

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523
BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY

Batch 62

1. SUBJECT CLASSIFICATION	A. PRIMARY Food production and nutrition	AE50-0000-G356
	B. SECONDARY Rural sociology--Guatemala	

2. TITLE AND SUBTITLE
Evaluation of changes in knowledge, attitude, and practices among subsistence farmers in the department of Jutiapa, Guatemala; a time sampling methodology

3. AUTHOR(S)
Rich, T.A.; Nesman, E.G.

4. DOCUMENT DATE 1975	5. NUMBER OF PAGES 27p.	6. ARC NUMBER ARC
--------------------------	----------------------------	----------------------

7. REFERENCE ORGANIZATION NAME AND ADDRESS
AED; S. Fla.

8. SUPPLEMENTARY NOTES (*Sponsoring Organization, Publisher, Availability*)
(In Basic Village Education Project. Working paper no. 3)

9. ABSTRACT

10. CONTROL NUMBER PN-AAD-895	11. PRICE OF DOCUMENT
12. DESCRIPTORS Farms, small Guatemala Innovations Jutiapa, Guatemala? Project evaluation Sequential sampling Social change Surveys	13. PROJECT NUMBER
	14. CONTRACT NUMBER AID/CM/1a-C-73-19 GTS
	15. TYPE OF DOCUMENT

**BASIC VILLAGE EDUCATION
GUATEMALA
EVALUATION REPORTS**

WORKING PAPER NO. 3

EVALUATION OF CHANGES IN KNOWLEDGE, ATTITUDE AND PRACTICES
AMONG SUBSISTENCE FARMERS IN THE DEPARTMENT OF JUTIAPA, GUATEMALA:
A TIME SAMPLING METHODOLOGY



WORKING PAPER NO. 3

EVALUATION OF CHANGES IN KNOWLEDGE, ATTITUDE AND PRACTICES
AMONG SUBSISTENCE FARMERS IN THE DEPARTMENT OF JUTIAPA, GUATEMALA:
A TIME SAMPLING METHODOLOGY

Thomas A. Rich

Edgar G. Nesman

UNIVERSITY OF SOUTH FLORIDA

TAMPA, FLORIDA

MAY, 1975

An Affirmative Action Equal Opportunity Institution

BASIC VILLAGE EDUCATION*

Guatemala's national development plan encompasses many programs to help rural families improve their education, agriculture, living conditions, and communities. Using traditional extension methods, the number of families reached by such programs is limited. A much larger proportion of the rural population can be served, however, if the efforts of agents, promoters, teachers, etc., can be reinforced through use of modern communications techniques.

The Basic Village Education Project (BVE) is an experimental program of non-formal adult education which does not initially require literacy. It seeks to determine the effectiveness and relative costs of selected combinations of communications media that have potential for use in development programs where resources are limited.

The primary audience for BVE is the small, often illiterate subsistence farmer. Program content stresses information that will help that farmer to improve his production and income from basic grain crops. When fully operational, the Project will include matched experimental and control areas in eastern Guatemala (Oriente) and in the Quiché-speaking Indian Highlands of western Guatemala (Occidente).

Evaluation

The first step in evaluation of the Basic Village Education Program is a baseline study to establish present knowledge, attitudes, farming practices, production, and income of farmers. Additional characteristics relating to communications, nutrition, health, mobility, and living conditions are also included in the study. That information provides the base against which change induced by the Program can be measured.

Baseline data for the 1974 area of action were obtained by interviewing approximately 400 farmers from fifteen communities in the experimental area, and more than 100 farmers from five communities in the control area. Names of farmers to be included in the sample were drawn from the census lists, using standard statistical procedures.

*The Basic Village Education Project is jointly funded by the Government of Guatemala and the United States Agency for International Development in accordance with terms of an agreement between the two governments. It is administered in Guatemala by the Guatemalan Ministry of Education in collaboration with the Ministries of Agriculture and Health. Foreign personnel and other technical assistance is provided by the Academy for Educational Development supported under contract No. AID/CM/1a-C-73-19 with the United States Agency for International Development. Responsibility for an independent evaluation of the Project rests with the University of South Florida through a sub-contract with the Academy for Educational Development.

The study was conducted in two phases. All farmers in the sample were interviewed in September 1973, to obtain general information. Two months later, the same farmers were interviewed again to obtain more information about agriculture in the areas. At the time of the second interview, every fifth person in the sample was also interviewed in depth by an agronomist.*

Purpose of the Working Papers

The working papers represent an intermediate step in the process of reporting the findings from this unique experimental program in non-formal education. These papers are circulated to a limited audience for comments and suggestions. At a later date necessary revisions and corrections will be made so that the papers can be circulated to a wider audience through the Academy for Educational Development or other suitable publishing outlets.

*Taken from: "Basic Village Education: An Experiment in Non-Formal Adult Education" Guatemala City: Programa de Educacion Basica Rural, April, 1974, pp. 1, 2 and 4.

