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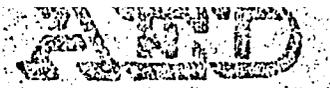
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ACADEMY FOR EDUCATIONAL DEVELOPMENT  
LA ACADEMIA PARA EL DESARROLLO EDUCATIVO

THE BASIC VILLAGE EDUCATION PROJECT  
(PROGRAMA DE EDUCACION BASICA RURAL)

GUATEMALA

SECOND INTERIM REPORT

FIELD OPERATIONS

JULY 1974 - JUNE 1975

This report has been prepared by the Academy for Educational Development under contract No. AED/CR/LA-C-73-29 for the Division of Education, Science and Technology, Office of Development Resources, Bureau for Latin America of the Agency for International Development.

## PREFACE

The Second Interim Report of the Basic Village Education Project has been written in two parts, Field Operations and Evaluation Component, and is presented in two volumes.

This volume, written by project field staff in Guatemala covers all project field operations during the period July, 1974, through June, 1975, including evaluation-related activities. The second volume, written by project evaluation staff at the University of South Florida, covers evaluation design and process, and results to date. The two volumes are cross-referenced as appropriate.

The evaluation team participated with field staff in development of project design and the Implementation Plan, and have been closely associated with all subsequent developments which could affect the validity of the evaluation. There is continuous interchange between evaluation and field staff in determining priorities for data analysis, and in interpretation of results. The evaluation team feeds information back to the field as rapidly as possible to permit its use in programming. Although the project is being subjected to an independent evaluation in the sense that evaluation design and data collection and analysis are under the direction of the evaluation team, it has benefitted from the above-described relationship between field and evaluation.

After the first year of experimental programming, results reported in the Evaluation Component volume indicate that knowledge of, and favorable attitude toward, the use of improved practices has increased. These increases are least in the control area, and increase progressively in the Radio Only, Radio/Monitor and Radio/Monitor/Agronomist areas. A consistent pattern of increased use of improved practices was not detected in that first year. As pointed out in that volume, however, a number of external factors may have influenced results significantly. It is still too early in the life of the project to reach definitive conclusions.

Guatemala City, Guatemala  
October, 1975

Howard E. Ray  
Program Leader  
Basic Village Education

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CHAPTER I

BACKGROUND

The Basic Village Education Project is a USAID/Washington regional Project designed to provide information of value in integrating modern communications technology into development programs throughout Latin America. Project origins, scope, design, implementing actions, and field implementation are described in the First Interim Report (July, 1974).

As stated in the Implementation Plan, the specific Project objective is:

"To determine effectiveness and relative costs of different mixes of communications media, used to supplement the work of extension agents (limited in number), in influencing change in agricultural practices and production among the Ladinos and Indians of rural Guatemala."

An unstated objective is the development of a cadre of trained people in Guatemala capable of planning and implementing regional or national programs which seek to use modern communications technology to increase the number of people reached effectively in development programs.

The approved Project Implementation Plan provides the basis for both operations and evaluation. In brief, the Plan calls for three years of experimentation in the Oriente and two years in the Occidente, with in-course modifications for 1975 and 1976 as appropriate. Three distinct mixes of communication media, representing increasing degrees of contact with rural families, constitute the major variables or "treatments" for the experiment.

The Project Implementation Plan was completed in August, 1973, approximately three months after arrival in Guatemala of the first two long-term U.S. technicians. Experimental and control areas for 1974 (Oriente only) were selected, baseline studies completed, and major commodity requirements identified and purchased by the end of that year. Central audio/visual production studios were equipped, and the radio transmitter at Quezada installed in late 1973 and early 1974. Staff were trained during the same period. The differential communications treatments were initiated in the Oriente in late March, 1974, and have been continued since that time without serious interruption.

A preliminary study of the Quiché-speaking region in the Occidente was conducted by a team of anthropologists during the first half of 1974 to develop criteria for area selection and to

identify potential sites for Project action. Experimental and control areas for the region were selected and baseline studies essentially completed by the end of the year. A radio transmitter was installed at Momostenango, and imposition of differential communications treatments in the Occidente was scheduled to begin in early 1975. Those treatments had still not been initiated at the end of the reporting period, however, due primarily to delays within the Government of Guatemala in appointing additional staff required for Occidente programming.

CHAPTER IIJUSTIFICATION AND SETTING

Demand is increasing faster than food production. The AID "Report to the Congress on World Food Conference Follow Up Actions" 1/ outlines five major areas of concentration for assistance programs designed to help developing countries alleviate growing food deficits. One important area is the acceleration of agricultural production in the developing nations. Programs and policies must operate with limited available resources. Therefore, better and cheaper methods of communication with subsistence farmers must be identified to help them utilize their own resources more efficiently, participate in the development of the rural sector, and improve their farm production.

The Basic Village Education Project is a controlled experiment directed specifically at the problem of finding better and cheaper ways of communicating with subsistence farmers. The target communities of the project are characterized by subsistence farming, small farm units and an illiterate or semiliterate population.

Guatemala was selected as the site of the experiment because of the interest of the Guatemalan government, and because it provides climatological and cultural settings which are representative of much of the developing world.

The physiography of Guatemala includes the humid, well watered coastal regions, the rain forests of the Peten, the highlands of Western Guatemala and the dry regions of the Southeast. The last two of these regions are of greatest concern to the BVE project, since it is there that the pressures of people on scarce arable land are felt most severely. The BVE experimental areas are located in the arid southeastern region (the Oriente) and in the mountainous western highlands (the Occidente).

The people of Guatemala are as diverse as their country. The principal language is Spanish, although four other major languages and numerous dialects can be found within the national boundaries. Spanish-speaking ladinos and the highland Indians who speak one of the other languages or dialects represent two broad, highly distinctive ethnic groups. The terms "Indian" and "Ladino" do not refer to biological or racial differences; rather, they are used to distinguish cultural differences.

Indians are the descendants of the once great Mayan civilization that inhabited southern Mexico, Guatemala and many other parts

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1/ Reported in USAID/Guatemala Staff Notice SN-71-75, May 29, 1975.

of Central America. The Guatemalan Indian Institute defines an Indian as anyone who speaks one of the numerous Indian dialects, wears the Indian "traje" (traditional Indian costume) and practices any of the many Mayan mythologies. Culturally, the Indian remains relatively isolated in his small community. He is characterized by adherence to traditional customs, pride in clan membership, strong beliefs in the dieties and in the power of his ancestors, and violent resistance to change from the outside. He places high values on hard work, ties and communication with the dead, and his language.

Ladinos are those who have adopted certain aspects of Western culture, and speak Spanish as their first language. They have no clan membership, generally reach higher levels of education and are more susceptible to outside influences.

According to 1964 census figures, Indians make up 43.3% of Guatemala's population with Ladinos accounting for the rest.

Two thirds of Guatemala's nearly six million people live in the rural areas. More than four fifths of those rural people earn less than the nation's estimated per capita income of \$318. 1/ Less than half of the people fifteen years of age or older are literate. 2/ Population is growing at a rate of approximately 3 percent annually. 3/

Agriculture accounts for about 30 percent of Guatemala's gross national income. The great majority of the economically active people in both the Oriente and Occidente regions dedicate themselves to agriculture. Both areas are characterized by minifundista agriculture. Nationally, over 40% of the farms are less than 1.4 hectares in size. The almost 90 percent of the farmers who have less than 7 hectares of land occupy in total less than twenty percent of the nations agricultural lands. Even so, they produce 50 to 60 percent of the corn, beans, wheat and sorghum. 4/

#### Characteristics of areas under investigation

Contrasting characteristics of the Occidente and Oriente areas under investigation by BVE are shown in Figure 1 to 3 drawn from "BVE" baseline survey data.

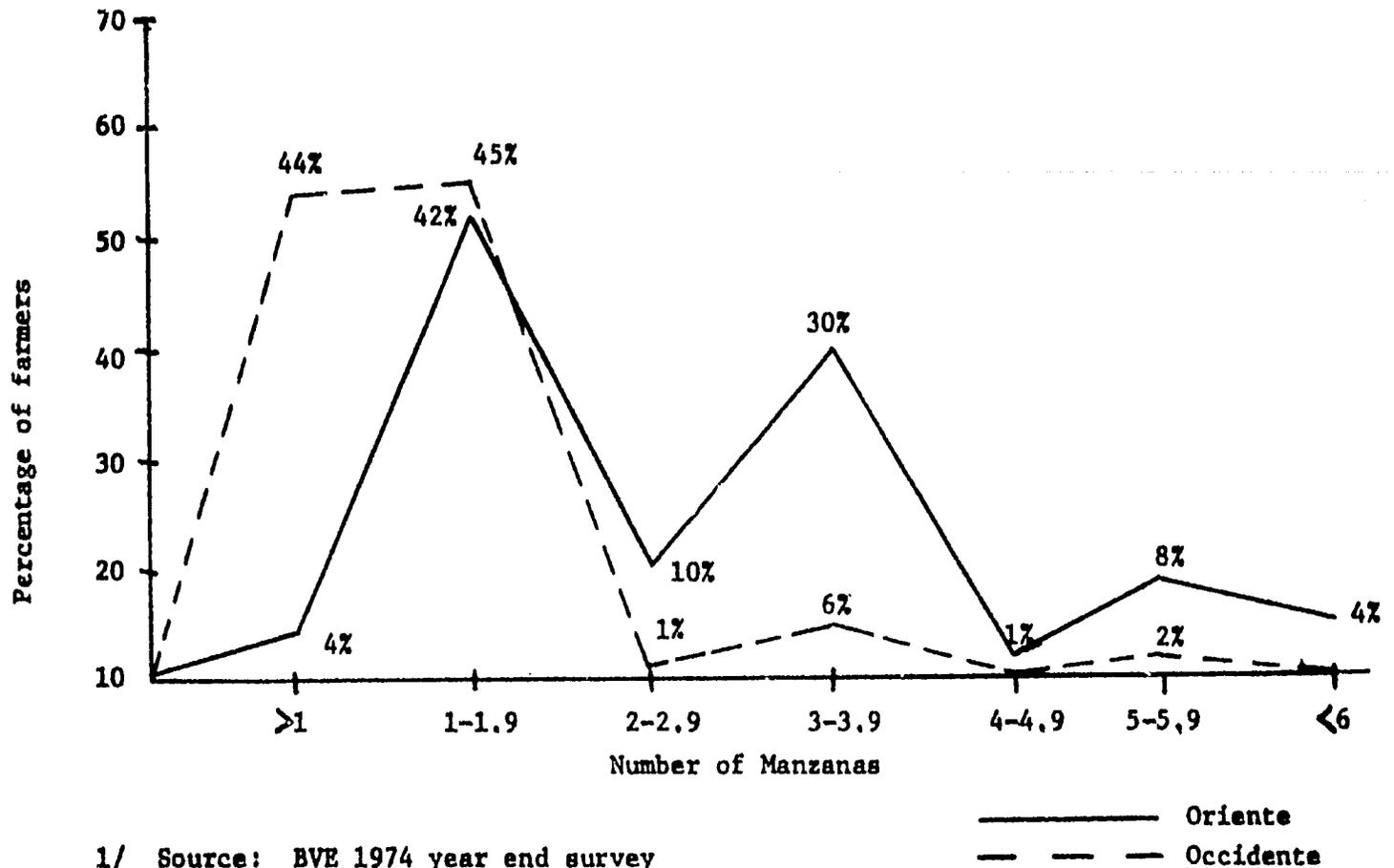
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1/ Estimates of Empresa de Servicios Agrícolas, Ltda., in Información Relacionada con el Pequeño Agricultor de Guatemala, AID/Guatemala, 1974.

