Sources of Information

In developing the design and procedures for this study, it was necessary to have information of two kinds:

The first concern was the organization and conduct of the result

demonstration program. This information was made available from monthly and quarterly reports prepared by the Extension Research Liaison Services division of Ahmadu Bello University, Zaria and the Ministry of Agriculture, North Western State, Nigeria. These reports included descriptions of the program, the design of result demonstrations, villages in which demonstrations were conducted, a detailed description of all activities carried on during and after conduct of the demonstrations, results of each demonstration, comparisons between the recommended practice and other practices and other miscellaneous information.

Information about villages included in the study were provided by extension workers located in these villages. A special questionnaire form was developed and sent to these workers. Information in the questionnaire forms was based on the workers experiences during their work in these villages, and on their monthly and quarterly reports. This information covered social, economic and educational aspects of the village. A special section in the questionnaire revealed information about the conduct of the result demonstrations, people's participation, results of the demonstrations, and workers' opinions about the whole matter.

The second was to evaluate the stages of the adoption of the improved practices obtained by farmers in demonstration villages. Factors associated with this information were obtained through demonstrations and participating farmers.

Constructing the Interview Questionnaire

Some research studies of farm practice adoption have used mailed questionnaires which were filled out by farmers and returned to the people who conducted the studies. Most of the research in this area has

been done by personal interviews using an interview questionnaire. For the purpose of this study, a questionnaire was thought to be the most appropriate instrument for collecting the required data.

The interview questionnaire was constructed in English language and translated to Hausa by Tukur Illo who interviewed the farmers on my behalf. The questionnaire included the essential steps involved in the conduct of the result demonstrations and the extent of farmers' participation. The following points were taken into consideration in constructing the interview questionnaire.

1. Questions were constructed in a way that they called for immediate response and could be answered with a simple yes or no, or by checking a blank space in choosing one or more alternative answers. Alternative answers were clearly distinct, so that choosing the desired answer would not cause confusion.

2. Questions considered too personal or embarrassing to farmers were avoided.

3. Questions were written in simple language, easily understood by interviewers, farmers and extension agents working in the villages.

4. Questions were constructed in a way as to reveal all needed information about variables considered in this study.

The Sample

In Minna division there were seven districts namely Bosso, Kuta, Paiko, Tgina, Kafinkero, Galadima-Kego and Kagora. It was found necessary in designing this study that only four of the districts randomly selected were to be included because of paucity of funds and limited time. These districts were Bosso, Kuta, Paiko and Tgina. From each of these four districts, two villages were required. One was to be a

village where field demonstrations had been conducted and the other village was to be a control village covered by the extension program, but not included in the field demonstration program. Table 1 indicates there were a total number of 1,582 full-time farmers from the four districts. The villages to be covered by this study were randomly selected. The samples of farmers represented the population of the full-time farmers in the division. The total number of farmers involved where demonstrations had been held was 802 compared to 780 farmers where no demonstrations had been conducted.

TABLE 1
NUMBER OF FULL TIME FARMERS AND SAMPLES OF FARMERS*
RANDOMLY SELECTED FROM DISTRICT/VILLAGES WITH
AND WITHOUT DEMONSTRATIONS, MINNA 1974

Farmers	District	Village where Demonstration Conducted N=110	Village where No Demonstration Conducted N=110
	Bosso	Beji	Gurusu
Full time farmers		211	134
Sample of farmers		29	19
	Kuta	Egwa	Gussoro
Full time farmers		146	241
Sample of farmers		20	34
	Paiko	Baida	Lefu
Full time farmers		218	142
Sample of farmers		30	20
	Tegina	Tegina	Gulangi
Full time farmers		225	262
Sample of farmers		31	37

*Total full time farmers 1,582

Number of farmers sampled 220

Sampling the Village

By random sampling these villages were determined thus:

1. The names of villages where demonstrations had been conducted from 1970-74, for example, Kuta district, were listed.
2. The name of each village was written on a small piece of paper (1" x 2").
3. All papers bearing the names of villages were placed in a small container.
4. The container was shaken at least 10 times.
5. The first paper was drawn, read and the name recorded on a sheet of paper. This was repeated for Bosso, Paiko and Tegna.
6. Similar procedure was repeated to select the four villages where demonstrations had never been conducted in Kuta, Bosso, Paiko and Tegna districts.
7. Hamlets were not considered as a village for study purposes.

Size of Sample

One hundred ^{and} ten farmer demonstrators and 110 non-demonstrators were selected for a total of 220. The number selected was proportional to the size of farmer population of villages selected in each district under our consideration as illustrated in the calculations that follow.

Villages Where Demonstrations
had been Conducted

District	Village	Full time Farmers
Kuta	Egwa	146
Bosso	Beji	211
Paiko	Baida	218
Tegina	Tegina	225
Total		802

Number of farmers interviewed from each of the above villages was calculated as follows. Fractions were rounded off to whole numbers.

Village	Number of farmers sampled
Egwa	$\frac{146}{802} \times \frac{110}{1} = 20$
Beji	$\frac{211}{802} \times \frac{110}{1} = 29$
Baida	$\frac{218}{802} \times \frac{110}{1} = 30$
Tegina	$\frac{225}{802} \times \frac{110}{1} = 31$
Total	110

Villages Where no Demonstrations
had been Conducted

District	Village	Full time Farmers
Kuta	Gussoro	241
Bosso	Gurusu	135
Paiko	Lefu	142
Tegina	Gulangi	262
Total		780

Number of farmers interviewed from each of the above villages was also calculated thus:

Village	Number of farmers sampled
Gussoro $\frac{241}{780} \times \frac{110}{1} =$	34
Gurusu $\frac{135}{780} \times \frac{110}{1} =$	19
Lefu $\frac{142}{780} \times \frac{110}{1} =$	20
Gulangi $\frac{262}{780} \times \frac{110}{1} =$	37
Total	110

Choosing the Farmers

Farmers were randomly selected based on the following procedure:

- Names of the farmers in the villages considered for this study were listed.
- Each name was written on a small piece of paper (1" x 2").

3. All papers bearing the names of farmers were placed in a small container.
4. The container was shaken at least 10 times.
5. The first paper was drawn, read and the name recorded on a sheet of paper.
6. The container was shaken about 5 or 6 times and the second paper was drawn, the name was read and recorded on the same sheet of paper.
7. The above process was repeated until the number of drawn papers was exactly equal to the number of farmers interviewed in each village.
8. 3 or 4 additional papers were drawn in each village which were to be used in case some farmers were absent or didn't want to give information.
9. The names of the farmers were not recorded on the interview forms. Instead each form was given a number that was recorded in the blank assigned for it.

Data collection was made possible through an interviewer in charge of Agricultural Services division, Minna. He had acquired experience in interviewing through the help he had rendered graduate students who had carried out similar surveys with the farmers in the division. The interviewer was given additional training with respect to this study prior to the start of data collection.

Experimental Design

The post-test experimental design was used for this study. There were two groups of farmers from selected villages. One group of farmers were those who had carried out package demonstrations and the second

group of farmers had never conducted package demonstrations. Two questionnaires were designed to find out information about how well the farmers learned through the adoption of recommended practices. By comparing the responses of farmers through information given in the returned questionnaires the author could evaluate the effectiveness of the package result demonstration program in Minna Division.

Scope

These comparisons would be used to show that both groups constitute homogeneous parts of the sample with regard to various important factors considered, and to analyze traditional practices used in control villages as compared to those used in demonstration villages which might be affected by the package result demonstrations.

Secondly, this study was intended to provide information which might be useful for future planning of result demonstrations and other extension activities. The findings would be made available to officials of the Ministry of Agriculture, North Western State, Nigeria. The officials would decide whether to make use of them in planning future programs. The usefulness of this pioneering work might pave the way for further studies of this nature. In addition, this work might render a valuable service towards steps to eliminate mass poverty in rural communities in the state.

CHAPTER IV

ANALYSIS OF DATA

The analysis of data in this chapter is reported in two parts, comparisons of the adoption of improved farm practices by 220 farmers sampled from villages with and without field demonstrations presented in percentages, and Extension Workers evaluation of the package result demonstrations in the villages where they have been closely associated.

FARMERS FROM VILLAGES WITH AND WITHOUT FIELD DEMONSTRATIONS COMPARED

Age of Farmers

Nearly half of the farmers interviewed (45.0 percent) said they were between the ages of 30-39 years, as shown in table 2. Approximately six out of ten farmers said they were under 40 years of age.

The data did not show a significant difference in the ages of farmers from villages with and without field demonstrations.

TABLE 2
AGE DISTRIBUTION OF FARMERS IN VILLAGES WITH
AND WITHOUT PACKAGE DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Age	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
20-29 years	13.6	20.1	16.8
30-39 years	51.8	38.0	45.0
40-49 years	21.8	29.1	25.5
50-59 years	8.2	8.2	8.2
60-69 years	4.6	4.6	4.5

Marital Status of Farmers

Ninety-five percent of the farmers interviewed were married, as shown in table 3.