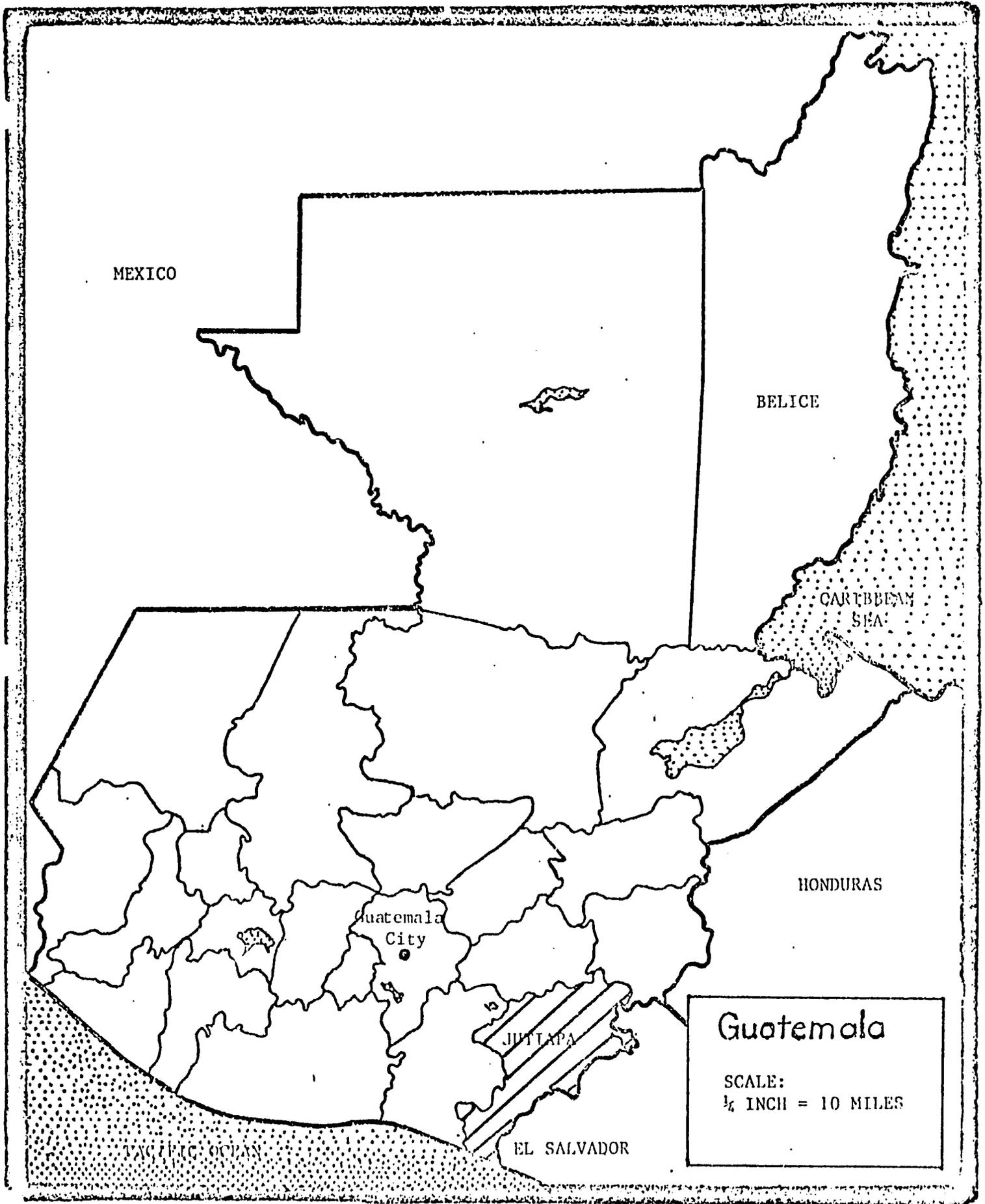


FIGURE I

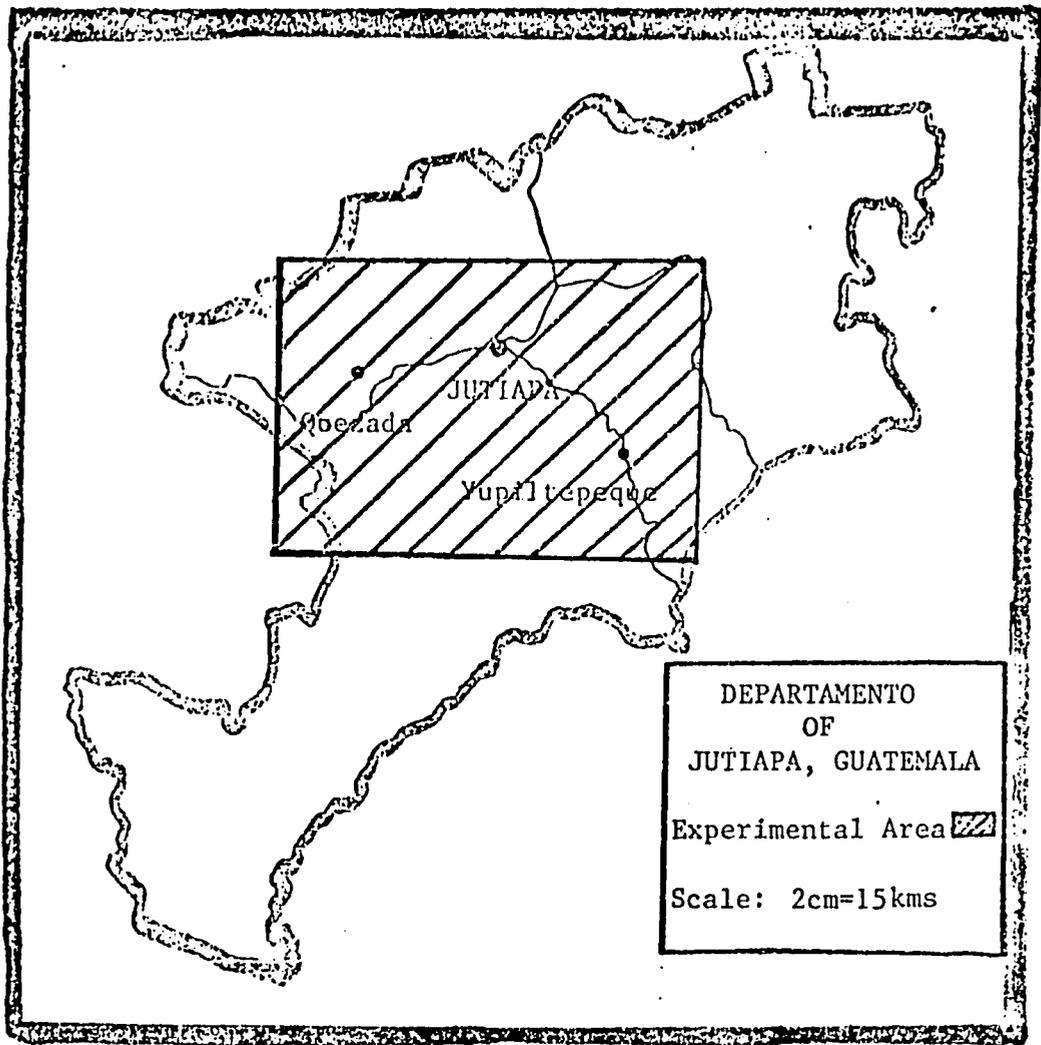


FIGURE II

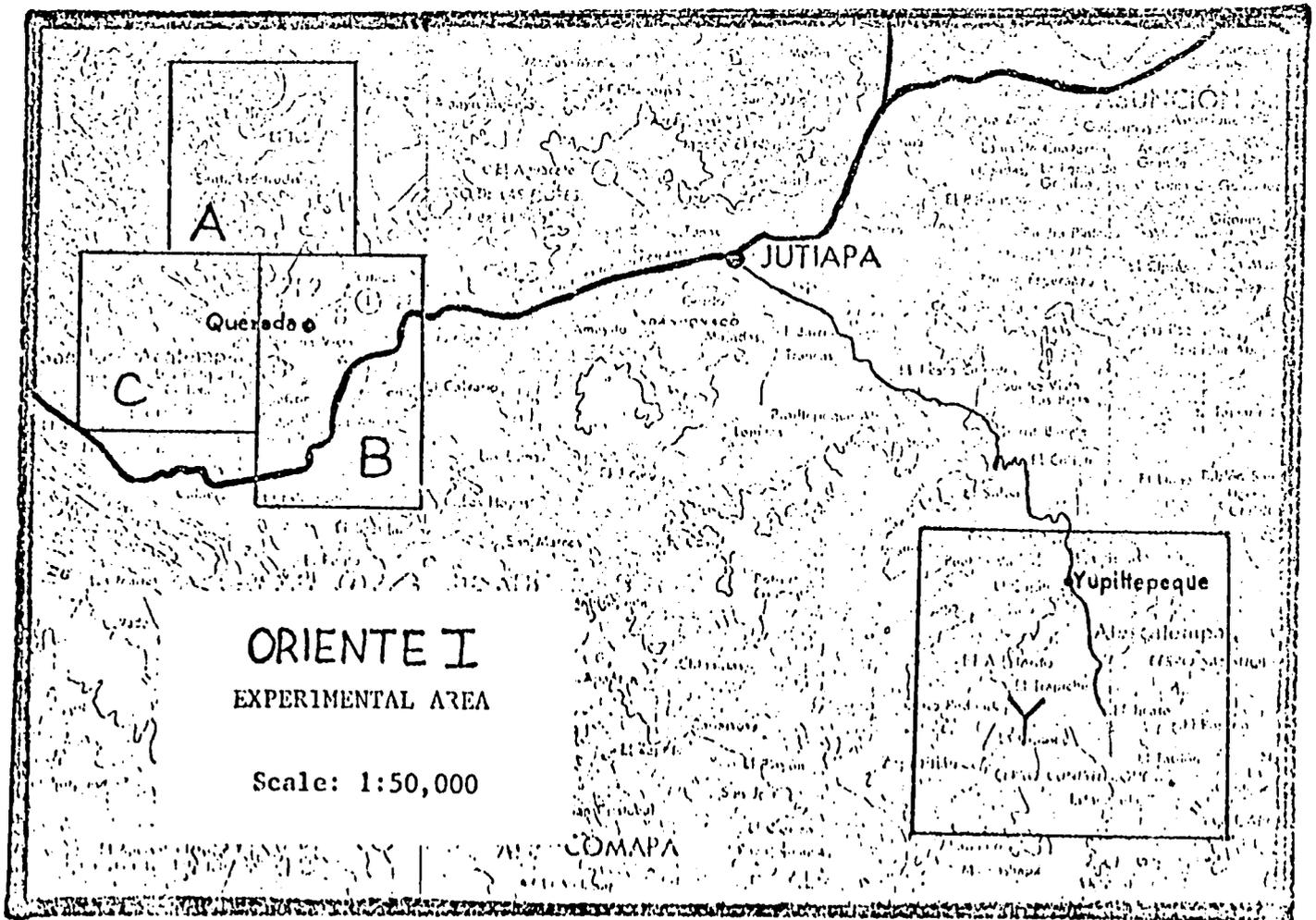


FIGURE III

TABLE OF CONTENTS

	<u>Page</u>
Sample Selection	1
Data Collection	2
Expected Findings	3
Findings	4
Discussion and Implications	5
Tables	7
References	14
Appendix - Tabulation Summaries-Time Samples I - VII	19