2/ 1964 Census of Population

3/ According to calculations of the Dirección General de Estadística, the annual rate of growth between the 1960 and 1964 censuses was 3.1%.

4/ Source: Report of Visits to CIAT: Suggestions for Basic Grain Production Programs, Gran M. Scobie and David L. Franklin. CIAT. Cali Colombia, Feb. 1974 (from original draft in Spanish ).

Figure 2. Farm size distribution in BVE areas of investigation in the Oriente and Occidente of Guatemala, 1/



As shown in Figure 1, only about 10 percent of the farmers in the area under study in the Occidente have 2 manzanas (1.4 ha.) or more available to them for planting their crops. In comparison, more than half of the farmers in the Oriente area had 2 or more manzanas.

Selected characteristics of the two regions are shown in Figure 2.

Literacy is slightly higher in the Oriente region than in the Occidente, although less than fifty percent in either region.

There is considerable variation between the areas in terms of recent changes in cropping practices. Specifically, fertilizer use is much more prevalent in the Oriente than in the Occidente, while the practice of using insecticides is almost equal in the two areas. (It must be pointed out that this data represents only the use of the inputs, not necessarily their proper or recommended use).

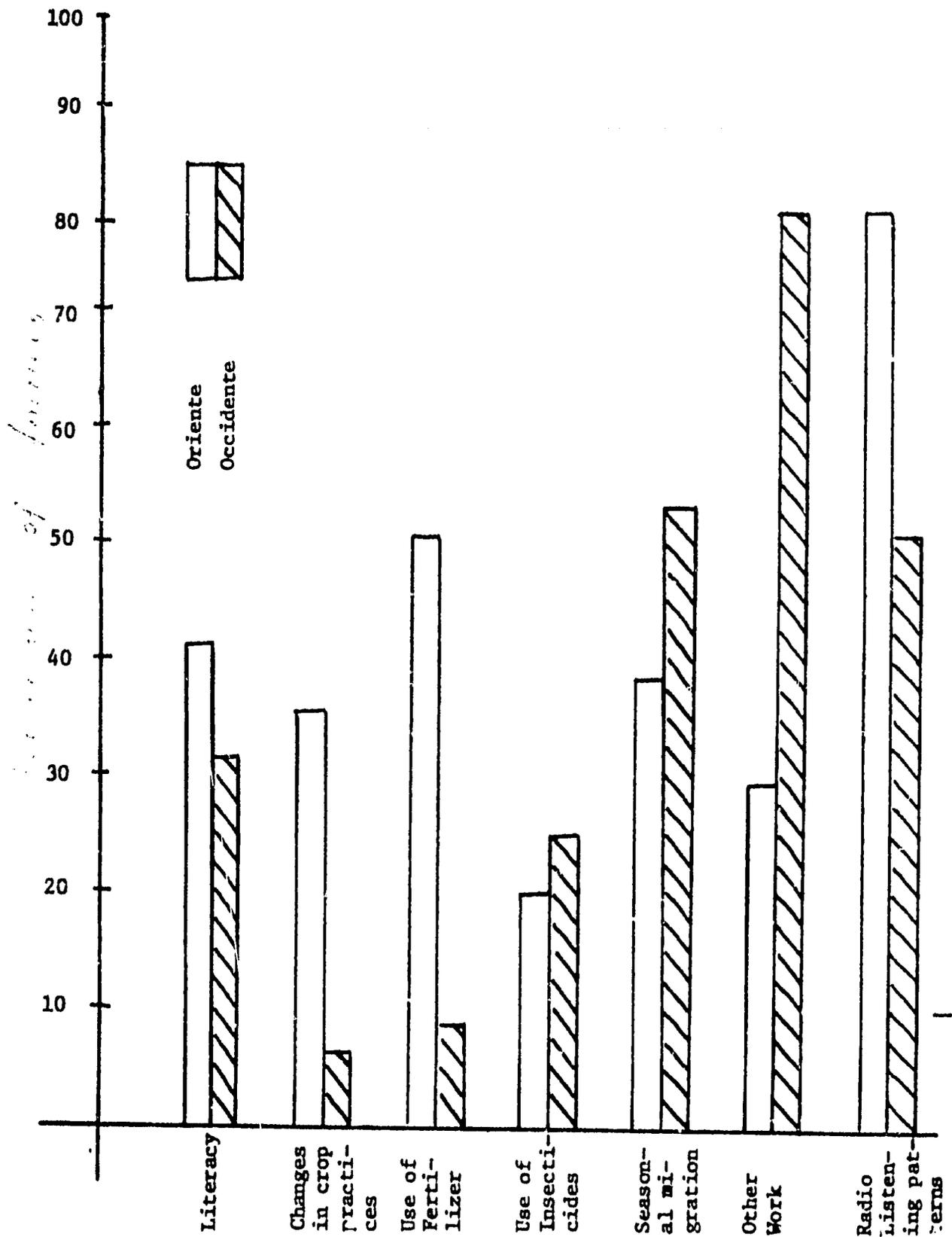
Seasonal migration to obtain work as hired labor is more common in the Occidente, although also a common practice in the Oriente. Over 75% of the farmers in the Occidente region of the program participate in other work (including seasonal migration) to supplement their incomes.

Because the BVE project is primarily interested in the potential uses of radio as a method of communication with subsistence farmers, data on radio listening patterns were also gathered during the baseline surveys. Nearly 80% of the farmers interviewed in the Oriente regularly listen to the radio, as compared to just over 50% in the Occidente.

Figure 3 illustrates the impact of low yields and small farm size on production per farm. In the area under investigation, over 75% of the Occidente farmers interviewed were forced to purchase corn for their family's consumption because their own crop was insufficient, and fewer than 5% were able to market surplus corn. This compares to only about 45% of the farmers interviewed in the Oriente who purchased corn, and almost 30% who were able to sell surplus corn.

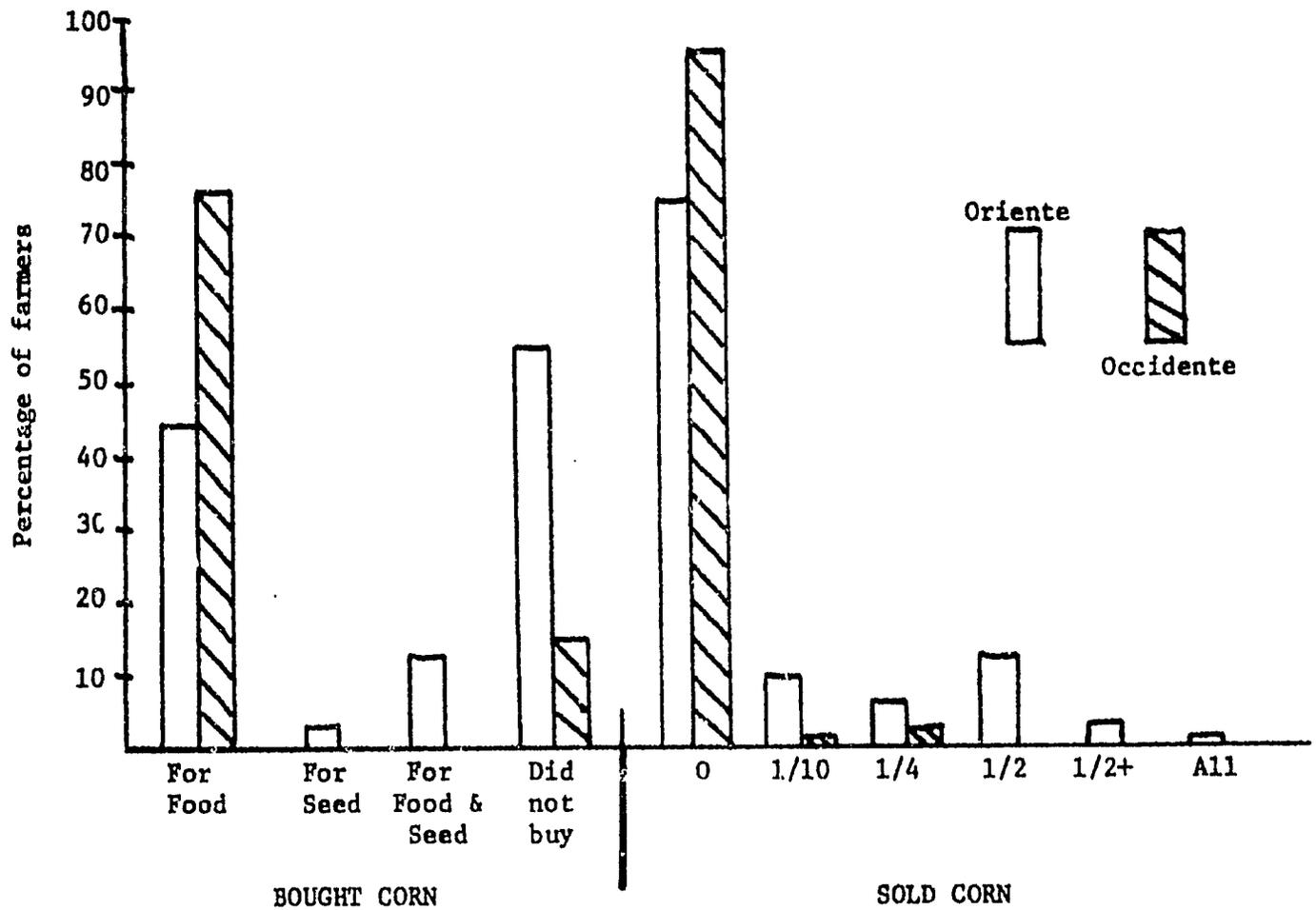
In common with many countries in the developing world, Guatemala has a largely rural population, land productivity is low, population is growing at a rapid rate, and large numbers of rural families have not yet been reached by educational and other development programs. Its diversity in physiography, people and culture provide the opportunity to study the role and effectiveness of modern communications technology under widely contrasting conditions.

Figure 2. Selected characteristics of farmers in BVE areas of investigation in the Oriente and Occidente of Guatemala. 1/



1/ Source: BVE Baseline surveys; Oriente 1973, and Occidente 1974.

Figure 3. Disposal of corn by farmers in BVE areas of investigation in the Oriente and Occidente of Guatemala. <sup>1/</sup>



<sup>1/</sup> Source: BVE Baseline surveys; Oriente 1973, and Occidente, 1974.