TABLE 3

FARMERS WHO WERE MARRIED IN VILLAGES WITH
AND WITHOUT AGRICULTURAL DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
Married Farmers			
Married	94.6	96.4	95.5

Size of Farm Families

The family size in this study was based on general concepts known to be accepted by Nigerian people. A small size family was composed of 1-4 members, including the father and mother, a medium size family had 5 or 6 members, and families having more than 7 members were considered to be large. As shown in table 4, a significant difference at the .01 level was reported between farmers from villages with and without field demonstrations. The data indicated that in the villages with field demonstrations, there were smaller families (average of 6.2) compared to villages without field demonstrations (average of 7.5).

TABLE 4
FAMILY SIZE OF FARMERS IN VILLAGES WITH AND
WITHOUT AGRICULTURAL DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Family Size	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
Small (1-4 members)	37.3	19.1	28.2
Medium (5 or 6 members)	31.8	13.6	22.7
Large (7 or more members)	30.9	67.3	49.1

$\chi^2 = 29.2$, Significant at .01 level.

Main Language Spoken by Farmers

The majority of farmers in Minna division were predominately Gwari. However, the farmers understood Hausa language as well. Hausa language is officially recognized during business meetings with the farmers.

Nearly half of the farmers interviewed (45 percent) said they spoke Hausa very well, and approximately half of them indicated that they either spoke it adequately or a little, as shown in table 5.

When farmers from villages with and without field demonstrations were compared, a significant difference at the .01 level was found. In the villages with field demonstrations nearly three-fourths of the farmers spoke Hausa very well as compared to less than two out of ten of the farmers from villages without field demonstrations.

About seven of ten farmers interviewed said they spoke Gwari very well. This was reported to have a significant difference at the .01 level.

TABLE 5

MAIN LANGUAGE SPOKEN BY 220 FARMERS SAMPLED IN
VILLAGES WITH AND WITHOUT DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

How Well Languages Were Spoken	Type of Village		Level of Significance	All Farmers (N=220)
	Demonstration Conducted	No Demonstration Conducted		
Hausa				
Very Well	73.6	16.4	.01	45.0
Adequately	5.5	7.3		6.4
A Little	20.0	61.8		40.9
Not at All	0.9	14.6		7.7
Gwari				
Very Well	68.2	65.5	.01	66.8
Adequately	8.2	-		4.1
A Little	11.8	0.9		6.4
Not at All	11.8	33.6		22.7
Nupe				
Very Well	1.8	-	NS	0.9
Adequately	8.2	10.0		9.1
A Little	9.1	7.3		8.2
Not at All	80.9	82.7		81.8
Kamuku				
Very Well	0.9	7.3	NS	4.1
Adequately	-	0.9		0.5
A Little	1.8	-		0.9
Not at All	97.3	91.8		94.5
English				
Very Well	0	0	NS	0
Adequately	0.9	0.9		0.9
A Little	10.9	3.6		7.3
Not at All	88.6	95.6		91.8

Nupe, Kamuku and English were also spoken, but by only a few of the farmers who responded.

Main Language Read and Written by Farmers

The literacy level among Nigerian farmers has been extremely low, because the people have had no opportunity of formal schooling. Adult literacy classes were set up in the villages to teach farmers how to read and write, because education is thought to influence the decisions of farmers regarding their farming business.

Farmers interviewed were asked whether they could read and write four languages. Slightly one of ten said they either could read and write Hausa very well or adequately, as shown in table 6. Approximately nine of ten said they could read and write only a little or not at all.

When farmers from villages with and without field demonstrations were compared, a significant difference at the .01 level was found. Farmers in villages with field demonstrations could read and write Hausa much more than farmers from the other villages. The reason was due to the fact that twenty-one percent of farmers from villages with field demonstrations said they either read and write Hausa very well or adequately, compared to one-seventh of farmers from villages without field demonstrations.

Gwari, Nupe and English were read and written, but only by a few of the farmers sampled.

Farmers who Reported Having Observed Package Result Demonstrations

Farmers who responded were asked whether they had observed package result demonstrations in their villages. Data as shown in table 7 revealed that 96 percent of farmers in villages with field

TABLE 6

MAIN LANGUAGE READ AND WRITTEN BY 220 FARMERS SAMPLED IN
VILLAGES WITH AND WITHOUT DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

How Well Languages were Read and Written	Type of Village		Level Significance	All Farmers (N=220)
	Demonstration Conducted	No Demonstration Conducted		
Hausa				
Very well	10.0	3.6	.01	6.8
Adequately	10.9	3.8		7.3
A little	33.6	13.6		23.6
Not at all	45.5	79.0		62.3
Gwari				
Very well	2.7	2.7	NS	2.7
Adequately	1.8	1.8		1.8
A little	10.0	6.4		8.2
Not at all	85.5	89.1		87.3
Nupe				
Very well	0.9	-	NS	0.5
Adequately	-	0.9		0.5
A little	-	-		-
Not at all	99.1	99.1		99.1
English				
Very well	0.9	-	NS	0.5
Adequately	-	0.9		0.5
A little	-	-		-
Not at all	99.1	99.1		99.1

demonstrations said that they had observed them compared to villages without demonstrations, where only about 30 percent of the farmers said they observed the demonstrations. There was a significance at the .01 level.

However, in villages without demonstrations, slightly more than three of ten farmers still said that they had observed the field demonstrations. This might be due to the fact that the two groups of farmers were homogenous. The farmers had the same cultural background and shared the same social activities. During the process, some of the farmers who responded might have observed the field demonstrations or might have learned from their close associates from villages with field demonstrations.

TABLE 7

PERCENTAGE OF FARMERS WHO REPORTED HAVING
OBSERVED PACKAGE RESULT DEMONSTRATIONS,
IN VILLAGES WITH AND WITHOUT
DEMONSTRATIONS, MINNA 1974

Type of Village	Percent	N
Farmers from Villages where Demonstrations Conducted (N=110)	96.4	106
Farmers from Villages where no Demonstrations Conducted (N=110)	30.9	34
All Farmers (N=220)	63.6	140

$\chi^2 = 74.06$, Significant at .01 level.

Improved Farm Practices Used by Farmers

Farmers interviewed were asked whether they had used the essential

improved farm practices. Nearly fifty-two percent of the farmers said they had used fertilizers as shown in table 8. There were approximately forty-six percent of the farmers who said they had used improved seeds, and three of ten said they had used seed dressing chemicals. Nearly three percent of the farmers responded that they had used insecticides.

TABLE 8
USE OF IMPROVED FARM PRACTICES BY FARMERS IN VILLAGES
WITH AND WITHOUT FIELD DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Farm Practice Used	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
Seed Dressing Chemicals	61.8	1.8	31.8
Use of Fertilizers	57.3	46.4	51.8
Use of Improved Seeds	54.6	37.3	45.9
Use of Insecticides	3.6	1.8	2.7

$\chi^2 = 38.7$, Significant at .01 level.

By comparing the responses given by farmers from villages with and without field demonstrations, the data showed a significant difference at the .01 level. There were quite a number of farmers from villages with field demonstrations who had used the new farm practices. The reason might be attributed to the fact that farmers in villages with field demonstrations had the extension workers who taught them about the practices.

The number of farmers in villages without field demonstrations who had used the new practices might have learned the techniques through their regular contact with farmers from villages with field demonstrations. It could be speculated that since there were no extension workers to teach and supervise farmers in villages without field demonstrations, the farmers might have applied the new practices wrongly.

Agricultural Extension Publications Received by Farmers

Agricultural extension publications were written monthly and quarterly and distributed freely to farmers. The publications contained agricultural extension news which informed farmers about the current farm news and operations. The leaflets and posters were being produced by the Extension Research Liaison Services of the Ahmadu Bello University, Zaria. The newsletters were published by the Extension Services division of the Ministry of Agriculture, Sokoto.

Slightly over forty-seven percent of the farmers said they had received the leaflets, as shown in table 9. About two of ten farmers said they had received the posters, and slightly more than one of ten farmers said they had received the newsletters.

Farmers who had received the agricultural extension publications from villages with and without field demonstrations were compared, and it showed a significant difference at the .01 level. The data indicated that agricultural extension publications have been received by many farmers from villages with field demonstrations.

TABLE 9

FARMERS FROM VILLAGES WITH AND WITHOUT FIELD
DEMONSTRATIONS COMPARED BY AGRICULTURAL
EXTENSION PUBLICATIONS RECEIVED
IN PERCENTAGES, MINNA 1974

Publications Received by Farmers	Type of Village		All Farmers (N=220)
	Demonstrations Conducted (N=110)	No Demonstrations Conducted (N=110)	
Leaflets	59.1	36.4	47.7
Posters	35.5	2.7	19.1
Newsletters	3.6	0	1.8

$\chi^2 = 15.8$, Significant at .01 level.

Farmers' Opinions about the Availability
of Agricultural Supplies in Agents' Shops

Farmers were asked whether agricultural supplies were available in agents shops. Five of ten said the supplies were sometimes available, as shown in table 10. Nine percent said that the supplies were seldom available. Nearly eight percent said the supplies were never available, and approximately eleven percent said the supplies were either available always or most of the time.

When the response given by farmers from villages with and without field demonstrations were compared, there was a significant difference at the .01 level. More farmers from villages with field demonstrations felt that agricultural supplies were sometimes available in agent's shops.