FIGURES AND TABLES

	<u>Page</u>	
Figure I.	Map of Guatemala	
Figure II.	Map of Jutiapa	
Figure III.	Map of Oriente I - Experimental Area	
Table I.	Suggested Practices Measured in 1974 Time Sample Surveys	7
Table II.	Summary of Interviews in 1974 Time Sample Surveys	8
Table III.	Reported Knowledge, Attitude and Use of Recommended Agricultural Practices	9
Table IV.	Reported New Knowledge of Recommended Agricultural Practices 1974	10
Table V.	Reported Favorable Attitudes Toward Recommended Practice 1974	11
Table VI.	Reported Change in Use of Recommended Practices 1973-1974	12
Table VII.	Reported New Knowledge, Favorable Attitudes and Change in Practices	13

This report deals with short-term evaluation in the form of development of specific agricultural practices, the incorporation of practices into radio messages and the continuing evaluation of the reception and impact of these messages. The independent variables in this study are the specific agricultural practices delivered through the radio treatments and the dependent variables are change in knowledge, attitude and practice.

Sample Selection*

Subsistence farmers are the target population for this study. To select an area and a population for the study it was necessary to decide on the characteristics of subsistence farmers as they are found throughout the world. They have been characterized in the following way:

1. They used a subsistence form of agriculture.
2. They live in a cluster of houses, from a few hundred to a few thousand people.
3. Have greater self-sufficiency than farmers in industrial states but dependent on cities for special goods.
4. Sell some surplus production for cash.
5. Are ambivalent towards the city in that they need goods but have fear of exploitation.
6. They are bound by traditional values and custom.
7. They are on the average, illiterate.
8. They have low levels of educational attainment.
9. They follow regional patterns of diet, home use of remedies, and use of local practitioners.
10. Are not productive farmers in terms of the national economy (Arensberg and Niehoff, 1971).

From results of a baseline survey conducted in the fall of 1973 and early reconnaissance survey findings, it was found that these farmers do meet most of the characteristics of subsistence farmers. They operate small farms and the particular sample that was chosen had an average size farm of 6.7 acres. They usually own their land although some are renters or use some communal land. Their production is limited to a few basic crops; all of the farmers grow corn, almost all of them grow beans, and many grow sorghum. These crops are grown basically for home consumption. In addition to corn, beans and sorghum, their diet includes a few items that are purchased once a week on a visit to the village or to the regional market center. In addition to their own crops, a large proportion of the farmers buy additional corn and beans to supplement that grown at home. Generally their travel is limited to the market trips and a yearly trip to the capital city or to the coast for season work to supplement the family income. Some also travel yearly to a religious center. The educational levels of these farmers are low and the illiteracy rates are high.

*See Working Paper No. 1 "The General Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala" and Working Paper No. 2 "The Agricultural Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala" for complete summary of characteristics of farmers.

New agricultural information comes by way of friends and neighbors or sometimes by radio. There are a few cases where the farmers have had contact with agricultural technicians.

The homes are owned and of simple construction. Tile roofs, adobe walls and dirt floors predominate. Sanitary facilities and the assurance of pure water are lacking. These farmers have high educational aspirations for their children and would still choose to be farmers if they had their choice of other jobs.

The baseline information which was gathered from field interviews of 506 farmers in 1973, provided the information concerning listening habits and the level of information, attitudes, and practices of the subjects. Utilizing this information with further input by agronomists and development specialists, the message was prepared as a series of behavioral objectives. These were stated as specific farm practices and were then incorporated into a monthly sequence of radio broadcasts. Programming begins with behavioral objectives and incorporates them into a script produced for the listening audience. Data is collected by specifically sampling the listening practices to determine if the farmers are listening and to determine the impact on knowledge, attitudes and practice.

Radio programming proceeded in a sequence appropriate to the crop year, and dealt with specific practices related to planting corn, use of credit, use of fertilizers, use of insecticides, method of storage, marketing practice and in all 45 specific practice areas, 36 of which are mentioned in this study (See Table I). Each program was scheduled during an appropriate month relative to the planting or harvesting season.

Data Collection

The time sample procedure consisted of a questionnaire developed from the same behavioral objectives used in programming. A multi-dimensional format was used in which the following questions were a part:

1. What did you do last year (in relation to a given agricultural practice)?
2. What did you do this year (related to same practice)?
3. Have you heard any new information regarding this practice?
4. What was the source of the new information?
5. How do you feel about this practice?

Each questionnaire contained approximately 35 questions that were related to six or seven basic practices that had been broadcast the prior month.