CHAPTER IIIAREAS OF PROJECT ACTION

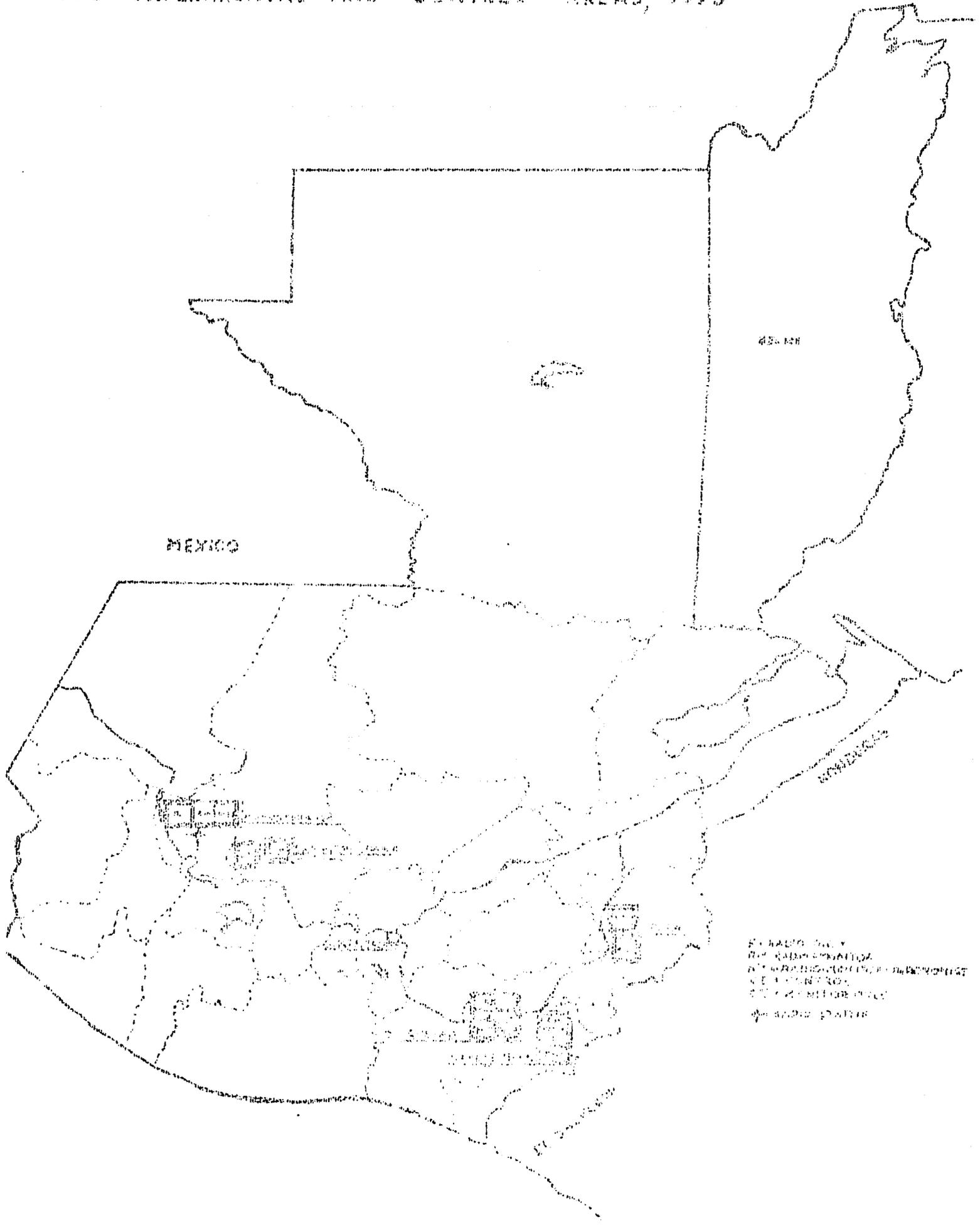
Educational programming in 1974 was restricted to one experimental area, the Quezada Valley in the Oriente. Five communities in the Yupiltepeque Valley of the same region constituted the control area. For 1975, Oriente programming, the Yupiltepeque Valley was converted into a second experimental area and two additional control areas were established.

Establishment in 1975 of experimental and control areas in the Quiché-speaking Indian region of the Occidente represents the final planned geographic extension of the present Basic Village Education Project.

The several experimental and control areas currently utilized by the Project are shown in Figure 4. Each experimental area is divided into three sub-units for purposes of imposition of the differential communications treatments.

FIGURE 4

BVE EXPERIMENTAL AND CONTROL AREAS, 1975



Chapter IVPROJECT OPERATIONSJULY 1974-JUNE 1975A. OVERVIEW

Several in-course modifications in project operation were made during the current reporting period as had been anticipated in the First Interim Report (Page 66). Some additional adjustments resulted from GOG funding and staffing problems during the first half of 1975.

Consistent with the December, 1973, re-assessment of personnel needs for the Project, the U.S. advisory staff was augmented through the addition of an agricultural specialist and a field supervisor for the Occidente. The communications specialist position remained vacant during all but the first two months of the reporting period.

The three basic communications treatments were maintained in the Oriente as described in the Implementation Plan. In addition, a fourth treatment was developed to be applied in control area No. 2 in each region beginning in 1975. Communications mixes currently used are described in Appendix A.

The inability to initiate educational programming in the Occidente in early 1975 had serious implications for the Project. As of the time of this writing, it is anticipated that program action in that region will be initiated in July, 1975. 1/

A series of formative or operational evaluation activities and special studies were conducted during the reporting period both for the purpose of improving the quality of educational materials prepared and to define more precisely the audience being reached. Within this group of activities, pre-testing and evaluation of program materials were still deficient.

Significant progress was achieved in development of intersectoral collaboration, particularly with the Ministry of Agriculture. In addition to continuing the general coordination described in the First Interim Report, the Project collaborated

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1/ Educational programming was, in fact, not initiated in the Occidente until August 29, 1975, coinciding with the inauguration of the Project's radio station in Momostenango.

with the Ministry of Agriculture in one major program of that Ministry. As the current reporting year drew to a close, a letter of understanding between the Project and the Ministry of Agriculture was approved which specifically defined the manner in which coordination will be achieved at both national and regional levels.

In continuation of implementing documents for the project, Project Agreement No. 75-3, project 598-15-690-551, for FY 1975, was signed on August 30, 1974.

Each phase of project operation is reported in greater detail in the sections which follow.

## B. ORIENTE

Educational programming and evaluation activities were carried out as planned. Quezada was continued as an experimental area, Yupiltepeque was converted from a control to an experimental area for CY 1975, and two new control areas were selected.

### 1. Area Selection

The process of new area selection began in mid-1974 with extensive research and field trips into the general areas of Sta. Rosa, Jalpatagua, Ipala, Chiquimula and Jalapa. Principal selection criteria included similarity or dis-similarity to Quezada and Yupiltepeque with respect to ecology, types of crops generally planted, farming practices, population characteristics and concentration, accessibility, and level of reception of Radio Quezada.

Based on the above criteria, Ipala was selected as the 1975 Oriente control area. The BVE field agronomist followed up with a more detailed reconnaissance survey from which specific communities were selected for inclusion in the 1974 baseline survey.

Seven additional communities were selected in Yupiltepeque to permit delineation of three distinct sub-areas for application of the differential communications treatments. Those communities were included in the 1974 baseline survey.

### 2. Program Materials Production

Production of program materials for use in the Oriente followed closely the overall program strategy and production process

described in the First Interim Report (Pages 23-33). Briefly, that process includes development of message content, production planning, pre-production, production diffusion, feedback, and analysis.

The U.S. input into development and production of program materials included one long-term agricultural specialist, one Guatemalan agronomist 1/ for the entire reporting period and a second 2/ beginning in January 1975, and two program production people employed on a part-time basis during the early months of reporting period. The senior audio and visual aids programming specialist terminated in August, 1974, and was not replaced during the reporting period. Ministry of Education staff employed fulltime in program materials production included scriptwriters, recording technician, special machines operator, photographer, archivist, secretaries, and a director of the production unit. That Ministry also provided radio announcers, actors and actresses on a part-time basis. In addition, the Ministry of Agriculture continued to provide an agronomist to the agricultural section of the Project.

a. Information development

Information development continued to be the major responsibility of the agricultural section. By late 1974, technical information had been developed in written form for all of the themes included in the annual agricultural message calendar. In each case, Ministry of Agriculture approval was obtained prior to use of such information in program production.

Planning for 1975 programming began in Sept., 1974, with development of the 1975 message calendar for the Oriente (Fig. 5), following the procedure described in the First Interim Report. The number of themes included in the 1975 calendar remained at 20, although there were some changes in titles and sequence.

Technical information used for 1974 programming was specifically oriented to the Quezada Valley. With expansion of educational programming into the Yupiltepeque Valley and increased

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1/ Ing. Agr. José Luis Monterroso, coordinator of the Agricultural section, resigned effective April 15, 1975, to accept the position of Regional Director for DIGESA (Dirección General de Servicios Agrícolas, Ministerio de Agricultura) in Quezaltenango. He was replaced by Agr. Jaime Carrera effective May 1, 1975.

2/ P.A. René Peña, field agronomist for the Oriente in 1974, was transferred to Guatemala City to strengthen the agricultural section of the Project.



coverage of the radio, some modifications were necessary to adapt the information to the larger area. Further, 1974 technical contents were prepared under serious time pressure resulting in inadequate opportunity for investigation, literature review, and verification. In consequence, each theme required revision before use in 1975 programming. Monterroso prepared a guide for writing technical contents (reproduced in part as Appendix B) which provided the basis for information development and revision during CY 1975.

There can be no clear line of demarcation between information development and program materials production. That is, the agricultural section not only develops the technical content of BVE messages, but also the strategy for its use. In addition, the agronomists give continuing orientation and consultation with production staff, and check all scripts and graphic materials for technical accuracy. Each of the steps in that process was defined by Monterroso, then coordinator of the BVE agricultural section, in January, 1975, in the report "Actividades de la Sección Agrícola y Responsabilidades del Personal." Excerpts from that report are included as appendix C.

Development of information and checking of content for the health-related radio program was facilitated by a representative assigned to the Project by the Ministry of Health.

b. Program production

The production system described in the First Interim Report continued in use during the current reporting period, with only minor adjustments and modifications as dictated by experience. A shortage of scriptwriters presented a continuing problem, particularly for "Revista Agrícola", the key agricultural radio program. That problem was resolved through use of part-time assistance and direct participation by the Agricultural Section.

Although the basic program format remained largely intact, some modifications were made during the year as scriptwriters gained experience, and as feedback was received from the field. One non-agricultural radio program was discontinued, and replaced with another program of general interest. The name and format of a second non-agricultural program were changed and that program re-oriented to focus more sharply on health and nutrition. Although the basic structure of Revista Agrícola was not changed, the format was modified to permit greater flexibility and variety. A series of special programs were produced in August and September in support of the national program to encourage planting of the second crop.

Program materials produced during the reporting period are summarized in Table 1.

Table 1. Program materials produced in BVE Production Unit during period July, 1974 - June, 1975.