TABLE 10

FARMERS' OPINIONS ABOUT THE AVAILABILITY OF AGRICULTURAL
SUPPLIES IN AGENTS' SHOPS IN VILLAGES WITH AND
WITHOUT AGRICULTURAL DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Farmers' Opinions About Availability of Agricultural Supplies	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
Always	2.7	8.2	5.5
Most of the time	2.7	8.2	5.5
Sometimes	68.2	31.8	50.0
Seldom	4.6	13.6	9.1
Never	0.9	15.4	8.2

$\chi^2 = 39.9$, Significant at .01 level.

Purchase of Agricultural Supplies Through
Commercial or Travelling Agents

The commercial or travelling agents were allowed to sell agricultural supplies to farmers with the permission granted by officials of the Ministry of Agriculture.

Forty percent of the farmers interviewed from villages with field demonstrations, and approximately thirty-three percent of farmers from villages without field demonstrations respectively, had purchased agricultural supplies through the commercial or travelling agents, as shown in table 11.

TABLE 11

PURCHASE OF AGRICULTURAL SUPPLIES THROUGH COMMERCIAL
OR TRAVELING AGENTS BY FARMERS FROM VILLAGES
WITH AND WITHOUT DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Type of Village	N	Percent
Farmers from Villages where Demonstrations Conducted (N=110)	44	40.0
Farmers from Villages where no Demonstrations Conducted (N=110)	36	32.7

Farmers' Statements on How They
Purchased Agricultural Supplies

Eight of ten farmers (80 percent) interviewed indicated in table 12 that they had purchased their agricultural supplies through cash. Nearly three of ten (29.1 percent) of the farmers said they had purchased their agricultural supplies after harvest.

TABLE 12

FARMERS' STATEMENTS ON HOW THEY PURCHASED AGRICULTURAL
SUPPLIES IN VILLAGES WITH AND WITHOUT
DEMONSTRATIONS, RANKED IN ORDER OF
PREFERENCE, IN PERCENTAGES,
MINNA 1974

How Agricultural Supplies were Purchased	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
Cash	78.2	82.7	80
After Harvest	39.9	18.2	29.1
When I Can	0.0	2.7	1.4
By Installments	0.0	0.9	0.5

$\chi^2 = 11.9$, Significant at .01 level.

When the farmers who responded from villages with and without field demonstrations were compared, there was a significant difference at the .01 level. Quite a good number of farmers purchased their agricultural supplies after harvest.

Agricultural Radio Station
Listened to by Farmers

Twenty-one percent of the farmers interviewed, as shown in table 13, said they had listened to the agricultural radio program relayed through Nigerian Broadcasting Corporation (NBC), Sokoto. Nearly seven percent of the farmers said they had listened to the program produced by (NEC), Kaduna, while five percent of the farmers said they had listened to the agricultural program transmitted through Broadcasting Corporation of Northern Nigeria radio station at Kaduna. The data did not reveal a statistically significant difference.

TABLE 13
AGRICULTURAL RADIO STATIONS LISTENED TO BY FARMERS FROM
VILLAGES WITH AND WITHOUT FIELD DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Radio Station	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
NBC, Sokoto	27.3	14.6	21.0
NBC, Kaduna	6.4	7.3	6.8
BCNN, Kaduna	8.2	1.8	5.0

Attendance at Agricultural
Shows by Farmers

The opinion of the respondent farmers in this study was sought

concerning the number of agricultural shows they had attended. As shown in table 14, two of ten farmers said they had attended the show once. One-twelfth said they had attended the show twice, and one-sixteenth said they had attended the show thrice.

TABLE 14
FARMERS FROM VILLAGES WITH AND WITHOUT FIELD DEMONSTRATIONS
COMPARED FOR ATTENDANCE AT AGRICULTURAL SHOWS,
IN PERCENTAGES, MINNA 1974

Farmers Reports on How Many Times They Had Attended Agric. Shows	Type of Village		All Farmers (N=220)
	Demonstration Conducted (N=110)	No Demonstration Conducted (N=110)	
Once	10.9	29.1	20.0
Twice	12.7	4.6	8.6
Thrice	10.9	1.8	6.4

$\chi^2 = 20.5$, Significant at .01 level.

EXTENSION WORKERS EVALUATION OF FIELD DEMONSTRATIONS

Method of Selection of Demonstrators by Extension Workers

The response of extension workers on the method used to select demonstrators, is shown in table 15. The differences between methods of selecting farmers for demonstrations were found to be statistically significant at the .01 level.

Nearly nine of ten extension workers reported that the demonstrators were selected from the farmers who attended council meetings. Half of the extension workers (50 percent) said the demonstrators were

selected by leaders in the village. About four of ten (44.4 percent) said the demonstrators were selected either from farmers who used some recommended practices before or the demonstrators were selected by extension workers.

TABLE 15
METHOD OF SELECTION OF DEMONSTRATORS IN
ORDER OF PRIORITY AS REPORTED BY
EXTENSION WORKERS, MINNA 1974

Method of Selecting Demonstrators	Extension Workers (N=18)	
	Number	Percent
From farmers who attended council meetings	17	94.4
From leaders in the village	9	50.0
From farmers who used package of practices before	6	33.3
Selection by extension workers	2	11.1

$\chi^2 = 26.8$, Significant at .01 level.

When method of selection of demonstrators was ranked from the most to the least used method the order was:

1. From farmers who attended Council meetings.
2. From leaders in the village.
3. From farmers who used package of practices before.
4. Selection by extension workers.

The data indicates that a majority of extension workers selected demonstrators by involving farmers in the planning process of the village extension program. Where the selection of demonstrators was

done by the extension workers alone, it would seem unlikely that farmers would give extension workers full co-operation needed to execute the programs in the village.

Arrangements Made by Extension Workers
Concerning Field Demonstrations

The response of extension workers concerning arrangements made with farmers before the demonstrations were conducted is shown in table 16. When the opinions of extension workers were compared concerning the arrangements they had made before farmers were allowed to conduct the demonstrations, a significant difference was found at the .01 level.

TABLE 16
ARRANGEMENTS MADE BY EXTENSION WORKERS CONCERNING
FIELD DEMONSTRATIONS, MINNA 1974

Arrangements Made with Farmers	Extension Workers (N=18)	
	Number	Percent
Farmers were involved in planning demonstrations	15	83.3
Demonstrations were planned together with demonstrators	9	50.0
Farmers who previously attended the demonstrations were invited	6	33.3
Demonstrator and Extension worker made the demonstration	4	22.2

$\chi^2 = 28.9$, Significant at .01 level.

Approximately eight of ten extension workers (83.3 percent) said they made arrangements with farmers who were invited to attend

demonstration meeting. Half the extension workers (50 percent) said the demonstrations were planned together with demonstrators. Three of ten extension workers said arrangements were made with farmers who previously attended the demonstrations, and two of ten extension workers said they made the arrangements with demonstrators.

This analysis showed that the majority of the extension workers placed high emphasis on farmers' self-determination, which allowed farmers to decide for themselves what they wanted.

The Time Extension Workers Visited Field Demonstrations

All extension workers said they were present at planting time and for the first fertilizer application on the field demonstrations for which they were in charge, as shown in table 17. Differences were significant at the .01 level.

Nearly nine of ten extension workers were present when thinning and the first weeding took place. About two-thirds of them said they visited the plots when the second fertilizer application was made.

One-third reported visiting the plots during spraying. Only about one-third of the demonstration plots were crops, such as cotton and cowpeas planted sole, that required spraying. This could indicate that a high percentage of extension workers visited the demonstration plots when these crops were sprayed, even though the total proportion was only one-third.

Extension workers were expected to organize a tour of the demonstration plots so farmers in the village could observe the effect of recommended practices during the growing season. Only six of ten said they held a demonstration tour. One extension worker said he never visited the demonstration plots.

TABLE 17
TIME WHEN EXTENSION WORKERS SAID THEY VISITED
FIELD DEMONSTRATIONS, MINNA 1974

Visits to the Demonstration Plot	Extension Workers (N=18)	
	Number	Percent
Planting	18	100.0
First fertilizer application	18	100.0
Thinning	16	88.9
First weeding	16	88.9
Second fertilizer application	12	66.7
On demonstration tour	11	61.1
During spraying	6	33.3
Never visited the demonstration	1	5.6

$\chi^2 = 75.7$, Significant at .01 level.

Factors Extension Workers Felt Limited
the Success of Demonstration Plots

About three-fourths of the extension workers said the demonstration plots they supervised were hindered by lack of transportation and too many demonstration plots assigned to them, as shown in table 18. Differences were significant at the .01 level.

Nearly six of ten extension workers said a limiting factor was caused by farmers not co-operative enough. Half the extension workers said delay in receipt of demonstration materials was a hindrance. Approximately four of ten extension workers said lack of encouragement by the Ministry, and the demonstrations not being simple

enough for farmers to understand were problems. Two extension workers said they were not adequately trained for their job.