Interviews were conducted with a 20% sample each month from each treatment and control area. The sample was selected randomly from each of the five villages in all four sub-areas. In addition to this randomization, all of the villages were divided into five zones so that a physical stratification of the sample could be made. A person was selected from each of

the five zones so that all of the sections of every village would be interviewed each month. There were 25 people interviewed in each of the four sub-areas giving a total of 100 people interviewed every month in the whole experimental area where the study was conducted. There were seven time samples conducted throughout the year and all of the tabulation summaries are included in the Appendix. Five of the seven are included in this study. A problem was encountered in that many of the farmers were absent from their farms due to work on the coast so that it was not always possible to interview them at the time their name was chosen for the sub-sample. In some cases they were not available for interviewing in any of the monthly surveys (see Table II).

The person selected to do the interviewing was chosen because of his prior experience in survey research, his knowledge of the area, and his rapport with the people. The interviewing procedures for the time sample were pretested and determined to be most effectively carried out in the following way: After the sample was selected and a list of names was available, the interviewer went to the home of the person to be interviewed. Upon arrival he began with an informal conversation in which he presented himself and gave the reason for the visit. After the conversation had proceeded informally he then asked specific questions and filled in the questionnaire.

The data from the questionnaires was field checked, transferred to sense sheets and then to computer cards for standard data analysis. A test of the difference of means was used to compare the effect of different communication treatments on changes in knowledge, attitudes and practices.

Expected Findings

In order to test the comparative impact of mass media (radio) and the combination of other communication treatments, three major areas of hypotheses are proposed. One is directed at the knowledge level (K), the second at the attitude level (A), and the third at the practice level (P). A comparison of change between knowledge, attitude and practice is also included.

Hypothesis related to knowledge.

1. The reported new knowledge of recommended practices in the radio treatment area will be greater than in the control area.
2. The reported new knowledge of recommended practices in the radio/monitor area will be greater than in the radio area.
3. The reported new knowledge of recommended practices in the radio/monitor/agronomist area will be greater than those in the radio/monitor area.

Hypothesis related to attitudes.

1. Favorable attitudes toward recommended practices in the radio area will be greater than those in the control area.

2. Favorable attitudes toward recommended practices in the radio/monitor area will be greater than those in the radio area.
3. Favorable attitudes toward recommended practices will be greater in the radio/monitor/agronomist area than they will be in the radio/monitor area alone.

Hypothesis related to practice change.

1. The increase in the use of recommended practices in the radio area will be greater than those in the control area.
2. The increase in the use of the recommended practice in the radio/monitor area will be greater than those in the radio area alone.
3. The increase in the use of recommended practice of radio/monitor/agronomist will be greater than those of the radio/monitor area.

In addition to the above hypotheses, it would be expected that more farmers would have knowledge of the recommended practices than those that would have a favorable attitude and want to try them out. Also, it would be expected that more farmers would have a favorable attitude toward the use of the practices than the number that had actually used them.

Findings

The results of the 1974 Time Sample Surveys are summarized in Tables III through VIIc. A test for significance between means was used to compare the sub-areas.

Comparative Measurement of New Knowledge. As can be observed in Table III, there is a progressive increase in reported new knowledge of recommended practices by treatment area. Radio is greater than Control and the difference is highly significant (see Table IVa). Radio/Monitor is greater than Radio alone but the difference is not significant (see Table IVb). Radio/Monitor/Agronomist is greater than Radio/Monitor and the difference is significant (see Table IVc).

Comparative Measurement of Favorable Attitudes. As can be observed in Table III, there is a progressive increase in the favorable attitude toward the recommended practices by treatment area. Radio is greater than Control and the difference is significant (see Table Va). Radio/Monitor is greater than Radio alone but the difference is not significant (see Table Vb). Radio/Monitor/Agronomist is greater than Radio/Monitor and the difference is significant (see Table Vc).

Comparative Measurement of Practice Change. As can be observed in Table III, the difference between the reported use of recommended practices in 1973 and 1974 does not follow the same pattern of progressive increase across communication treatment sub-areas as with knowledge and attitudes. There is an absolute decrease in the use of recommended practices from 1973 to 1974 in all sub-areas except one. The decrease in the Radio sub-area is greater than in the Control sub-area although the difference is not significant (see Table VIa). The decrease in the Radio/Monitor sub-area

is less than in the Radio sub-area alone and the difference is significant (see Table VIb). The increase in the Radio/Monitor/Agronomist sub-area is greater than in the Radio/Monitor sub-area although the difference is not significant (see Table VIc).

A comparison between Radio alone and Radio/Monitor/Agronomist combined is found in Tables VIIa, VIIb, and VIIc. There is a significant difference between these two treatments at all three levels--knowledge, attitude and practice.

Comparative Measurement of Knowledge, Attitude and Practices. If it is assumed that all those who used the recommended practice in 1973 also had the knowledge component as well, then this can be added to "new knowledge" for a count of "knowledge" 1974" of 1650 practices. This can be compared to the "favorable attitude: 1974" which is reported as 1388 practices. In turn, this can be compared to reported "practice use: 1974" of 704 practices. This shows reported knowledge of recommended practices to be greater than reported favorable attitudes toward these practices. It also shows that the reported favorable attitudes toward recommended practices are considerably more numerous than the use of the practices. There are many assumptions in this procedure and caution is advised in taking these comparisons as conclusive.