Nature of Material	Description	No. Produced
Recorded radio program	Revista Agrícola	321
	Hombre, Guitarra y Luciérnaga	185
	Conversemos	185
	Buenas Noticias	80
	Historias Verdaderas	115
	La Vida es Así	105
	La Magia de la Música	38
	Escuela del Aire	30
	Programas Especiales	50
	Recorded spot announcements	→ Agricultural Messages
recorded music	90 minute tapes	100
	Flipcharts	156 <sup>1/</sup>
Handouts (single sheets)	For Use with Radio Forums	
	For use with radio Forums	156 <sup>2/</sup>
35 mm. color slides	Project documentation and graphic dictionary	278
black/white negatives	5"x7"; project documentation and graphic dictionary	373
Black/white negatives	8"x10"; Project documentation and graphic dictionary	40
Flipcharts	Miscellaneous visual material	35

Total Number of written scripts	1112
Total Number of recordings (including 50 programs not written by the production unit)	1162
Total number of mountings (some programs require 3 separate types of mounting)	1321
Total number of reproductions	2692

<sup>1/</sup> 2 each produced in 1974 and 4 each in 1975  
<sup>2/</sup> 100 copies of each

c. Program quality control

Program quality control was a continuing concern throughout the period. As a result of staff efforts, use of feedback information, and limited informal evaluation, quality of audio materials improved significantly. Progress with visuals was disappointing, however. It had been expected that the communications advisor would have major responsibility for evaluation of program materials from the standpoint of quality and acceptability from the audience; but as earlier mentioned, that post remained vacant during most of the current reporting period.

Formative evaluation activities carried out during the period, and steps being taken to strengthen quality aspects of the program are described elsewhere in this report.

3. Message Transmission

The differential communications treatments were continued throughout the reporting period according to plan. Additional areas placed under treatment, and the fourth partial treatment instituted in 1975, are described earlier in this report. Basic delivery systems used for message transmission remained unchanged.

a. Radio

Radio Quezada Educativa, TGME, was on the air six days each week throughout the period. Power failures were minimal, and never more than a few hours in duration.

Special programming was prepared for national holidays, and for the last two weeks of December. Otherwise, the broadcasting schedule shown in Table 2 was followed every Monday through Friday. On Saturdays, the week's radio forum was broadcast in the morning and afternoon; the remainder of the Saturday broadcast day was devoted to local programming.

In accordance with project design, it was anticipated that Radio Quezada would broadcast at 500 watts, beginning in December 1974. Due to technical difficulties, however, this was not possible until late January, 1975.

The table of organization for GOG staff calls for a field supervisor in each experimental area to have responsibility for supervision of the radio station. Due to budgetary problems, those positions remained unfilled throughout the reporting period, and responsibility for station management remained with the GOG project director. Although he delegated day to day supervision to the field agronomist and to the station announcer, the need for closer supervision was obvious.

Table 2. Daily broadcasting schedule (Monday through Friday of Radio Quezada Educativa.)

<u>MAÑANA</u>		<u>TARDE</u>	
5:00	-	16:00	Apertura
5:05	-	16:05	Música (ranchera, marimba, etc)
6:00	-	17:00	Identificación, hora, mensaje
6:01	-	17:01	Buenas Noticias (noticiero)
6:15	-	17:15	Viaje Musical Latinoamericano
6:30	-	17:30	Identificación, hora, mensaje
6:31	-	17:31	Revista Agrícola
7:00	-	18:00	Identificación, hora, mensaje
7:01	-	18:01	La Vida es Así (Novelas)
7:30	-	18:30	Identificación, hora, mensaje
7:31	-	18:31	La música que Usted Pide (Complacencias)
8:00	-	19:00	Identificación, hora, mensaje
8:01	-	19:01	Para Servir a Usted (Mensajes de los Oyentes)
8:15	-	19:15	El Mundo de la Marimba
8:30	-	19:30	Identificación, hora, mensaje
8:31	-	19:31	Historias Verdaderas (campaña de salud)
9:00	-	20:00	Identificación, hora, CIERRE

20/2/75

b. Monitors

The program functioned through 1974 with the two monitors serving areas RM and RMA in Quezada. With expansion of the Oriente program for 1975, it was necessary to recruit and train two additional monitors. As the first step, Arnold and Ray prepared a draft guide for selection, training and utilization of monitors.

New monitors were selected to serve the RM and RMA areas of Yupiltepeque. One of those monitors would, in addition, work in the new "monitor only" treatment area on weekends. Both new and veteran monitors were given a 20-day pre-service training course in February, 1975, prior to initiation of radio forum meetings in March. That course included agricultural subject matter, practical laboratory field work, group dynamics, and monitor skills. In addition, increased emphasis was placed on the need for and techniques to obtain information feedback.

The new monitor assigned to Yupiltepeque area RM and the "monitor only" area proved unsatisfactory after approximately three months in the field, and was replaced. His replacement received initial intensive orientation from the field agronomist before starting to work in those areas. During the transition period, however, the above areas were without an effective monitor for approximately two months (May and June, 1975).

The field agronomist conducted 39 weekly monitor orientation sessions during the year. The objectives of those sessions were: 1) to prepare the monitor for his presentation of the next week's radio forum; 2) to receive feedback from the monitors of current problems, and farmers reactions to the last radio forum; and 3) to provide in-service training to the monitors.

Participation in radio forums held during the current reporting period is indicated in Table 3.

c. Agronomist

The field agronomist for treatment RMA was provided to the program by the Contract through 1974. As a result of discussions with the Ministry of Agriculture, it was anticipated that a Ministry of Agriculture agronomist would be assigned to the Project to serve as BVE field agronomist for the Oriente beginning in 1975. Therefore, the Contract-supplied agronomist was transferred to headquarters at the end of 1974 to serve as a member of the agricultural section.

The Ministry of Agriculture agronomist became available to the Project only in June, 1975. Therefore, technical assistance to RMA areas in both Quezada and Yupiltepeque, and monitor orientation and training, had to be carried out on a part-time basis

Table 3. Farmer participation in BVE radio forums during period July, 1974 - June, 1975.

Sub-Area	No. of Meetings	Total Adult participation	Average No. of participants per radio forum
QRM <u>1/</u>	163	2406	15
QRMA <u>1/</u>	201	2327	12
YRM <u>2/</u>	94	781	8
YRMA <u>2/</u>	96	962	10
CII <u>3/</u>	16	325	20

- 1/ Five communities in area QRM and area QRMA.
- 2/ Four communities in YRM and area YRMA. Monitor treatment with Radio forum initiated March 1, 1975
- 3/ 1 community in area CII. Monitor treatment with radio forum initiated March 1, 1975

by members of the headquarters agricultural section during the first five months of 1975. Although every effort was made to provide the level of technical assistance anticipated in the Project design, the situation was not completely satisfactory.

Crop demonstrations established by the monitors and agronomist in the Quezada experimental area in 1974 (see Table 7 in the First Interim Report) were carried to completion and results summarized. Due to a serious mid-summer drought in much of the area, yields were depressed. Further, some problems were encountered in supervision and in recording data.

Farmers showed strong interest in the plots, and some useful data were obtained. As a consequence of problems encountered, however, the first year demonstration plots should be considered primarily as a year of learning how the job should be done.

The demonstration plot program for 1975 was completely reorganized, and a guide for conducting and recording information from such plots was developed by the Agricultural Section. Following intensive training and orientation, demonstrations were established as shown in Table 4. At the close of the reporting period, all demonstrations for the first crop were in the field and records were up to date. Results will not be available until early 1976.

#### 4. Formative Evaluation

As used in this report, formative evaluation includes a series of formal and informal activities and studies designed for immediate application in Project operations.

##### a. Program materials testing

The project requires an organized system for testing program materials (audio and visual) both to improve the quality of media currently in use and to develop new media. The objectives are severalfold, including: to determine impact upon the target audience in terms of interest, understanding, and credibility; to determine specific changes necessary to increase impact; to determine the cost and cost-effectiveness of new media being considered for incorporation into the program; and to identify potential logistic problems in production and/or distribution of such media. Progress toward developing such a system was disappointing during the current reporting period, principally due to personnel constraints.

In the absence of an organized materials testing program, the project had to rely on after-the-fact information and feedback.

Table 4 Demonstration plots established by BVE in Quezada and Yupiltepeque for first crop, 1975.

AREA	Community	Type	Crops
QUEZA DA "RM"	Sta. Gertrudis	Strip	corn
	La Brea	"	beans
	El Tule	"	corn
	Salitrillo	"	beans
	Los Comunes	"	corn
QUEZA DA "RMA"	Don Diego	Strip	Corn
	San Fernando	"	beans
	La Libertad	"	beans
"RMA"	Las Quebradas	"	corn
	El Retiro	"	corn
"RMA"	El Retiro	H.P. <u>1/</u>	Corn, beans; beans+corn; sorghum
	El Retiro	H.P. <u>1/</u>	Corn, beans; beans+corn; sorghum
YUPIL- TEPE- QUE "RM"	El Tetunte	Strip	corn
	El Sauce	"	corn
YUPIL- TEPE- QUE "RMA"	La Ceibita	Strip	corn
	La Perla	"	corn
	Estanzuela	"	corn
"RMA"	Estanzuela	H.P. <u>1/</u>	corn+beans; beans+corn; sorghum

1/ H.P. = High Production

for guidance in improving programs quality and impact. Sources of such information included weekly monitor and agronomist reports, letters received at the Quezada radio station, periodic listener-ship studies, time sample survey results and a steady stream of informal feedback from local people, agencies and authorities. Although the quality of both programming and program materials was increased significantly, such measures could not be considered adequate.

The above situation was the subject of extended study and discussion, both within the project and with AID, culminating in May 1975, in the following plan for testing and evaluation of media. 1/

"Two major needs addressed by participants in the May 12-14 sessions were: (1) to determine the impact of media mixes in areas not reached by BVE radio, and (2) to test and evaluate an array of specific media. Incorporation of a fourth treatment into the Project design this year which includes a monitor with audio and visual materials working in an area outside the range of the BVE radio, speaks directly to the first. Therefore, discussion early focussed on testing and evaluation of specific media (particularly the graphic arts); and an overall plan of action was developed for moving positively and concretely in that direction.

"In the judgment of the participants, that plan, described below, is consistent with the design of the Project and will be acceptable to the Government of Guatemala.....

### C. Procedures

1. Tests will be conducted in communities within each region of action which are not included in an experimental or control area. Final selection of such communities has not yet been made. However, the present pre-test areas are being considered -- Sta. Isabel in the Occidente and Jalpatagua in the Oriente.
2. Continuity of the pre-test panel will be maintained insofar as possible. That is, the same group of people will be used throughout a complete testing cycle. To achieve such continuity, some incentive must be offered to members of the group. Sug-

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1/ Excerpted from "Plan for Program Materials Testing in the BVE Project," dated May 26, 1975.

gestions for such incentives emerging from the May 12-14 discussions included a radio for each participant (both as an incentive and to encourage him to listen to the BVE radio messages), and some contribution to the community upon successful completion of a testing cycle.