TABLE 18
FACTORS THAT EXTENSION WORKERS FELT LIMITED THE SUCCESS
OF DEMONSTRATION PLOTS, FROM MOST TO
LEAST IMPORTANT, MINNA 1974

Problem	Extension Workers (N=18)	
	Number	Percent
Lack of transportation to supervise	14	77.8
Too many demonstrations to cope with	13	72.2
Farmers somewhat unco-operative	10	55.6
Delay in receipt of demonstration materials	9	50.0
Lack of encouragement by Ministry	8	44.4
Farmers found packages too difficult	7	38.9
Agents not adequately trained for the job	2	11.1

$\chi^2 = 21.2$, Significant at .01 level.

Reasons Given by Extension Workers
as to Why Farmers Adopted
Recommended Practices

All extension workers, but one, said farmers adopted the recommended practices because farmers were convinced that the practices were profitable, as shown in table 19. Differences as to why farmers adopted practices in the opinion of Extension workers were significant at

the .01 level. Nearly six of ten extension workers believed it was because farmers hoped to increase their production, understood the practices or accepted what the extension workers told them.

TABLE 19
REASONS GIVEN BY EXTENSION WORKERS AS TO WHY
THEY FELT FARMERS ADOPTED RECOMMENDED
PRACTICES, MINNA 1974

Reasons	Extension Workers (N=18)	
	Number	Percent
Farmers convinced that practices were profitable	17	94.4
Farmers hoping to increase production	11	61.1
Farmers understood the practices	10	55.6
Farmers accepted all that extension workers told them	10	55.6
Because village head adopted the practices	7	38.9
Willing to do something different	2	11.1

$\chi^2 = 33.4$, Significant at .01 level.

Nearly four of ten extension workers said it was because the village head adopted the practices, and one of ten extension workers said it was because farmers were willing to do something different.

Extension Workers Report as to Why
Non-Adopters Rejected the
Recommended Practices

Approximately nine of ten extension workers said the reason

non-adopters rejected the recommended practices was because the non-adopters did not participate in the extension activities, as shown in table 20. Differences were significant at the .01 level.

TABLE 20
FACTORS THAT EXTENSION WORKERS FELT CAUSED
NON-ADOPTERS TO REJECT THE ADOPTION OF
RECOMMENDED PRACTICES FROM MOST TO
LEAST IMPORTANT, MINNA 1974

Reasons	Extension Workers (N=18)	
	Number	Percent
Didn't participate in extension activities	16	88.9
Had to have cash to obtain inputs	12	66.7
Not prepared to give up old practices	10	55.6
Had no faith in the improved recommended practices	9	50.0
Didn't know enough about the improved practices	8	44.4
Low level of education	8	44.4
Lack of extension worker in the village	5	27.8
Didn't hear about the practices	3	16.7

$\chi^2 = 25.0$, Significant at .01 level.

About seven of ten extension workers said it was because non-adopters had to have cash to obtain the inputs.

Nearly six of ten extension workers said non-adopters were not prepared to give up old practices.

Half the extension workers said non-adopters had no faith in the recommended practices.

Slightly more than four out of ten extension workers believed it was because the non-adopters either did not know enough of the practices or had low level of education.

Slightly less than three out of ten extension workers said the non-adopters rejected the practices because there were no extension workers in the village.

About two out of ten extension workers said practices were rejected because non-adopters did not hear about the practices.

Number of Package Demonstrations
Extension Workers Said They
Could Supervise Effectively

Six out of ten extension workers said they could supervise three demonstration plots effectively, as shown in table 21. Differences were significant at the .01 level.

TABLE 21
NUMBER OF PACKAGE DEMONSTRATIONS EXTENSION WORKERS
SAID THEY COULD SUPERVISE MOST EFFECTIVELY
PER SEASON, MINNA 1974

Number of Demonstrations per Season	Extension Workers (N=18)	
	Number	Percent
Three	11	61.1
Four	3	16.7
Two	3	16.6
One	1	5.6

$\chi^2 = 17.5$, Significant at .01 level.

Approximately two of ten extension workers said they could supervise four or two demonstration plots.

Nearly one-sixth of the extension workers said they could only supervise one demonstration plot.

Extension Workers Report About People
Present When Field Demonstrations
Were Harvested

About nine out of ten extension workers said the regular farmers together with the demonstrators and themselves were present when the demonstration plots were harvested, as shown in table 22. Differences were significant at the .01 level.

TABLE 22
EXTENSION WORKERS REPORT ABOUT WHICH PEOPLE WERE
PRESENT WHEN FIELD DEMONSTRATIONS WERE
HARVESTED, MINNA 1974

People Believed to be Present	Extension Workers (N=18)	
	Number	Percent
Extension workers with regular farmers	16	88.9
Extension workers and demonstrators only	8	44.4
Extension workers only	2	11.1

$\chi^2 = 22.0$, Significant at .01 level.

Four out of ten extension workers said it was only the demonstrators and the extension workers who were present at the time of harvest.

One out of ten extension workers said he harvested the demonstration plots by himself.

Publicity Used to Inform Farmers of
Results of Field Demonstrations

Nearly nine out of ten extension workers said the results of the demonstration plots were made available to farmers in the field after harvest, as shown in table 23. Differences between methods used were significant at the .01 level.

TABLE 23

PUBLICITY USED TO INFORM FARMERS OF RESULTS
OF FIELD DEMONSTRATIONS AS REPORTED
BY EXTENSION WORKERS, MINNA 1974

Type of Publicity	Extension Workers (N=18)	
	Number	Percent
In the field after harvest	16	88.9
In council meetings immediately after harvest	15	83.3
With farmers in neighboring villages	9	50.0
In council meetings later	8	44.0

$\chi^2 = 12.6$, Significant at .01 level.

Eight out of ten extension workers said the results of the demonstration plots were announced to farmers in council meetings immediately after harvest.

Half the extension workers said the results were announced to farmers in neighboring villages.

Four out of ten extension workers said the results were publicized to farmers in council meetings later.

Number of Farmers Extension Workers
Reported Adopted the Recommended
Practices from 1972-74

Between 1972/73 the extension workers said that the percentage of farmers who adopted the recommended practices was 94.2 percent as shown in table 24. Similarly between 1973/74 they reported that there was an increase of 69.6 percent. Despite the increase, it was less by 24.6 percent compared to 1972/73. The decrease could be construed to the fact that between 1973/74, the fertilizers were sold to farmers after the planting of the early crops such as maize and millet. Also, the year 1973/74 was very unfavorable to farmers, because of drought which caused a considerable loss to crops, as observed by the author. These reasons might be the factors which caused a decrease in the number of farmers who adopted the practices in 1973/74. It was envisaged by the extension workers that between 1974/75 there could be an increase of 109.2 percent of farmers to adopt the improved recommended practices.

TABLE 24
NUMBER OF FARMERS WHO ADOPTED THE RECOMMENDED PRACTICES
IN THE VILLAGES IDENTIFIED BY THE EXTENSION
WORKERS, MINNA 1974

Villages	Number of full time farmers	Number of farmers who adopted the practices			Number of farmers expected to adopt practices in 1975
		1972	1973	1974	
Kuta	1,636	25	32	47	215
Nukuchi	228	10	25	30	57
Kagara	1,345	8	7	15	35
Beji	135	15	4	79	100
Yakila	305	6	11	14	23
Kuchi	229	0	2	5	12
Gurmana	205	3	4	5	32
Tungan Mallam	479	4	3	5	20
Paiko	1,515	0	15	30	50
Adunu	188	30	35	42	48
Tegina	302	14	25	50	100
Sarkin Pawa	80	10	32	45	70
Erana	600	15	26	39	50
She	593	15	30	50	80
Kwana	335	10	15	20	85
Gwada	465	30	70	150	350
Gawu	485	15	75	40	50
Fuka	656	8	12	21	62
Total	9,781	218	423	687	1,439
Average	543.4	12.1	23.5	38.2	79.9
Percent increase			94.2	69.6	109.2

CHAPTER V

A COMPARISON OF FARMERS WHO DID AND DID NOT ADOPT IMPROVED RECOMMENDED PRACTICES IN VILLAGES WITH FIELD DEMONSTRATIONS

The analysis in this chapter was to compare the opinions of adopters and non-adopters in villages with field demonstrations. The criteria used to determine the adopters and non-adopters were the responses given by farmers that they had used four improved farm practices.

These were:

1. Improved seeds
2. Seed dressing chemicals
3. Recommended planting time
4. Fertilizer method and application time

Age Distribution of Adopters and Non-Adopters

Slightly over one-third of the adopters, and nearly half of the non-adopters were forty years of age or older, as shown in table 25.

There was a significant difference at the .01 level, in the ages of the adopters and non-adopters. The non-adopters tended to be older (average age 60) than the adopters (average age 35).

Main Language Shown by Adopters and Non-Adopters

All the non-adopters said they spoke Hausa very well, while about three-fourths of the adopters spoke Hausa very well, as shown in table 26.

TABLE 25

AGE DISTRIBUTION OF ADOPTERS AND NON-ADOPTERS
IN VILLAGES WITH FIELD DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Age	Adopters (N=54)	Non-Adopters (N=25)
20-29 years	13	12
30-39 years	50	40
40-49 years	20.4	36
50-59 years	13	8
60-69 years	3.7	4

$\chi^2 = 7.93$, Significant at .01 level.