Discussion and Implications

From the preliminary analysis of the data it would appear that mass media (radio) can be used to effect change in knowledge and attitudes among a traditional population such as the subsistence farmers in southeastern Guatemala. (Both hypotheses comparing radio to no radio at the level of knowledge and attitudes were confirmed.) It also suggests that the possibilities of knowledge, attitude and practice change increase as group meetings and personal visits of technicians are added to the message system. (Two of the four hypotheses were confirmed. The addition of the monitor alone to radio does not make a significant difference but it is found that the results from the combined interpersonal treatment of monitor and agronomist with the mass treatment of radio is significantly greater than with radio alone. This is true at the levels of knowledge, attitudes and practices.) The possibilities of changing practices as compared to knowledge and attitudes, at least within the short period of one year by the use of radio or radio combined treatments, is not as clearly substantiated by the data from the time sample surveys.

One of the greatest problems in using a single year for the measurement of change in agricultural practices is that many things in the natural and cultural environment change from year to year making it impossible to use a desired practice a given year although it is generally adopted in the long run. The use of fertilizers in 1974 is just such a case. The international oil crises had a direct effect on the availability and price of fertilizers. Even when available, the price in 1974 was at least three times that of 1973. One of the sub-areas (the one that was randomly chosen for Radio treatment alone) already had used many of the recommended farm

practices related to chemical fertilizer prior to the initiation of the Basic Village Education program so that the impact of the fertilizer shortage gave a negative effect. Some indication of the impact of fertilizer shortage is available from the data presented here but only long term measurement of change will give a more accurate assessment. For example, 40% of the farmers interviewed said they had used recommended types of fertilizer at seeding time in 1973 but only 23% used it in 1974 in spite of increased knowledge and favorable attitudes. The responses on non-fertilizer items were in contrast to the above example. In response to the question on the order of weeding and hilling corn, 33% of the farmers interviewed said they had used the recommended practice in 1973 and this increased to 41% in 1974. It should be mentioned also that 1973 was one of the best crop years that has been experienced in the study area during the last decade.

No attempt has been made in this summary to analyze the message content or methods of presentation in the different treatment areas. A further analysis by practice could give an indication of which ones had the greatest impact.

This summary is only one of a series that will be conducted as part of the Basic Village Education Project so that the present findings, which are tentative in nature, can be further confirmed or amplified in the future. The actual measurement of crop yields will be an important part of the project.

The hypotheses examined are illustrative of the potential of time sampling for ongoing evaluation of a field project in Basic Village Education. The reader may wish to pursue other areas in the summary codebook tables that follow.

TABLE I

BASIC VILLAGE EDUCATION

SUGGESTED PRACTICES MEASURED IN 1974 TIME SAMPLE SURVEYS

- TS-3 3 Soil disinfecting
 8 Selection of corn seed
 13 Number of corn seed per hill
 18 Type of fertilizer at seeding
 23 Amount of fertilizer per manzana
 28 How to apply fertilizer
 33 How to measure amount of fertilizer applied by hill dropping
- TS-4 3 Use of insecticides
 8 Height of weeds at first weeding
 13 Association of weeding and hilling
 18 Use of weed control
 23 Use of fungicide
 28 How to drain steep land
 33 How to drain flat land
 38 How to drain low land
- TS-5 3 Control of insects in beans
 8 Safety precautions with insecticide use
 13 Type of insecticide to control corn ear worm
 18 How to plant second crop/association
 23 How to obtain second crop-sorghum seed
 28 How to obtain second crop-corn seed
- TS-6 3 Use of compost piles
 8 Advisor for fertilizers
 18 Type of fertilizer/initiation of flowering corn
 23 Amount of fertilizer per manzana on corn/bean association
 28 Amount of fertilizer per manzana on sorghum/bean association
 33 Proper time to disinfect soil with insecticides
 38 Advisor to identify crop diseases
 13 Timing of fertilizer at initiation of flowering
- TS-7 3 First weeding of the corn field/determined by weed height
 8 Second weeding of the corn field/determined by weed height
 13 Order in which you should weed, hill and fertilize
 18 Order in which you should weed and hill your first crop of corn
 23 Insecticide most effective for the diabrotica beetle
 28 How to mix the insecticides used to control the diabrotica beetle
 33 Advisor about use of insecticides on the crops

TABLE II

BASIC VILLAGE EDUCATION

SUMMARY OF INTERVIEWS IN 1974 TIME SAMPLE SURVEYS

1. Total number of monthly time sample surveys (TS) included in study = 5.

2. Number of practices included in each survey:

1. TS III = 7 (less fertilizer = 3)

2. TS IV = 8 (less fertilizer = 8)

3. TS V = 6 (less fertilizer = 6)

4. TS VI = 8 (less fertilizer = 3)

5. TS VII = 7 (less fertilizer = 6)

Total Practices=36 (Total practices less fertilizer = 26)

3. Number of respondents chosen for each survey:

1. Control sub-area = 25

2. Radio sub-area = 25

3. Radio + monitor sub-area = 25

4. Radio + monitor + agronomist = 25

Total respondents 100

4. Total respondents chosen from each sub-area for all five surveys:

1. Control sub-area = 125

2. Radio sub-area = 125

3. Radio + monitor sub-area = 125

4. Radio + monitor + agronomist = 125

Total respondents 500

TABLE III
 BASIC VILLAGE EDUCATION: GUATEMALA
 REPORTED KNOWLEDGE, ATTITUDE AND USE OF RECOMMENDED AGRICULTURAL PRACTICES