3. Message continuity will be maintained through use of content sequenced material, probably with the radio forum as a basis. Other types of programs and materials will be inserted on a spot check basis. (As the health program develops, the possibility of a second panel will be explored, with which a similar content-sequenced approach for health would be utilized).
4. At the outset, evaluation will be largely subjective in nature to: (1) avoid "threat" to the panel, and (2) determine how best to obtain effective feedback.
5. A wide range of graphic and audio materials will be included in the testing program such as flipcharts, handouts, booklets, filmstrips with battery-operated projector, consumer cassettes, etc.
6. As need and opportunity arise, specific materials and/or approaches will be tested outside of either the panel or on-going program areas.

D. Relation to Educational programming

In addition to providing continuing immediate feedback to production staff for improving the quality of materials produced, the testing program will facilitate incorporation of additional tested media into the experiment as production capability develops. Care will be taken to assure that any new medium or message treatment will be introduced into all appropriate experimental areas simultaneously.

E. Implementation

The following steps will be taken immediately to permit early implementation of the materials testing program.

1. Recruit a communications specialist (position presently vacant) with specific experience in field testing and evaluation of audio/visual/print mate-

rials to provide leadership to and direct the materials testing program.

2. Recruit a short term graphic arts specialist to provide leadership in creation of new materials as well as improvement of visuals presently used. (The possibility of obtaining a Guatemalan for this position will be explored).
3. Attempt to adjust distribution of available resources to employ a small team of Guatemalans to work under the direction of the communications specialist in conducting field evaluations of materials and in tabulating and analyzing results. The team will include at least one and, hopefully, two persons from each of the regions included in the experiment (Oriente and Occidente) who are thoroughly conversant with rural areas and the language and culture of their respective regions.
4. Initiate discussions with the Guatemalan BVE Project Director to gain his support for the specific measures proposed. (As noted earlier, he is already concerned about the need for materials testing, and the general parameters of this proposal have been discussed with him on several occasions)."

b. Feedback from the field

The information feedback system utilized in BVE was reported in the First Interim Report. Both the quality and quantity of information received from the field improved substantially during the year, however, as the result of continued efforts to improve the system.

At the outset, feedback from monitors was little more than a simple reporting of radio forum attendance. However, conversations with the monitors revealed that they were good observers and possessed valuable information about the people, crops, weather conditions, etc. The problem was four-fold: 1) they did not fully comprehend the project's need for detailed information nor precisely what information was desired; 2) the report forms used initially were too restrictive in format; 3) the monitors, though literate, had had little or no previous experience in preparing reports or expressing themselves in writing; 4) the field agronomist was not fully aware of how feedback fits into the process of developing program material, and therefore was not asking the right questions of the monitors.

Monitors received further training during the last half of 1974, and new report forms were developed to provide a better vehicle for their information. As mentioned earlier, information feedback was given concentrated attention in the 1975 monitor training course. The field agronomist was integrated into the program materials development process in a manner that increased his effectiveness in contributing to information feedback.

Although the above measures resulted in significant improvement, efforts to improve the system continued.

c. Radio listenership

Three radio audience surveys were conducted in the Oriente during the reporting year as indicated in Table 5 below.

Table 5. Numbers of communities included and interviews obtained in radio audience surveys during period July, 1974 - June, 1975.

Data of Survey	Communities surveyed in area			Interviews obtained in area			TOTAL INTERVIEWS IN SURVEY
	Q1/ <u>1</u>	Y2/ <u>2</u>	I3/ <u>3</u>	Q1/ <u>1</u>	Y2/ <u>2</u>	I3/ <u>3</u>	
Nov. 1974 <u>4</u>	11	10	-	122	114	-	236
April, 1975 <u>5</u>	5	5	5	50	50	50	150
June, 1975 <u>4</u>	5	5	4	50	50	50	150

1/ Quezada

2/ Yupiltepeque

3/ Ipala

4/ Both men and women included in sample in a ratio of approximately 7 to 3

5/ Only men included in sample

Data from the three surveys indicate that:

1. Radio listenership is consistently high (more than 90 percent), although incidence of radio ownership varies

widely among the areas.

2. Radio Quezada continued to be the most popular station in the Quezada Valley; nearly all respondents in all surveys named that station as one to which they regularly listen.
3. About 90 percent of respondents in the Yupiltepeque Valley were listening to Radio Quezada by June, 1975. In earlier surveys, made before station power was increased and/or a Radio Quezada promotion campaign, less than half of those interviewed from that Valley were listeners.
4. A high proportion of respondents in both Quezada and Yupiltepeque listen to Radio Quezada specifically for the agricultural counsel they receive (72 and 56 percent, respectively)
5. Listenership is evenly spread throughout the week, with peak listening hours generally being between 5 to 7 a.m. and 4 to 7 p.m.
6. There is some spillover of listeners into the Ipala area. However, very few respondents (12 percent) mentioned Radio Quezada in the surveys -- presumably due to poor and inconsistent reception of the signal in the area and lack of promotion.

d. Signal penetration

A series of penetration tests were conducted in 1974 and early 1975 to monitor reception quality of Radio Quezada. Local school teachers or BVE personnel were used to monitor signal reception in specific communities in both the experimental as well as control areas.

Standard portable transistor radios were distributed along with special forms which called for program monitoring every 30 minutes during the entire programming day. In addition, interference to the signal was monitored and recorded.

Additional tests of this nature are scheduled for 1975 plus more extensive survey blanketing the entire Oriente to determine general boundaries of coverage.

Results of the signal penetration surveys indicate the following:

1. Reception is generally better on the larger table model radios than the smaller, pocket-sized radios.

2. Early morning and late afternoon reception is generally poorer than mid-day reception and is often accompanied by interference/ reception of other radio stations.
3. Reception is generally adequate to strong in the Quezada and Yupiltepeque experimental areas.
4. The Ipala control area appears to be receiving some Radio Quezada programs. However, due to lack of promotion campaigns, sporadic reception and strong interference, listenership is at a minimal level as shown by the most recent listenership survey.

e. Consumer cassette

A 4-week pilot study was conducted in July, 1974, to determine the effectiveness and logistic requirements of the use of consumer cassettes. The consumer cassette utilizes pre-recorded messages and portable cassette tape recorders which are left with one or more families in a community. Those messages can be listened to by the families at their convenience, and replayed as often as desired.

The purpose of the study was several fold:

1. Could the messages be made interesting enough so that the audience would wish to receive other such messages in the future?
2. Could any positive behavioral, attitudinal or knowledge changes be promoted by the simple pre-recorded messages?
3. Would the messages be heard by other members of the community as well as the family in charge?
4. Is it feasible to use non-salaried volunteers to act as liaison with the communities?
5. Was it necessary to have a person trained in the use of portable cassette recorders present at all times?
6. Would the hardware be cared for and kept in good condition?
7. What logistical problems would be encountered in operating a consumer cassette program?

During the four weeks of the consumer cassette operation, no major problems were encountered either in program acceptance or logistics.

An analysis of battery duration and replacement requirements indicated that each of the four weekly program tapes was played between 40 and 60 times.

De-briefing of the volunteers showed a high degree of interest and credibility on the part of community members. The volunteers indicated that a number of people had tried some of the projects described in the tapes, generally (although not always) with good results.

A major thrust of the tapes was the dissemination of agricultural information, specifically the desirability of planting a new strain of sorghum seed as a second crop. The four communities in the study received this advice before any of the other communities in the area. By the fourth week, over 800 lbs. of this new seed had been purchased by farmers in these communities even though a high percentage had reported that sorghum was not one of their usual crops.

A detailed report of the study is presented in the paper, "Stretching manpower for Non-Formal Education in Rural Development: A Case study in Communication" attached as Appendix D.

#### F. Analysis of Letters Received

A total of 30,407 letters was received by Radio Quezada Educativa during the current reporting period. (See Table 6 for a breakdown of letters by community).

Obviously, letters to Radio Quezada do not constitute a representative sample of the target audience, as less than half of the farmers in the Quezada Valley are literate. Nevertheless, the letters do constitute an important feedback source which serves three functions. First, it is used as a source of local color which is used in programming. Second, it provides specific questions related to agriculture which aid in programming and planning Radio-forums. Last, it helps to define the approximate limits of geographic coverage of the radio.

The increase in power of the Quezada radio tower from 100 to 500 watts in early 1975 is reflected in the expanded area from which letters have been received.

The majority of letters received before the increase in wattage came from the immediate Quezada Valley. (See Figure 6, P. 45, Part One of the First Interim Report.). Since the increase however, the letters received encompass a substantially larger area.

Table 6. Total of letters received by Radio Quezada during period July 1974 - June, 1975.

<u>Community</u>	<u>No.</u>	<u>Community</u>	<u>No.</u>	<u>Community</u>	<u>No.</u>
Quezada	4126	San José Acatempa	252	Sta. Isabel	151
*Sta. Gertrudis	1579	Tunillas	357	La Flor Amayo	22
Río de la Paz	175	Jalpatagua	327	Las Lomas	187
*El Jocote (Aldea)	971	El Retozadero	35	La Esperanza Jal	41
El Amatón	411	*El Tuie	382	Al Sta. Rosita	22
*El Retiro	1275	Mal Paso	427	Sta. Clara	126
La Pava	638	Tierra Blanca	158	Al Sta. Isabel	59
La Arada	663	Fca El Porvenir	165	La Esperanza SR	40
*Potrerillos	701	El Carnero	88	Aceituno Jal	53
El Zarzalito	257	Sanixtan	57	Brasilas	108
*El Calvario	448	Los Chivos	37	Las Cabezas	48
El Ujuxte	91	Fca Los Nacimientos	22	El Pajonal	23
*San Fernando	2321	Amatillo	37	La Peña	36
El Chaparrón	78	Maulal	34	Coponte	31
Buena Vista	295	El Carpintero	115	Cerro G. Jutiapa	49
*Bordo Alto	554	Fca Argelia	84	Al. El Ciprés	28
El Pinito	143	El Aceituno	59	Las Crucitas	74
Laguna Seca	233	Lomas Canton S.M.	67	Amayo	61
*El Jícara	280	Xl Pinalito	28	Sanixtan Jal	27
Jutiapa	388	La Garita Cantón S.M.	24	El Bañadero	33
*Las Quebradas	542	Oratorio	318	Azulco Jal	41
*Salitrillo	486	Las Cabezas	314	Fca. Olivares	46
El Marillal	67	Sta. Clara S.M.	240	Asunción Mita	49
Fca Las Cabezas	234	Sn. Jerónimo	46	El Jícara, Quez.	109
Trapichitos	664	Al. Ceiba Gacha	139	Sapuyuco	26
Cerro Gordon	42	La Esperanza	26	Morritos	22
El Zapote Jal.	44	El Ciprés	173	Coña, Moyuta	26
Los Comunes	663	*Don Diego	1112	Al. La Laguna	26
Fca El Palomar	40	El Salitre	35	El Bebedero	31
Nuevo Chaparrón	400	Hda. Vieja	41	Comapa	24
*El Rodeo	149	Amatillo Oratorio	23	Fca. Zapote	22
Guatemala	111	*El Chaguite	42	Fca. Cabezas G.	31
Guachipilín	67	Sn Pedro Finula	28	Sta. Rosita	37
La Ceibita	426	Al. Joya de Guayabo	26	Fca. Las Delicias	35
*La Brea	808	Guachipilin Comapa	21	La Garita	52
Monte Verde	314	Fca. La Sonrisa	24	La Laguna	29
El Estoraque	356	Fca. El Peñón	75	Plan Grande	37
Amayito	55	Los Hoyos	95	Nvo. Carpintero	37
El Sayote	103	Fca La Esperanza	32	Fca. La Virgen	21
Paso Caballos	385	La Canoa	100	Los Achiotes	26

An additional 180 communities sent 20 letters or less each: totaling 1158 letters.