The data showed a significant difference at the .01 level in the Hausa language spoken. More non-adopters of recommended farm practices spoke Hausa language than did the adopters.

Slightly over three-fourths of the adopters said they spoke Gwari very well as compared to two out of ten non-adopters. There was a significant difference at the .01 level. The adopters spoke Gwari better than the non-adopters.

Nearly one-fifth of the adopters, but not a single non-adopter, said they spoke Nupe very well. There was a significant difference at the .01 level. The adopters spoke Nupe better than the non-adopters.

Approximately four percent of the adopters and non-adopters said they spoke English language very well. There was not a significant difference in the speaking of the English language by the adopters and non-adopters.

TABLE 26

MAIN LANGUAGE SPOKEN BY ADOPTERS AND NON-ADOPTERS
IN VILLAGES WITH FIELD DEMONSTRATIONS, IN
PERCENTAGES, MINNA 1974

How Well Languages Were Spoken	Adopters (N=54)	Non-Adopters (N=25)	Level of Significance
Hausa			
Very well	81.5	100	.01
Adequately	1.9	-	
A Little	14.8	-	
Not at all	-	-	
Gwari			
Very well	77.8	24	.01
Adequately	3.7	20	
A Little	13	16	
Not at all	1.9	4	
Nupe			
Very well	1.9	-	.01
Adequately	11.1	4	
A Little	9.3	16	
Not at all	42.6	28	
English			
Very well	3.7	4.0	NS
Adequately	1.9	-	
A Little	14.8	24	
Not at all	35.2	28	

Main Language Read and Written by
Adopters and Non-Adopters

Slightly over nine percent of the adopters said they could read and write Hausa very well as compared to slightly more than one out of ten non-adopters, as shown in table 27. There was a significant difference at the .01 level.

TABLE 27

MAIN LANGUAGE READ AND WRITTEN BY ADOPTERS AND
 NON-ADOPTERS IN VILLAGES WITH FIELD
 DEMONSTRATIONS, IN PERCENTAGES,
 MINNA 1974

How Well Languages Were Read and Written	Adopters (N=54)	Non-Adopters (N=25)	Level of Significance
Hausa			
Very well	9.3	16.0	.01
Adequately	9.3	20.0	
A little	37.0	48.0	
Not at all	42.6	8.0	
Gwari			
Very well	3.7	4.0	NS
Adequately	3.7	-	
A little	11.1	8.0	
Not at all	64.8	52.0	
English			
Very well	-	-	NS
Adequately	-	-	
A little	11.1	20.0	
Not at all	74.1	52.0	

The reading and writing of Gwari and English between the adopters and non-adopters showed no statistically significant difference.

Adopters and Non-Adopters Who Had
Conducted a Demonstration

Slightly more than four out of ten of the adopters said they conducted a demonstration compared to two out of ten non-adopters who said they had conducted a demonstration, as shown in table 28.

TABLE 28

ADOPTERS AND NON-ADOPTERS WHO HAD CONDUCTED A
DEMONSTRATION IN VILLAGES WITH FIELD
DEMONSTRATIONS, IN PERCENTAGES,
MINNA 1974

Had Conducted a Demonstration	Adopters (N=54)	Non-Adopters (N=25)
Demonstration	42.6	20

Improved Farm Practices Used by
Adopters and Non-Adopters

The adopters all said they had used the following:

1. Improved seed
2. Seed dressing chemicals
3. Recommended planting time
4. Fertilizer method and application time

Only two out of ten non-adopters said they had used improved seed, slightly over six out of ten used seed dressing chemicals, nearly three out of ten said they used recommended planting time, and slightly over four out of ten said they had used fertilizer method and application time, as shown in table 29.

Slightly over half of the adopters said they had used insecticides compared to two-fifths of the non-adopters who said they had used it too. The data showed a significant difference at the .05 level.

As indicated, many of those classified in this analysis said they used some of the recommended farm practices. There were no farmers who reported not using any of the practices.

TABLE 29
IMPROVED FARM PRACTICE USED BY ADOPTERS AND
NON-ADOPTERS IN VILLAGES WITH FIELD
DEMONSTRATIONS, IN PERCENTAGES,
MINNA 1974

Farm Practices Used	Adopters (N=54)	Non-Adopters (N=25)
Improved seed	100.0	20.0
Seed dressing chemicals	100.0	64.0
Planting time	100.0	28.0
Fertilizer method and application time	100.0	44.0
Insecticide	5.6	4.0

$\chi^2 = 4.84$, Significant at .05 level.

Reasons Given by Adopters and Non-Adopters
as to Why They Thought Demonstrations
Were Difficult

Slightly over one-tenth of the adopters said the reason was due to lack of confidence in the demonstrations compared to nearly three out of ten adopters who gave the same reason as table 30 illustrates. There was a significant difference at the .01 level.

Perhaps the main reason why the non-adopters failed to adopt the recommended improved practices was because they had no confidence in the demonstrations.

TABLE 30

REASONS GIVEN BY ADOPTERS AND NON-ADOPTERS AS TO
WHY THEY THOUGHT DEMONSTRATIONS WERE DIFFICULT,
IN VILLAGES WITH FIELD DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Reasons	Adopters (N=54)	Non-Adopters (N=25)
Lack of understanding	14.8	-
Too many practices involved	5.7	0
No confidence in the demonstrations	1.9	28

$\chi^2 = 9.5$, Significant at .01 level.

Agricultural Extension Publications
Received by Adopters and
Non-Adopters

There was not much difference in the agricultural extension publications the adopters and non-adopters received, as shown in table 31. The data did not reveal a statistically significant difference.

TABLE 31

ADOPTERS AND NON-ADOPTERS FROM VILLAGES WITH FIELD
DEMONSTRATIONS COMPARED BY AGRICULTURAL
EXTENSION PUBLICATIONS RECEIVED,
IN PERCENTAGES, MINNA 1974

Publications Received	Adopters (N=54)	Non-Adopters (N=25)
Leaflets	88.9	72
Posters	79.6	64
Newsletters	46.3	52

Adopters and Non-Adopters Opinions
about Availability of Agricultural
Supplies in Agents' Shops

About eleven percent of the adopters said the supplies were always and most of the time available in agents' shops. All the non-adopters in this study said the supplies were not available in agents' shops, as shown in table 32.

TABLE 32

ADOPTERS AND NON-ADOPTERS OPINIONS ABOUT AVAILABILITY OF
 AGRICULTURAL SUPPLIES IN AGENTS' SHOPS, IN VILLAGES
 WITH FIELD DEMONSTRATIONS, IN PERCENTAGES,
 MINNA 1974

Opinions about Availability of Agricultural Supplies in Agents' Shops	Adopters (N=54)	Non-Adopters (N=25)
Always	5.6	0
Most of the time	5.6	0
Sometimes	85.2	80
Seldom	3.7	8.0
Never	0	4.0

$\chi^2 = 3.9$, Significant at .05 level.

Nearly nine out of ten adopters said the supplies were sometimes available compared to eight out of ten non-adopters who were of the same opinion.

About four percent of the adopters said the supplies were seldom available in agents' shops compared to four-fifths of the non-adopters who said the same thing.

There was a significant difference at the .05 level. This difference may indicate that the adopters had better knowledge of how to get the supplies than the non-adopters.

Purchase of Agricultural Supplies Through
Commercial or Traveling Agents by
Adopters and Non-Adopters

About 52 percent of the adopters said they purchased agricultural supplies through commercial or traveling agents compared to 44 percent of the non-adopters who did the same, as shown in table 33.

TABLE 33

PURCHASE OF AGRICULTURAL SUPPLIES THROUGH COMMERCIAL
OR TRAVELING AGENTS BY ADOPTERS AND NON-ADOPTERS
IN VILLAGES WITH FIELD DEMONSTRATIONS,
IN PERCENTAGES, MINNA 1974

Supplies Purchased	Adopters (N=54)	Non-Adopters (N=25)
	51.9	44.0

Agricultural Radio Stations Listened
to by Adopters and Non-Adopters

The data in table 34 did not show much difference in the radio stations listened to by the adopters and non-adopters.

TABLE 34

AGRICULTURAL RADIO STATIONS LISTENED TO BY ADOPTERS
AND NON-ADOPTERS FROM VILLAGES WITH FIELD
DEMONSTRATIONS, IN PERCENTAGES,
MINNA 1974

Radio Station	Adopters (N=54)	Non-Adopters (N=25)
NBC, Sokoto	35.2	28.0
BCNN, Kaduna	11.1	4.0
NBC, Kaduna	7.4	12.0

However, with the inauguration of Nigerian Broadcasting Co-operation, (NBC) in North Western State, having a well organized agricultural program relayed everyday, more farmers were likely to learn improved recommended practices.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary and Conclusions

The main purpose of this study was to compare the adoption of recommended practices by farmers in villages with and without field demonstrations in the Minna Division, Nigeria.

Secondly, Extension workers duties related to field demonstration plots for which they were in-charge were investigated.

Thirdly, a comparison of farmers who did and did not adopt recommended practices in villages with field demonstrations was made.