All Practices	<u>Communication Treatment</u>				Total All Sub-Areas**
	Control	Radio	Radio + Monitor	Radio + Monitor + Agronomist	
Use 1973 No.	148	254	200	167	769
%	16.4	28.2	22.2	18.6	21.4
New knowledge: 1974 No.	120	220	244	303	887
%	13.3	24.4	27.1	33.7	24.6
Favorable attitude: 1974 No.	274	328	365	421	1388
%	30.4	36.4	40.6	46.8	38.6
Use 1974 No.	110	212	198	184	704
%	12.2	23.6	22.0	20.4	19.6
Change in use 1973-74 No.	-38	-42	-2	17	-65
%	- 4.2	- 4.7	-0.2	1.9	- 1.8

*Total possible responses = 900.
 **Total possible responses = 3600.

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported New Knowledge of Recommended Agricultural Practices 1974

TABLE IVa

CONTROL	RADIO
120*	220
0.1317**	0.2470
T = 5.70 d.f. = 248 P = 0.000 Difference between sub-areas: highly significant	

TABLE IVb

RADIO	RADIO + MONITOR
220	244
0.2470	0.2701
T = 0.96 d.f. = 248 P = 0.339 Differences between sub-areas: not significant	

TABLE IVc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
244	303
0.2701	0.3320
T = 2.23 d.f. = 248 P = 0.027 Difference between sub-areas: significant	

*Total responses (900 possible)

**Mean response of all respondents (N=125)

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported Favorable Attitudes Toward Recommended Practice 1974

TABLE Va

CONTROL	RADIO
274* 0.3088**	328 0.3720
T = 2.41 d.f. = 248 P = 0.017 Difference between sub-areas: significant	

TABLE Vb

RADIO	RADIO + MONITOR
328 0.3720	365 0.4082
T = 1.30 d.f. = 248 P = 0.194 Difference between sub-areas: not significant	

TABLE Vc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
365 0.4082	421 0.4713
T = 2.09 d.f. = 248 P = 0.038 Difference between sub-area: significant	

*Total responses (900 possible)

**Mean response of all respondents (N=125)

Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported Change in Use of Recommended Practices 1973-1974

TABLE VIa

CONTROL	RADIO
-38* -0.0404**	-42 -0.0471
T = -0.40 d.f. = 248 P = 0.689	
Differences between sub-areas: not significant	

TABLE VIb

RADIO	RADIO + MONITOR
-42 -0.0471	-2 -0.0002
T = 2.53 d.f. = 248 P = 0.012	
Differences between sub-areas: significant	

TABLE VIc

RADIO + MONITOR	RADIO + MONITOR + AGRONOMIST
-2 -0.0002	+17 0.0184
T = 1.11 d.f. = 248 P = 0.269	
Difference between sub-areas: not significant	

*Total responses (900 possible)
 **Mean response of all respondents (N=125)
 Source: 1974 Monthly Time Samples III through VII.

BASIC VILLAGE EDUCATION: GUATEMALA

Reported New Knowledge, Favorable Attitudes and Change in Practices:

A Comparison of the Effect of Radio vs. Radio/Monitor/Agronomist

Table VIIa
New Knowledge 1974

RADIO	RADIO + MONITOR + AGRONOMIST
22.0* 0.2470**	303 0.3320
T = 3.31 d.f. = 248 P = 0.001 Difference between sub-areas: highly significant	

Table VIIb
Favorable Attitude 1974

RADIO	RADIO + MONITOR + AGRONOMIST
328 0.3720	421 0.4713
T = 3.46 d.f. = 248 P = 0.001 Difference between sub-areas: highly significant	

Table VIIc
Change in Use 1973-74

RADJO	RADIO + MONITOR + AGRONOMIST
-42 -0.0471	+17 0.0184
T = 3.67 d.f. = 248 P = 0.000 Difference between sub-areas: highly significant	

*Total Responses (900 possible):

**Mean response of all respondents (N = 125)

Source: 1974 Monthly Time Samples

REFERENCES

A.I.D.

- 1970 Non-Formal education: a selected list of references for AID technicians. Washington, D. C.: Office of Education and Human Resources. Agency for International Development.
- 1971 Notes on case studies of instructional media projects. Washington, D. C.: Office of Education and Human Resources, Bureau for Technical Assistance. Agency for International Development.
- 1973a The cost of instructional radio and television for developing countries. Washington, D. C.: Office of Education and Human Resources. Agency for International Development.
- 1973b The effectiveness of alternative instructional media: a survey. Washington, D. C.: Office of Education and Human Resources, Bureau for Technical Assistance. Agency for International Development.

Arensberg, Conrad M., and Arthur H. Niehoff.

- 1971 Introducing Social Change: A Manual for Community Development. Chicago: Aldine-Atherton.

Armsey, James W., and Norman C. Dahl.

- 1973 An Inquiry Into the Uses of Instructional Technology. New York: Ford Foundation Report.

Bennis, Warren G., Kenneth D. Benne, and Robert Chin.

- 1969 The Planning of Change. New York: Holt, Rinehard and Winston.

Brembeck, Cole S. and Timothy J. Thompson.