Total letters received during reporting period: 30,407

\*Experimental Communities

## 5. Summative Evaluation 1/

Although project evaluation is the responsibility of the University of South Florida, evaluation-related activities require a major input from the field as well. In general terms, the University of South Florida evaluation team provides the evaluation design, supervises planning of evaluation-related activities, and analyzes and interprets the data. Guatemala-based staff organize and execute studies, and tabulates some data in preparation for computer analysis. University of South Florida and field staff collaborate in seeking to identify and assess external factors which must be considered in interpretation of results.

The Guatemala-based U.S. personnel input into evaluation during the report year included two U.S. technicians (field supervisors for Oriente and Occidente) plus Guatemalan field interviewers employed as needed to conduct baseline and follow-up annual surveys. In addition, the Contract provided one fulltime interviewer for monthly time sample surveys through CY1974, and two such interviewers during the early months of 1975.

The Ministry of Education assumed responsibility for the two time sample interviewers as the reporting period ended.

### a. Baseline/follow-up surveys (Oriente, 1974)

In collaboration with University of South Florida evaluation personnel, the field staff revised the 1973 baseline questionnaires for use in the 1974 study, organized and carried out the survey, and supervised checking of questionnaires and transfer of data to computer sense sheets. The sense sheets were then sent to Florida for computation and analysis.

The questionnaire for the 1974 baseline/follow-up survey was a composite instrument which combined the two questionnaires used in the 1973 baseline survey. Consultations with the agricultural section and information gleaned from 1974 time sample interviews were used in making necessary modifications. A prime tenet of this process was to maintain as nearly constant as possible both the general scope of information and specific information in each category.

Changes from the 1973 series of instruments fell into two general categories. The first included modifications based on staff experiences during 1974 to augment information gained

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1/ Refer to Evaluation Component, Interim Report. Section II for further details.

either through re-wording questions and developing more complete, accurate codes, or through the addition of new questions and coded responses to investigate in greater depth the different areas of information. The second category was concerned with the application of this instrument to the Occidente area. The addition of certain crops, practices and measurements eliminated the need for two separate interview instruments in the Occidente and Oriente.

For each question in the 1974 instrument, all relevant questions from all previous questionnaires (including time samples) and staff recommendations were compiled to extract as succinct and efficient wording as possible both in the question and in the response codes. Questions which referred to crop yields, land area or fertilizer use were supplied with spaces for the interviewer to write in the actual numbers related by the farmer. These data were later computed and post-coded after the interview according to a standard code expressed in terms of manzanas, quintales or cuerdas. (Some problems were encountered in 1973 about the size of a "cuerda" as it is not a standardized measurement of fixed area. To avoid such problems in the future, especially between Occidente and Oriente where at least four possible measurements for a cuerda may be used, a space was provided in the questionnaire for the interviewer to record the measurement being used by the interviewer. This was later computed against a table of coded responses standardized for all possible measuring systems between the Oriente and Occidente).

Technical terms were replaced, wherever possible, with the common term used in the area of investigation. Of great value in this process was the extensive vocabulary list compiled by Astolfo Mellado, the 1974 time sample interviewer who had lived in the area throughout the year.

After the composite questionnaire was prepared in draft form, it was reviewed by the EBR staff a number of times in order to pare it down and hone it into a more workable instrument. Criteria for this process included the ability of each question to measure change from the 1973 baseline survey, the relative importance of each item in the questionnaire, and the ability of each question and code to elicit the desired information.

Pre-testing of questionnaire in the field. A near final draft of the instrument was reproduced in sufficient quantities to allow its use in the training of interviewers for the Occidente area. During the training, they familiarized themselves with the questionnaire through a series of exercises, and then pre-tested it in the field in a community within the general limits of the experimental area but outside the communities to be included in the survey. Each interviewer did a minimum of three interviews

giving a total of about thirty completed questionnaires.

The interviewers then made comments on the instruments' reliability and precision. A number of questions and codes were revised at this time to conform to their recommendations. The entire process was repeated during a second pre-test period of about the same proportions during which time the instrument was further refined.

It was originally intended that the questionnaire be written in both the Spanish and Quiché languages as it was considered unlikely that the information elicited during the interview could be readily understood by the Indian farmers if only Spanish were used. However, the interviewers (all of whom were fluent both in Spanish and Quiché) recommended that the questionnaire be prepared only in Spanish, as written Quiché does not lend itself to the type of instrument being used. They felt more comfortable making the translation themselves during the interview. This also gave them more leeway to interpret concepts for the farmers who did not understand the precise meaning of some of the questions.

After the two pre-tests, the refined questionnaire was used for the baseline survey of the Occidente region in 1974.

Some additional minor changes were made before the instrument was pre-tested by the team of interviewers in the Oriente region.

Adjustment of questionnaire used in Occidente. Due to the fact that a number of changes were introduced in the questionnaire just prior to being used in the Oriente, those employed in the baseline survey of the Occidente required minor adjustments in certain codes to assure that each question and coded response had precisely the same meaning and value for the two regions.

Occidente interviewers were employed for this task. Each questionnaire was reviewed by the team of interviewers and each of the revised questions was recoded and then checked by another interviewer.

Office procedures used for checking, re-coding and tabulating questionnaire, shown in summary form in Figure 6, included the following steps:

1. Questionnaires were received from field in envelopes marked by community. The envelopes were then placed in boxes by sub-area. To each envelope and box was attached a control card which was to be initialed and dated at the completion of each stage of

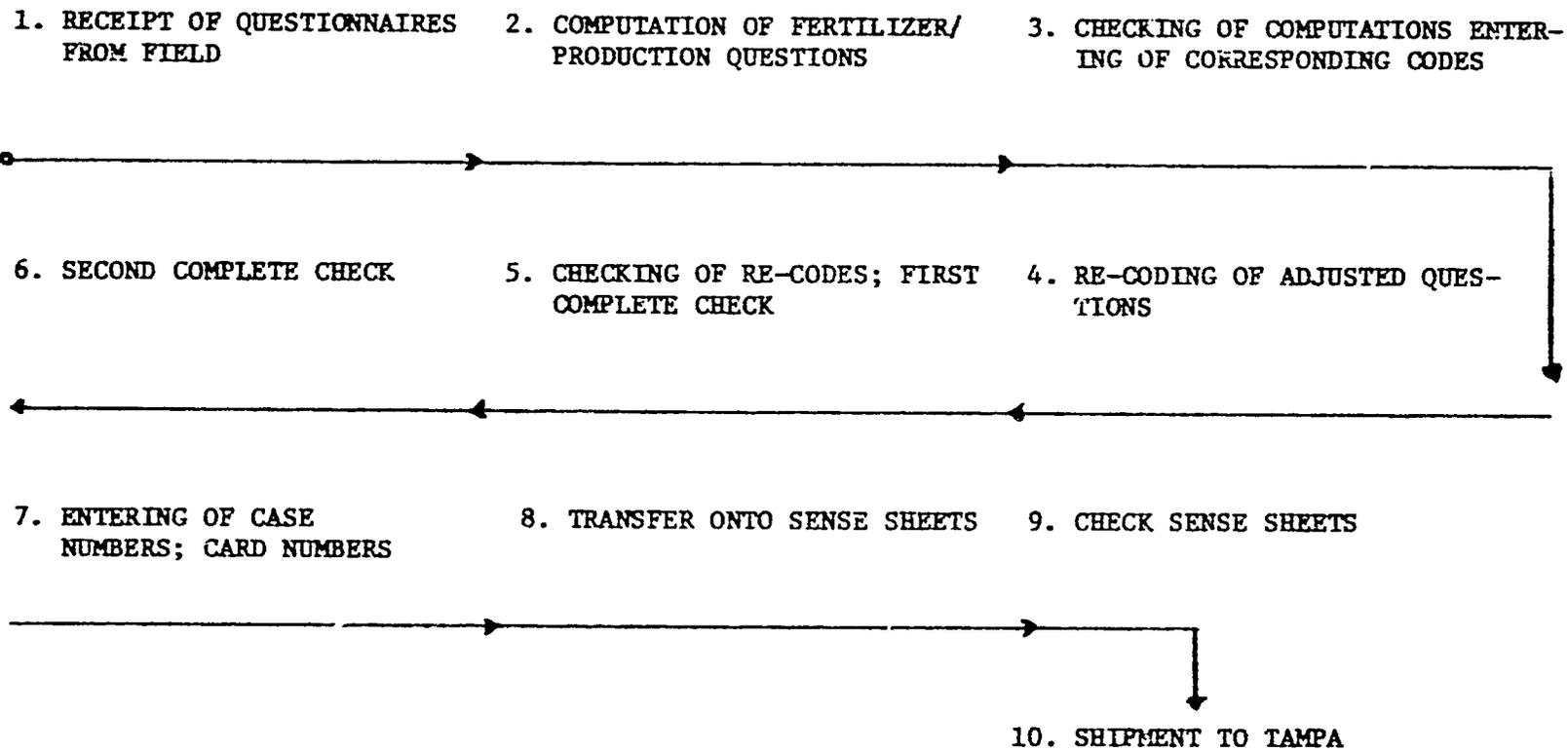


Figure 6. Office procedures used to check, re-code, and tabulate questionnaires, baseline/follow-up surveys, 1974

Figure 7. Control card for questionnaire review, baseline/  
follow-up surveys, 1974.

<u>CONTROL DE CUESTIONARIOS</u>			
<u>FECHA/FIRMA</u>		<u>FECHA/FIRMA</u>	
RECIBIDAS	/		/
COMPUTACIONES	/	TABULACION	/
COMPUTACIONES REVISADAS/CODIFICADAS	/	TABULACION REVISADA	/
RE-CODIFICACION	/	REGION	AREA
RE-CODIFICACION REVISADA	/	SUB-AREA	COMUNIDAD
REVISION COMPLETA	/	LISTOS PARA ENVIAR	NUMERO DE CUESTIONARIOS
REVISION AL HAZAR			

the operation. (Figure 7).

2. Two interviewers (who were also certified accountants) did the computations on the fertilizer/production questions where the field interviewers had only written in actual quantities, leaving the standard codes to be post-coded after computation.