Findings from the study were to be used to plan future extension programs and to conduct further research.

Objectives of this study were:

1. To determine factors influencing the adoption of improved and recommended practices by farmers in villages with and without field demonstrations in Minna, 1974.
2. To determine those Extension functions which should be given specific attention as perceived by Extension workers.

Two questionnaires were mailed to obtain information from 110 farmer demonstrators and 110 non-demonstrators from villages where field demonstrations had and had not been conducted. Farmers were randomly selected by the Minna Divisional Agricultural officer who conducted the interviews. In addition, Extension workers in Minna were sent a

questionnaire inquiring into the value and conduct of field demonstrations.

Chi-square was used for analysis of the data. A significance for chi-square was established at the .05 level.

A COMPARISON OF FACTORS INFLUENCING ADOPTION OF
RECOMMENDED PRACTICES BY FARMERS
IN VILLAGES SAMPLED

Factors found to be statistically significant were:

1. Size of farm families (average 6.2) in villages with demonstrations were much smaller (30.9 percent) than family size (average 7.5) in villages without demonstrations (67.3 percent).
2. In villages with field demonstrations nearly three-fourths of the farmers spoke Hausa very well as compared to less than two out of ten of the farmers from villages without field demonstrations.
3. Ninety-six percent of farmers in villages with field demonstrations said they had observed package result demonstrations compared to only thirty percent of farmers where demonstrations had not been held in their villages.
4. There was slightly over fifty-seven percent of farmers interviewed from villages with demonstrations who said they had used fertilizers compared to slightly less than forty-seven percent of the farmers who used fertilizers in villages without field demonstrations.
5. Leaflets had been circulated to farmers (59.1 percent) more extensively in villages with field demonstrations than to farmers (36.4 percent) in villages without field demonstrations.
6. Farmers (68.2 percent) from villages with field demonstrations felt that agricultural supplies were sometimes available in agents shops

compared to farmers (31.8 percent) from villages without field demonstrations.

7. Farmers (78.2 percent) from villages with field demonstrations said they paid cash for their agricultural supplies compared to farmers (82.7 percent) from villages without field demonstrations.

The following findings were not found to be statistically significant:

1. There was not much difference when the ages of farmers from villages with and without field demonstrations were compared.
2. Few farmers interviewed spoke or wrote Nupe, Gwari, Kamuku and English languages.
3. Forty percent of the farmers interviewed from villages with field demonstrations compared to about thirty-three percent of farmers from villages without field demonstrations respectively, had purchased agricultural supplies through commercial or traveling agents.
4. Farmers (27.3 percent) from villages with field demonstrations listened to Nigeria Broadcasting Co-operation (NBC) radio station, Sokoto compared to farmers (14.6 percent) from villages without field demonstrations.

EXTENSION WORKERS DUTIES RELATED TO FIELD DEMONSTRATION PLOTS

Factors found to be statistically significant were:

1. Method used in selecting demonstrators, ranked from most to least were:
 - a. From farmers who attended council meetings
 - b. From leaders in the village

- c. From farmers who had used package of practices before
 - d. Selection by extension workers
2. The best demonstrations arrangement involved those that were pre-planned, that is, extension worker and farmer planned them together.
3. Extension workers visited demonstration plots:
 - a. At planting
 - b. When fertilizers were first put on
 - c. At thinning
 - d. At first weeding
 - e. When second fertilizers were put on
 - f. During the demonstration tour
4. Extension workers said those factors limiting the success of field demonstrations were:
 - ✓ a. Lack of transportation to supervise plots
 - ✓ b. Too many demonstrations to cope with
 - ✓ c. Delay in receipt of demonstration methods
5. Factors influencing farmers to adopt improved practices were:
 - a. Farmers convinced that practices were profitable
 - b. Farmers hoping to increase production
 - c. Farmers understood the practices
 - d. Farmers accepted all that extension workers told them
6. In the opinion of extension workers farmers rejected improved practices for the following reasons:
 - ✓ a. Non-adopters did not participate in extension activities
 - ✓ b. They lacked cash to obtain inputs
 - c. They were not prepared to give up old practices

- d. They had no faith in the improved recommended practices
 - e. They did not know enough about the improved practices
 - f. They had low levels of education
- ✓7. Extension workers felt they could adequately conduct only three to four demonstrations per season.
8. Extension workers reported the results of demonstration plots to farmers:
- a. In the field after harvest
 - b. In council meetings immediately after harvest
 - c. With farmers in neighboring villages after harvest

A COMPARISON OF FARMERS WHO DID AND DID NOT
ADOPT IMPROVED RECOMMENDED PRACTICES
IN VILLAGES WITH FIELD
DEMONSTRATIONS

Statistically significant findings were:

1. Non-adopters tended to be older (average age 60) than the adopters (average age 35).
2. Nine percent of the adopters said they could read and write Hausa very well while sixteen percent of the non-adopters could read and write Hausa.
3. Nearly three of ten non-adopters said the demonstrations were not acceptable, because they had no confidence in expected results.

Findings not statistically significant were: nearly four of ten adopters said they had listened to NBC, Sokoto compared to approximately three of ten non-adopters.

CONCLUSIONS

A number of conclusions could be drawn from the results of this study:

1. Demonstrators were selected from farmers who attended council meetings.
2. Village heads whose decisions were respected by the community did select demonstrators as well.
3. A majority of extension workers placed high emphasis on farmers' self-determination because farmers were involved in deciding their own needs.
- ✓ 4. The capacity of extension workers to conduct effective demonstration plots were hindered by:
 - ✓ a. Lack of transportation to carry out effective supervision
 - ✓ b. Too many demonstration plots assigned to supervise each season
 - ✓ c. Some farmers were somewhat unco-operative
 - d. Delay in receipt of demonstration materials
5. Farmers adopted the improved recommended practices because they were found to be profitable.
6. Non-adopters rejected the improved recommended practices because they did not participate in extension activities.
7. The circulation of leaflets to farmers in villages with field demonstrations helped influence them to adopt improved practices.

RECOMMENDATIONS

The results of this study should be of particular interest and value to Ministry of Agriculture, North Western State, Nigeria. It

might also be of interest to other northern states Ministries of Agriculture.

It is recommended that:

1. A similar study be conducted in other divisions of the state to determine reliability.
- X 2. Improved recommended practices should be made simpler to enable farmers to follow directions more easily.
3. Higher adult literacy in Hausa and English is of paramount importance so more adult literacy programs should be made available.
4. Certain programs already in practice such as subsidies for fertilizers, improved seeds and tractor hiring services should be continued with vigor.
5. State governments should provide farmers with loans to reduce some of the risks associated with adopting improved practices.
6. There should be ready availability of essential inputs at all time *as needed* in supplier's shops.
- X 7. Broader based educational research and extension programs are needed to convince more farmers to adopt improved practices so they can increase their income (per capita income now is approximately \$279 per annum).
- # 8. Extension workers should be provided with essential instruments to make their supervision of demonstration plots more effective.

IMPLICATIONS FOR FURTHER STUDY

The study did not indicate whether the adopters had higher farm incomes than non-adopters. This factor could be investigated in the future.

Mixed cropping continued to be the traditional farming pattern of over 60 percent of the farmers. It would be of value to determine the advantage or disadvantage of mixed cropping over other types of farming.

It would be of interest to investigate the total number of result demonstrations required in the state to determine the number of extension workers needed.

Further study to determine the best means of transportation suitable for supervision of the demonstration plots in the villages would be of value.

It would be of value to determine the best method of selecting the demonstrators either the method which involved all the farmers or the method whereby the village leaders did the selection.

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APPENDICES

APPENDIX A

QUESTIONNAIRE FOR FARMERS WHO HAVE
CONDUCTED PACKAGE DEMONSTRATION

QUESTIONNAIRE FOR FARMERS WHO HAVE CONDUCTED
PACKAGE DEMONSTRATION

District Name _____ Village _____

Farmer No. _____

1. Are you married?

2. Family Size Number

Wives _____

Children _____

3. Your age? _____

4. Do you speak the following languages, and how well?

	Very Well	Adequately	A Little	Not at All
a. Hausa	_____	_____	_____	_____
b. English	_____	_____	_____	_____
c. Gwari	_____	_____	_____	_____
d. Nupe	_____	_____	_____	_____
e. Others	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

5. Do you read and write the following languages?

	Very Well	Adequately	A Little	Not at All
a. Hausa	_____	_____	_____	_____
b. English	_____	_____	_____	_____
c. Gwari	_____	_____	_____	_____
d. Nupe	_____	_____	_____	_____
e. Others	_____	_____	_____	_____
_____	_____	_____	_____	_____

6. Have you observed a demonstration on another farm?

Yes _____ No _____

7. Have you conducted a demonstration on your farm? Yes _____ No _____

If Yes, have you shared the experience with nearby farmers?

(Check as it applies).