- 1973 New Strategies for Educational Development: The Cross-Cultural Search for Non-Formal Alternatives. London: Lexington Books. D. C. Heath and Co.

Bryn, Darcie, et al.

- 1959 Evaluation in Extension. Topeka, Kansas: H. M. Ives and Sons.
Division of Extension Research and Training, United States
Department of Agriculture.

Coombs, Phillip, Roy C. Prosser and Manzoor Ahmed.

- 1973 New Paths to Learning: For Rural Children and Youth. New York:
International Council for Educational Development.

Coombs, Phillip H. and Manzoor Ahmed.

- 1974 Attacking Rural Poverty: How Non-formal Education Can Help.
Baltimore: The John Hopkins University Press.

Gale, Laurence.

- 1969 Education and Development in Latin America. New York: Frederick
A Praeger.

Hayes, Samuel P.

- 1959 Measuring the Results of Development Projects. Paris: UNESCO.

Ingle, Henry T.

- 1974 Communication media and technology: a look at their role in
non-formal education programs. Washington, D. C.: The Information
Center on Instructional Technology. Academy for Educational
Development.

Kleis, Russell.

- 1974 Program of Studies in Non-Formal Education: Case Studies. East
Lansing: Michigan State University Institute for International
Studies in Education.

LaBelle, Thomas J.

- 1972 Education and Development: Latin America and the Caribbean.
Los Angeles: Latin American Center, UCLA.

Lerner, Daniel, and Wilbur Schramm.

- 1967 Communication and Change in the Developing Countries. Honolulu:
 East-West Center Press.

Lionberger, Herbert F.

- 1960 Adoption of New Ideas and Practices. Ames, Iowa: The Iowa State
 University Press.

Madison, John.

- 1971 Radio and Television in Literacy: Reports and Papers on Mass
 Communication No. 62. Paris: UNESCO.

Mathur, J. C. and Paul Neurath.

- 1959 An Indian Experiment in Radio Farm Forums. Paris:UNESCO.

McAnany, Emile G.

- 1973 Radio's role in development: five strategies of use. Washington:
 D.C.: Information Bulletin No. 4. Information Center on Instruc-
 tional Technology. Academy for Educational Development.

Moore, Wilbert E.

- 1974 Social Change, 2nd ed. Englewood Cliffs: Prentice-Hall.

Myren, Delbert T.

- 1964 Communications in Agricultural Development. Mexico City, Mexico.
 University of Wisconsin and Mexican Ministry of Agricultural.

Nisbet, Robert.

- 1972 Social Change. New York: Harper and Row.

OECD.

- 1973 Indicators of Performance of Educational Systems. Paris:
 Organization for Economic Cooperation and Development.

Paulston, Rolland G.

- 1972 Non-Formal Education: An Annotated International Bibliography.
New York: Praeger Publishers.

Richardson, Lee.

- 1969 Dimensions of Communications. New York: Appleton Century Crofts.

Rogers, E. M. and F. Floyd Shoemaker.

- 1971 Communications of Innovations. New York: The Free Press.

Rogers, Everett M. with Lynne Svenning.

- 1969 Modernization Among Peasants: The Impact of Communication. New
York: Holt, Rinehart and Winston.

Roy, Prodipto, Frederick B. Waisanen and Everett Rogers.

- 1969 The Impact of Communication on Rural Development: An Investigation
in Costa Rica and India. Paris: UNESCO.

Schramm, Wilbur.

- 1973 Big Media--Little Media. Washington, D. C.: Office of Education
and Resources. Bureau for Technical Assistances, Agency for
International Development.

Secord, Paul F. and Carl W. Backman.

- 1974 Social Psychology. New York: McGraw Hill, 2nd ed.

Selltiz, Jahoda, et al.

- 1960 Research Methods in Social Relations. U.S.: Henry Holt and Company.

Solo, Robert A. and Everett M. Rogers.

- 1972 Inducing Technological Change for Economic Growth and Develop-
ment. Michigan: Michigan State University Press.

Ward, Ted W. and William A. Herzog, Jr.

- 1974 Program of Studies in Non-Formal Education: Effective Learning
in Non-Formal Education. East Lansing: Michigan State University
Institute for International Studies in Education.

Weiss, Carol H.

1972 Evaluation Research. Methods of Assessing Program Effectiveness.
Englewood Cliffs: Prentice-Hall.

Wilson, Meredith C. and Gladys Gallup.

1954 Extension Teaching Methods. Washington: Federal Extension
Service, USDA.

BASIC VILLAGE EDUCATION EVALUATION REPORTS

"The General Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala" Working Paper No. 1 by Thomas A Rich and Edgar G. Nesman. Tampa, Florida, October 1974.

"The Agricultural Characteristics of Subsistence Farmers in the Department of Jutiapa, Guatemala" Working Paper No. 2 by Edgar G. Nesman and Thomas A. Rich. Tampa, Florida, February 1975.

"Innovativeness Among Subsistence Farmers in Guatemala" by Edgar G. Nesman, Thomas A. Rich and Howard E. Ray. Presented at Rural Sociological Society Meetings, Montreal, Canada, August 1974.

"The Comparative Study of the Impact of Mass Communication on Subsistence Farmers in Guatemala" by Edgar G. Nesman and Thomas A. Rich. Presented at Southern Sociological Society Meetings, Washington, D. C., April 1975.