Those doing the computation worked as a two-man team, one reading the data while the other made the computations on a small electronic calculator. The answer was written below the code space for each question.

3. After the team had finished a complete envelope (generally one complete community) they switched roles to check the computations. If the answer was not the same as the first, they both re-did the questions independently until the answer matched both times. Only then was the answer compared to the standard code list and the correct code written in the appropriate space.

4. After all questionnaires in one box (one complete sub-area) were computed and coded, the box passed on to a team of interviewers, each of whom was responsible for re-coding one question in each of the questionnaires in the box. (Some of the codes were changed after the instrument was used in the Occidente baseline survey. Also, additional response codes were added to two questions after the survey was completed in the Oriente. These questions were all re-coded on all questionnaires in order to maintain uniformity between the two survey regions).

5. The questionnaires were passed on to another team after the re-coding process. (Questionnaires were always moved from team to team in complete envelopes, never separately, to avoid losing them within other communities). This team was responsible for checking each of the re-coded responses, checking "special attention" questions and giving the questionnaire its first complete check.

(Special attention questions were those which gave internal indications of the reliability of the responses. An example of this would be where two or more different questions elicited the same or similar responses).

6. After this checking process, all of the questionnaires were passed on to still another team which performed the second complete checking of the questionnaires.

7. After the second check was completed, a team was assigned to place the correct case numbers and card numbers on the questionnaires (in order to save time, the checking of this step was incorporated in the tabulation process).

8. After all of the above steps had been completed on an entire box, it was passed on to a team of two interviewers who then

transferred the coded responses from the questionnaires onto sense sheets. As they began and finished each sense sheet, they automatically checked that the case and card numbers were properly recorded on the questionnaire.

Sense sheets were then placed in separate envelopes by community and in the same order as the questionnaires.

9. After an entire box of questionnaires had been transferred to sense sheets, another team (not the same which did the tabulation) checked each entry and code of each questionnaire. Any errors were corrected immediately and the total number of errors recorded on the sense sheet envelopes.

10. Packages of sense sheets, by community, were then packed for shipment to Tampa and computer analysis.

b. Time sample surveys

Field staff collaborated with the University of South Florida evaluation team in the preparation of time sample questionnaires and the execution of surveys during the reporting period. (Randomly selected sub-samples of those farmers originally interviewed in the baseline survey were interviewed at monthly intervals about specific educational materials included in programming of the previous month.

The purpose of time sampling is to determine precisely where and when specific changes occur during the course of the experimental treatments to aid in the analysis of baseline/follow-up survey data. The data are also used in making in-course corrections in program message content.

Between April and October 1974, 100 farmers were interviewed in each of seven time sample surveys. Twenty-five farmers were randomly selected in each of the three experimental treatment sub-areas as well as the control area. A total of 700 farmers were interviewed during the course of the 1974 time sample surveys, with some farmers being interviewed in more than one time sample.

Due to program expansion in the Oriente, the number of interviews increased to 200 per month in 1975, and two fulltime interviewers were required in that region.

Time sample interviews conducted through June, 1975 are summarized in Table 7 below.

Table 7. Time sample interviews conducted in Oriente during period April, 1974 - June, 1975.

MONTH	TIME SAMPLE	No. of Interviews	No. of Communities Interviewed
<u>1974</u>			
April	TS-1	100	20
May	TS-2	100	20
June	TS-3	100	20
July	TS-4	100	20
August	TS-5	100	20
September	TS-6	100	20
October	TS-7	100	20
<u>1975</u>			
April	TS-8	200	33
May	TS-9	200	33
June	TS-10	200	33

c. Yield survey

In February, March and April of 1975, a survey was conducted, using 20% sub-sample of those farmers interviewed in the 1974 base-line/follow-up survey.

The purpose of this survey was to determine actual yields of basic crops for both second as well as first crops. (The second crop had not been harvested during the November surveys, so crop yield had been estimated by the farmers).

Two hundred farmers, randomly chosen from the master list of interviewees were surveyed by the 1974 time sample interviewer. Results of this survey were recorded, duplicated and forwarded to Tampa for tabulation and analysis.

One general observation, however, could be made judging from the farmers' accompanying comments. That is that crop yields were lower in 1974 than anticipated due to a serious lack of rain in the region.

## 6. Use of Evaluation Data

### in Program Production

Educational messages of the project, to be effective, must be: 1) directed toward the perceived needs of the people; 2) presented at a level and in a style consistent with present knowledge and attitudes of the people; and 3) related specifically to presently used agricultural practices as a point of departure from which to seek improvement. Data from the baseline/follow-up and time sample surveys are indispensable to program production in providing information on all of the above.

The manner in which evaluation data feeds into the program production process is illustrated in Figure 8. In broad terms, baseline and follow-up survey data are used in development of themes to be used, and relative emphasis to be given to each (for both agricultural and non-agricultural programming). Time sample results provide guidance in making in-course corrections in specific message content, programming strategy, and timing of message diffusion. (The evaluation reports are used as one method of data feed back for field use. See Evaluation Reports, Section I of Evaluation Component of Second Interim Report).

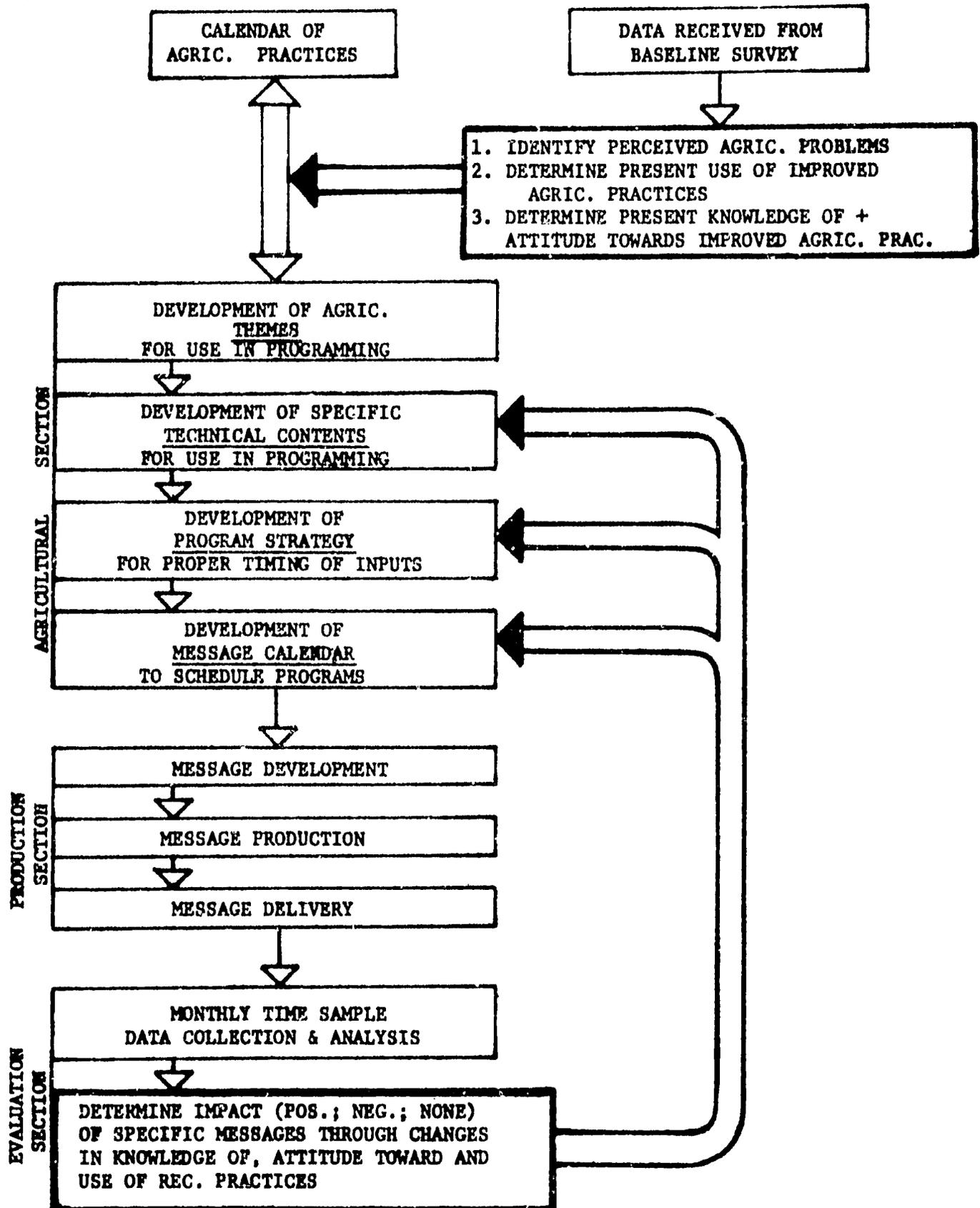
### C. OCCIDENTE

The second half of 1974 was a period of intensive activity in the Occidente in preparation for the planned initiation of educational programming. Experimental and control areas were selected, and baseline surveys completed. Development of technical message content received increased attention from the agricultural section. The radio station site was selected by the end of the year, and installation nearly completed by mid-1975. Due to delays discussed elsewhere, however, educational programming had still not been initiated at the close of the reporting period. Therefore, the entire report year must be considered as a period of preparation.

#### 1. Preliminary Studies

As stated in the First Interim Report (p.9), it was anticipated that the experimental design described in the Implementation Plan would be modified as appropriate, based on first year experience in the Oriente and results of a preliminary investigation in the Occidente. The basic design was to be

Figure 8. Use of evaluation data in BVE program production



followed in both regions insofar as possible.

It was recognized that Occidente communities are separated from the Oriente not only by distance but also (as described earlier in this report) in terms of language, culture and custom. A panel of anthropologists and sociologists having long experience in the Occidente was consulted in mid-1973 to help determine the modifications in design and approach to programming which should be made for that region.

As a result of the recommendations of that panel, a preliminary study was conducted in early 1974 under the supervision of Dr. Robert Carmack, a SUNY-Albany anthropologist with many years of experience in the region. The study was completed in May of 1974, with written recommendations presented shortly afterward. 1/

In follow-up on the Carmack recommendations, field staff made several reconnaissance trips to the region in mid-1974 to gain additional information concerning physiographic, agricultural, settlement and communications characteristics. Carmack then participated with project staff in establishing selection criteria for control and experimental areas, and in the process of area selection.

## 2. Area Selection

General limits on area selection in the Occidente were determined by prior decisions that: 1) the experiment would include an area predominantly indigenous, and 2) the indigenous area would be within the Quiché-speaking area of the country. After preliminary inspection trips to the Occidente, it appeared that areas meeting these two requirements could be found in the Department of Totonicapán. Within that Department, the Carmack report specifically recommended Tzanjón, Tierra Blanca and Jutacaj -- aldeas of the Municipio of Momostenango. Also recommended were Cruzchē and Chujuyub in the Department of Quiché.