Through Tour	Everyday Contact	No one cared	Not worthwhile telling people about
_____	_____	_____	_____

Other comments _____

8. Check the following crops on which you had demonstrations:

- a. Cotton _____
- b. Groundnuts _____
- c. Rama _____
- d. Guinea Corn _____
- e. Yam _____
- f. Fadama Rice _____
- g. Upland Rice _____
- h. Cowpeas _____
- i. Other Crops _____
- _____
- _____

9. These packages are suggested for the following crops:

Cotton, Groundnuts, Rama, Fadama Rice, Upland Rice,
Guinea Corn,* Yam,* Cowpeas,* Maize*, Millet*.

Check your views as appropriate.

	Doesn't know about	Know about it	Hasn't used it	Has used it	Plans to use it	Doesn't plan to use it	Has used it but stopped
a. Improved seed	_____	_____	_____	_____	_____	_____	_____
b. Seed dressing chemical	_____	_____	_____	_____	_____	_____	_____
c. Planting time	_____	_____	_____	_____	_____	_____	_____
d. Fertilizer method and application time	_____	_____	_____	_____	_____	_____	_____
e. Fertilizer rate	_____	_____	_____	_____	_____	_____	_____
f. Weeding time	_____	_____	_____	_____	_____	_____	_____
g. Insecticide and time applied	_____	_____	_____	_____	_____	_____	_____
h. Harvest time	_____	_____	_____	_____	_____	_____	_____
10. Were the demonstrations conducted your choice, or did you do them to fulfill the direction of the Ministry?							

My Choice _____

Ministry's Choice _____

If not your choice, give reasons to fulfill your choice.

*Crops for which no improved varieties were available

11. Were the demonstrations too difficult? Yes _____ No _____
12. If you considered the demonstrations too difficult it was because
(check one or more)
- a. Too many _____
 - b. Lack of understanding _____
 - c. No time _____
 - d. No confidence in the demonstration _____
 - e. Other reasons _____

13. I obtained my supplies (check one or more as it applies)
- a. Through the Ministry _____
 - b. From a nearby town _____
 - c. Other sources _____

14. Are there agents who supplied the following in the village?
- | | Yes | No | If yes, how many |
|-------------------------------|-------|-------|------------------|
| a. Improved seeds | _____ | _____ | _____ |
| b. Seeding dressing chemicals | _____ | _____ | _____ |
| c. Fertilizers | _____ | _____ | _____ |
| d. Insecticides | _____ | _____ | _____ |
| e. Herbicides | _____ | _____ | _____ |
| f. Fungicides | _____ | _____ | _____ |
| g. Sprayers | _____ | _____ | _____ |

15. Are some supplied by the Ministry? Yes _____ No _____

If Yes, which ones:

16. Are some supplied by commercial or travelling agents?

Yes _____ No _____

If Yes, which ones?

17. Are the supplies always available in Agent's shops when you need them?

a. Always _____

b. Most of the time _____

c. Sometimes _____

d. Seldom _____

e. Never _____

18. I pay for the supplies by: (check one or more as it applies)

a. Cash _____

b. By installments _____

c. After harvest _____

d. When I can _____

19. I used the supplies because: (check one or more as it applies)

a. More reliable _____

b. More convenient _____

c. The only source _____

d. Cheaper _____

e. Other reasons _____

20. Do you listen to the agricultural radio program?

Yes _____

No _____

If No, why not?

a. Don't have a radio _____

b. Don't have time _____

c. Not worth listening to _____

d. Other reasons _____

If Yes, how often?

a. Everyday _____

b. Once a week _____

c. Number of times a week _____

d. Any other times _____

21. Which Agricultural Radio programs do you listen to.

a. Check stations that apply to you.

N.B.C., Kaduna

Radio Television, Kaduna

N.B.C., Sokoto

b. Other stations _____

Give reasons for your choice.

22. Do you receive agricultural Extension publications?

Yes _____ No _____

If Yes, which of the items mentioned below?

	Yes	No
a. Leaflets	_____	_____
b. Newsletters	_____	_____
c. Posters	_____	_____
d. Others	_____	_____
_____	_____	_____
_____	_____	_____

23. Have you attended Agricultural shows in the division?

a. Yes _____ No _____

If Yes, how many times: once _____ twice _____ thrice _____

b. When did you attend the Agricultural show(s)?

Day	Month	Year
-----	-------	------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

c. What did you learn?

APPENDIX B

QUESTIONNAIRE FOR INTERVIEWING FARMERS
IN VILLAGES WHERE PACKAGE
DEMONSTRATIONS WERE
NEVER CONDUCTED

QUESTIONNAIRE FOR INTERVIEWING FARMER IN VILLAGES WHERE
PACKAGE DEMONSTRATIONS WERE NEVER CONDUCTED

District Name _____ Village _____

Farmer No. _____

1. Are you married? Yes _____ No _____

2. Family Size Number

Wives _____

Children _____

3. Your age _____

4. Do you speak the following languages, and how well?

	Very Well	Adequately	A Little	Not at All
a. Hausa	_____	_____	_____	_____
b. English	_____	_____	_____	_____
c. Gwari	_____	_____	_____	_____
d. Nupe	_____	_____	_____	_____
e. Others	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

5. Do you read and write the following languages?

	Very Well	Adequately	A Little	Not at All
a. Hausa	_____	_____	_____	_____
b. English	_____	_____	_____	_____
c. Gwari	_____	_____	_____	_____
d. Nupe	_____	_____	_____	_____
e. Others	_____	_____	_____	_____
_____	_____	_____	_____	_____

6. Have you observed a demonstration on another farm?

Yes _____ No _____

If Yes, how was the observation made? (check as it applies)

Through Tour	Contact with Friends	Self Observation	Mass Media
--------------	-------------------------	------------------	------------

_____	_____	_____	_____
-------	-------	-------	-------

Other sources: _____

7. Farmers use different practices in farming. Please check below the practices that you are using in your work.

- a. Uses hand tools _____
- b. Uses tractors _____
- c. Plant own seeds _____
- d. Use fertilizers on crops _____
- e. Use improved seeds _____
- f. Use seed dressing chemicals _____
- g. Use insecticides _____
- h. Use herbicides _____
- i. Use fungicides _____
- j. Sprayers _____

8. I buy my supplies

a. Through the Ministry _____

b. From a nearby town _____

c. Other sources: _____

9. I pay for my farming supplies
- Cash _____
 - By installments _____
 - After harvest _____
 - When I can _____
10. Are the supplies always available in Agent's shops when you need them?
- Always _____
 - Most of the time _____
 - Sometimes _____
 - Seldom _____
 - Never _____
11. Are there Agents who supplied the following in the village?
- | | Yes | No | If yes, how many? |
|----------------------------|-------|-------|-------------------|
| a. Improved seeds | _____ | _____ | _____ |
| b. Seed dressing chemicals | _____ | _____ | _____ |
| c. Fertilizers | _____ | _____ | _____ |
| d. Insecticides | _____ | _____ | _____ |
| e. Herbicides | _____ | _____ | _____ |
| f. Fungicides | _____ | _____ | _____ |
| g. Sprayers | _____ | _____ | _____ |
12. Are some supplied by the Ministry? Yes _____ No _____
- _____
- _____
- _____
- _____

13. Are some supplied by commercial or travelling agents?

Yes _____ No _____

14. Do you listen to the Agricultural Radio Program?

Yes _____ No _____

If No, why not?

a. Don't have a radio _____

b. Don't have time _____

c. Not worth listening to _____

d. Other reasons _____

If Yes, how often

a. Every day _____

b. Once a week _____

c. Number of times a week _____

15. Which Agricultural Radio programs do you listen to?
Check stations that apply to you.

N.B.C., Kaduna

Radio Television, Kaduna

N.B.C., Sokoto

Other stations _____

Give reasons for your choice _____

16. Do you receive Agricultural Extension publications?

Yes _____ No _____

If Yes, which of the items mentioned below?

a. Leaflets _____

b. Newsletters _____

c. Posters _____

17. Have you attended Agricultural shows in the division?

Yes _____ No _____

If Yes, how many times: once _____ twice _____ thrice _____

When did you attend the Agricultural show(s)?

day	month	year
-----	-------	------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

What did you learn?

APPENDIX C

QUESTIONNAIRE TO BE FILLED IN BY FULL TIME EXTENSION WORKERS IN MINNA DIVISION

The purpose of this study is to obtain information from full time extension workers about their duties mostly in connection with package result demonstration program for which they have been in charge.

The information from this study will be used as a basis in improving the result package demonstrations and giving much encouragement to extension workers in areas that had hindered them to perform their duties effectively. You are being asked to co-operate in this study by giving a frank and honest opinion as you fill in the questionnaire. This information will only be used for classifying the responses received. Your response to the questionnaire will not be used for evaluation.

QUESTIONNAIRE TO BE FILLED IN BY FULL TIME EXTENSION
WORKERS IN MUNNA DIVISION

1. Name of the Village _____
Total Number of Families Living in the Village _____
2. Total Number of Farm Families _____
Number of Full Time Farm Families _____
3. What are the Main Crops in the village? List them by order of importance.
a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
4. What percent of the farmers are literate?
Hausa _____ English _____ Gwari _____ Nupe _____
5. On what crops did you have demonstrations in 1970 through 1973 in the village?

[illegible]

6. <u>Crop Demonstration</u>	<u>Day</u>	<u>Month</u>	<u>Year</u>	<u>Meeting Held with Farmer</u>	
				<u>Yes</u>	<u>No</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

If meetings were held with farmers, what was the average attendance?

<u>Year</u>	<u>Average Number</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Are there agents who supplied the following in the village?

	Yes	No	How many?
a. Improved seeds	_____	_____	_____
b. Seed dressing chemicals	_____	_____	_____
c. Fertilizers	_____	_____	_____
d. Insecticides	_____	_____	_____
e. Herbicides	_____	_____	_____
f. Sprayers	_____	_____	_____

8. How were the following supplied?

	<u>Agents</u>		<u>If yes, How many</u>	<u>Supplied by Ministry</u>		<u>Not available</u>
	Yes	No		Yes	No	
a. Improved seed	_____	_____	_____	_____	_____	_____
b. Seed dressing chemicals	_____	_____	_____	_____	_____	_____
c. Fertilizers	_____	_____	_____	_____	_____	_____
d. Insecticides	_____	_____	_____	_____	_____	_____
e. Herbicides	_____	_____	_____	_____	_____	_____
f. Fungicides	_____	_____	_____	_____	_____	_____
g. Sprayers	_____	_____	_____	_____	_____	_____
h. Others	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____

9. Before I went to the meeting I had (check one of the following you did)

- a. A rough idea about the practice _____
- b. Understand every step involved in the practice _____
- c. The practice outlined and written on paper by me _____

10. Demonstrations were selected as follows (Check one or more)

- a. From leaders in the village _____
- b. I selected them ahead of time from among old friends _____
- c. They were selected after consultation with farmers in the meetings _____
- d. They were good farmers who were using the same practices before _____
- e. They were selected by the Ministry _____

11. After the selection of the demonstrators (Check the operations you have carried out from those listed below).

- a. I came the second time to make the demonstration _____
- b. I made the plan for the demonstration in the office and came the second time to make it _____
- c. I planned the demonstration with the demonstrators _____
- d. I invited all other farmers to attend the demonstration _____
- e. I invited only those farmers who attended the meeting to attend the demonstration _____
- f. The demonstrator and I alone made the demonstration _____
- g. I did make a map, but I didn't keep records for the demonstration _____
- h. The farmers who attended the previous meetings attended the demonstration _____
- i. Other farmers besides those who attended the meetings attended the demonstration _____

12. How many farmers attended the demonstration _____

13. How many times did you visit the demonstration before harvest? _____

14. And at what stages? (Check one or more of the following)
- a. During the first fertilizer application _____
 - b. During the first weeding _____
 - c. During thinning _____
 - d. During second fertilizer application _____
 - e. When farmers came for demonstration tour _____
 - f. During spraying _____
 - g. Never visited the demonstration after planting _____
 - h. Other reasons _____

15. Who was present when you harvested the demonstration?
(Check one or more of the following)
- a. You and the demonstrator _____
 - b. Farmers who usually meet with you _____
 - c. Other (explain) _____

 - d. Nobody _____
 - e. Put number of farmers who were present _____
16. How were results made known to farmers of the village?
(Check one or more of the following)
- a. Right in the field after harvest _____
 - b. Discussed in meetings later _____
 - c. Discussed in a meeting that included farmers from other villages plus farmers of the village _____
 - d. Discussed in meetings with farmers in other villages _____
17. How many farmers have adopted the practice after the
- first year? _____
- second year? _____
- third year? _____

18. How many farmers do you expect will adopt the practice next year? _____
19. What, in your opinion, were the main reasons that made some farmers adopt the practice? (Check one or more of the following items).
- a. They understood the technics involved in the package _____
 - b. They were convinced of the increase in the net income as a result of the practice _____
 - c. They were hoping to increase their production _____
 - d. They are willing to adopt any new practice if it brings them more benefit _____
 - e. They found the village leaders have adopted the practice _____
 - f. They accepted all that the Extension Worker suggested to them _____
 - g. They like to do something different regardless of the work _____
 - h. List other reasons _____

20. What are, in your opinion, the main reasons of non-adopters? (Check one or more of the following items).
- a. They didn't hear about the practice _____
 - b. They didn't know enough about the practice _____
 - c. They didn't participate in the extension activities in the village _____
 - d. They didn't believe that it is possible _____
 - e. They can't obtain the inputs without cash _____
 - f. There is no agent in the village or nearby village _____
 - g. They didn't like to change the practice which is used by all farmers in the village _____
 - h. Their education is low; they didn't understand the technical effects of inputs to be applied at the correct time _____
 - i. Other reasons _____

21. What factors do you think limit the success of demonstration plots? (Check one or more of the following).
- a. Delay in receipt of demonstration materials _____
 - b. Too many demonstrations to handle at a time _____
 - c. Demonstrations too complicated for farmers to handle _____
 - d. I am not well trained to conduct the demonstration _____
 - e. Lack of transportation to supervise the demonstration _____
 - f. Lack of cooperation from the farmers _____
 - g. No encouragement from the Ministry _____
 - h. Other reasons _____

22. Check one of the following. The best number of demonstrations I can effectively handle each season is:
- a. One _____
 - b. Two _____
 - c. Three _____
 - d. Four _____
 - e. Five _____
23. Are you satisfied with present demonstration methods for farmers? Yes _____ No _____. If No, give suggestions as to how you would like to see it improved.

24. Are you satisfied with the present system of packages? Yes _____
 No _____. If No, how would you like it improved?

25. Indicate the number of demonstrations carried out by you.

Year	Number successful in terms of farmers'	
	acceptance	Number failed
1970	_____	_____
1971	_____	_____
1972	_____	_____
1973	_____	_____

26. Name _____

Age _____

Years in service _____

Years in the area _____

27. List agricultural jobs you held before becoming an Extension Agent?

28. Number of villages you now serve _____

29. Date of certificate obtained from the Agricultural School _____

30. Number of Extension in-service training sessions you have
 attended _____

AN EVALUATION OF PACKAGE RESULT DEMONSTRATIONS IN
VILLAGES WITH AND WITHOUT FIELD DEMONSTRATIONS
IN MINNA DIVISION, NIGERIA

by

FRANCIS SALAWU GANA

B.S., Ahmadu Bello University, Zaria, 1968

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

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KANSAS STATE UNIVERSITY
Manhattan, Kansas

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The main purpose of this study was to compare the adoption of recommended practices by farmers in villages with and without field demonstrations in Minna Division, Nigeria.

Two questionnaires were mailed to obtain information from 220 farmers; half from villages with, and the other half from villages without field demonstrations. These farmers were randomly selected by the Minna Divisional Agricultural Officer, who conducted the interview. Extension workers were sent a questionnaire related to the actual conduct of field demonstrations.

Chi-square was used for an analysis of the data. A significance for chi-square was established at the .05 level. When there was significance at the .01 level, it was reported.

Hausa and Gwari were commonly spoken by farmers. All except one-fourth of the farmers said they had observed result demonstrations in villages with field demonstrations. More than 51 percent of the farmers said they had used fertilizers. Only one out of ten (11.0 percent) of the farmers said agricultural supplies were always available in agents' shops.

Extension workers reported the following: nearly nine out of ten said demonstrators were selected from farmers who attended council meetings. One-half said demonstrators were selected by leaders in the villages. Approximately eight out of ten extension workers said planning of demonstrations were made with farmers. One-half said demonstrations were planned together with demonstrators.

All extension workers said they were present at planting time and for the first fertilizer application on the field demonstrations. Nearly nine out of ten extension workers were present when thinning and first

weeding took place. About two-thirds of the extension workers said they visited the plots when the second fertilizer application was made.

A limiting factor reported by about three-fourths of the extension workers was that they lacked access to the demonstration plots they supervised, and that there were too many plots which they could not cope with. Nearly six out of ten extension workers reported a somewhat limiting factor was that of farmers being somewhat uncooperative. One-half noted that a delay in receipt of demonstration material was a hindrance.

Almost all extension workers reported that farmers adopted the recommended practices because the practices were profitable. Nearly six out of ten extension workers believed farmers cooperated with the hope of increasing their production. Approximately nine out of ten extension workers believe that non-adopters rejected the recommended practices because they did not participate in extension activities.

Sixty-one percent of the extension workers felt they could supervise three demonstration plots effectively. About nine out of ten extension workers said regular farmers, together with the demonstrators and themselves, were present when demonstration plots were harvested. Nearly nine out of ten said the results of demonstration plots were made available to farmers in the field after harvest. Eight out of ten said results of demonstration plots were announced to farmers in council meetings, and one-half said results were made available to farmers in neighboring villages.

Adopters of approved recommended practices were found to be younger than non-adopters. Non-adopters said they had no confidence in the demonstrations.

The results of the study appeared to support the following conclusions:

1. Improved recommended practices need to be made simpler to enable the farmers to follow the instructions more easily.
2. Farmers' literacy in Hausa and English languages is badly needed.
3. Extension workers should be provided with essential facilities to enhance their effective supervision of demonstration plots.
4. There should be ready availability of essential inputs in agents' shops.
5. Future study is necessary to determine whether the improved recommended practices used by adopters and non-adopters were applied correctly.
6. Extension workers can adequately conduct only three to four demonstrations per season.