Final selection of experimental areas was based on the area criteria established and the Carmack report recommendations. It was necessary to eliminate Tierra Blanca due to a long standing dispute between the Municipios of Momostenango and San Bartolo. Further examination identified aldea Canquixaja in Momostenango as an area meeting the selection criteria. The experimental areas finally selected were Tzanjón (Area R)

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1/ Carmack, Robert M. May 1974. Final report: Communications of Agricultural information in the Guatemalan Occidente. Typed report.

Canquixajá (Area RM), and Jutacaj, (Area RMA).

The selection of an Occidente control area presented several serious problems. Curzché and Chujuyub, the two areas in the Department of Quiché suggested by Carmack were visited by field staff in June, 1974. Other areas in the same Department which were also considered were: Chocomán, Chinique, and Santa Rosa de la Reforma. All were visited by project staff and eventually eliminated because they failed to meet essential selection criteria.

In August, 1974, project staff met in Guatemala City with Carmack to review the status of the control area, and to decide on future action. Carmack suggested the consideration of communities in the Municipio of Chichicastenango and identified several areas that seemed to meet the criteria. On October 22, the recommendations of the agronomists were accepted, and two control areas were identified in Chichicastenango: Control Area I consisting of aldeas Saquillá I, Saquillá II and Xepocol, and Control Area II with Aldeas Chipacá I, Chipacá II and Panquiac.

Chipacá I was eliminated before the start of the baseline survey due to transportation difficulties. Panquiac was later eliminated because of the migratory patterns of the farmers in the area. Saquillá II was then eliminated due to a serious lack of community organization which made completion of the baseline survey impossible.

As finally established in January 1975, the Occidente control areas in the Municipio of Chichicastenango included the following: Control Area I made up of Saquillá I and Xepocol, and, Control Area II consisting of Chipaca I.

A detailed file on the selection of experimental and control areas in the Occidente is kept in the archives of the BVE field office in Guatemala City.

### 3. Transmitter Site Selection and Installation

The selection of an appropriate site for the Occidente Radio transmitter involved a number of factors not encountered in the Oriente. As much of the region is not served by electricity, efforts were initially directed toward identification of appropriate locations in which the use of line power would be possible. Other selection criteria included:

- a. Location in relation to experimental and control areas to permit coverage of the experimental area and exclusion of the control area.
- b. Absence of natural barriers, such as mountains, that could interfere with reception in the experimental area.
- c. Location within the region of Quiché-speaking Indians.

- d. Accessibility
- e. Possibility to maintain adequate security
- f. Acceptability of the site to people in the traditional Indian sector.
- g. Potentially acceptable living conditions for station personnel.

Site selection was delayed by: 1) unavailability of the project's consulting engineer during July and August, 1974, and 2) belated information that use of line power was not feasible at the originally selected site. Site selection efforts were intensified in November, but no suitable sites were identified for which line power was accessible.

In early December, 1974, Momostenango was selected as the site for the new station, and the design of the installation was modified to include a diesel-electric system to power the transmitter.

Site preparation was completed in early February. Major construction and equipment installation were largely completed by early April. Transmitter tuning and testing were delayed, however, by delays in shipment by the suppliers of certain components essential for this purpose. As of the writing of this report, it is anticipated that the station will be ready for full operation in August, 1975.

#### 4. Implications of Delay in Occidente Start-up

Initiation of educational programming in the Occidente was delayed for more than six months. Although scheduled to begin in January, 1975, programming had still not been started at the end of the reporting period.

Major factors contributing to that delay included:

1. Difficulties in selection of an appropriate site for installation of the radio transmitter.
2. The time required for installation and testing of the radio station installed at Momostenango.
3. Delays in appointment by the GOG of staff for production of programs, operation of radio station, and field operations in the Occidente.

In short, programming could not be initiated until all physical installations had been completed, and bi-lingual (Spanish-Quiché)

staff were in place and trained.

The prolonged delay in Occidente start-up had serious implications for the Project. By the end of July or earlier, farmers would have made essentially all major decisions for the year concerning their crops, and the agricultural cycle would be well-advanced. The remaining months of 1975 could be considered only as a period for developing competence in program operation, and an opportunity to gain the attention, interest and confidence of the local people. The potential for program impact in terms of significant change in attitudes toward, and adoption of, improved agricultural practices would be minimal.

Thus, educational programming can now extend over only one complete agricultural cycle in the Occidente instead of the two cycles projected in the Implementation Plan.

#### 5. Program Materials Production

Production of program materials for use in the Occidente was expected to follow the overall program strategy and production process earlier described for the Oriente, with necessary adjustments required to permit production of materials in Quiché.

The U.S. personnel input was not increased. It was anticipated that, after a year of experience in the Oriente, the staff would have developed sufficient capacity to handle both regions adequately.

The Ministry of Education was expected to increase its personnel assigned to the project to provide bi-lingual staff required for producing programs in Quiché plus additional technicians and radio station operating personnel needed for the expanded program. Although nominated, those personnel were not yet on board as of the end of June, 1975.

The agricultural section increasingly focussed on development of information for the Occidente region, beginning in late 1974. An annual agricultural message calendar for 1975 was developed in collaboration with Ministry of Agriculture personnel in the region (Figure 9). Technical message contents earlier prepared for the Oriente were reviewed and adapted for use in the Occidente. (It was later decided that separate texts should be prepared by theme for each region. That work was still pending in mid-1975).

#### 6. Message Transmission

Although the differential communication treatments could not be started during the reporting period, progress was made toward



that end. Monitors were selected for areas RM and RMA in Momostenango, and for the "monitor only" area of Chichicastenango. Arrangements with the Ministry of Agriculture to provide the field agronomist for area RMA had progressed to the point that he was expected to be available when needed. The radio station installation was essentially completed. Training and orientation programs for new staff had been planned. A tentative radio programming format had been developed.

### 7. Formative Evaluation

Formative evaluation activities were planned along similar lines as those earlier described for the Oriente.

### 8. Summative Evaluation

#### a. Baseline survey

The baseline survey employed during the 1974 surveys was constructed in a manner that permitted its use in both the Oriente and Occidente. A detailed discussion of the development, testing, and revision of the questionnaire is given earlier in this report (Pages 3-37, Summative Evaluation, Oriente).

The Occidente interview team, consisting of seven men fluent in both Spanish and Quiché, received the same training as the interviewers used in the Oriente. They participated in a pre-test of the questionnaire in the Municipality of Momostenango, but outside the actual experimental communities.

Due to the cultural differences between the Ladinos of the Oriente and the Indians of the Occidente mentioned earlier in this report, several problems were encountered during the Occidente survey.

Entering the communities and obtaining accurate, reliable answers to questions was a major problem. Local leaders were contacted prior to entering the communities, and contact with them was maintained throughout the entire interviewing period. Local informants and translators were used continuously in the field to help with language problems as well as to add credibility to the program. The assistance of local authorities in arranging interview dates and locations was essential for obtaining accurate responses during the interviews.

The initial baseline interview in the Occidente was conducted in September, 1974. Because of high seasonal migration in the

Occidente (Figure 2), many of the farmers scheduled to be interviewed were not available.

It was necessary to return to the areas repeatedly during the period October, 1974 - January, 1975, to obtain interviews with those who had been working on the South Coast in September.

The problems of entering the communities, obtaining accurate information and "cleaning-up" missing interviews -- and the manner in which they were resolved -- are documented in memorandums in the BVE field office archives.

The total number of interviews conducted in both regions, broken down by area and community, is shown in Table 8.

b. Time-sample surveys

These surveys will follow the basic design described for time-sampling in the Oriente. It was projected that the surveys would begin in August and continue on a monthly basis, contingent upon inauguration of the radio station in June. 1/

D. INTERSECTORAL COORDINATION

Although BVE is a program of the Ministry of Education, coordination and collaboration with other sectors are essential to its development and operation.

1. Ministry of Agriculture (MOA)

Continuing effective coordination and collaboration with the Public Agricultural Sector were facilitated by frequent meetings (at least monthly) of the BVE-MOA coordination committee formed in 1973, and the agronomist assigned permanently to the project by MOA through DIGESA (Dirección General de Servicios Agrícolas). That agronomist provided a continuing link not only with the Public Agricultural Sector in the Capital, but also with MOA field personnel in both the Oriente and Occidente. Project personnel maintained frequent contact with MOA field personnel in the two regions, both individually and in meetings.

The MOA continued to provide technical assistance in develop-

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1/ Time sample surveys subsequently had to be postponed due to delays in the start-up of Occidente programming.

Table 8. Interviews conducted in BVE baseline/follow-up surveys, 1974.

REGION	DEPARTMENT	COMMUNITY	AREA	No. OF INTERVIEWS	
ORIENTE	JUTIAPA	QUEZADA	R	112	
			RM	110	
			RMA	119	
		YUPILEPEQUE ZAPOTITLAN	R	126	
			RM	113	
			RMA	133	
	CHIQUMULA	CACAHUATEPEQUE IPALA	M	101	
			C	<u>139</u>	
	TOTAL NO. OF INTERVIEWS - ORIENTE				953
	OCCIDENTE	TOTONICAPAN	TZANJON CONQUIXAJA JUTACAJ	R	133
RM				150	
RMA				117	
QUICHE		CHIPACA I SAQUILLA I XEPOCOL	M	88	
			C	<u>121</u>	
TOTAL NO. OF INTERVIEWS - OCCIDENTE				609	
TOTAL NO. OF INTERVIEWS IN BOTH REGIONS				1562	

ment, and subsequent approval, of annual message calendars and technical contents to be used in educational programming. In return, the project collaborated with that Ministry in a 1974 emergency program to encourage small farmers to plant a second crop as a means of increasing total production of basic grain crops. Specifically, project representatives participated as members of the planning and coordinating committee, and 45 radio programs were produced as part of that program.

Discussions with DIGESA beginning in mid-1974 finally culminated in May, 1975, in a letter of understanding between DIGESA and the project (see Appendix E). In addition to continuation of existing arrangements, DIGESA agreed to assign two additional agronomists to the project to serve as field agronomists for Oriente and Occidente, respectively, and to reproduce audio/visual materials needed for development of DIGESA/BVE programs in the field. The project agreed, in return, to provide initial training and periodic orientation to DIGESA personnel in the use of BVE agricultural program materials to make available to DIGESA selected program materials, and to provide technical assistance in program development. (It was agreed that no BVE materials were to be used by DIGESA in project experimental or control areas). Finally, the accord called for formation of BVE-MOA coordination committees at the regional level.

## 2. PEMEP

In 1974, BVE collaborated with PEMEP (an experimental program in elementary education) on an experimental program of primary school extension in the Quezada Valley. PEMEP personnel used a half hour of broadcast time 3 days a week (from June to October) to transmit their "Escuela del Aire" over radio Quezada. A number of out-lying schools (generally grades 1-4) were supplied with inexpensive portable radios and lesson sheets which were coordinated with the radio programs.

Two basic units were included in the "Escuela del Aire"; growing tomatoes from small seedlings to producing plants; and collection (by students) of stories and legends about the Quezada Valley. These subjects were used as vehicles to teach the listeners basic arithmetic, health, nutrition, gardening and other pertinent subjects.

Teachers in the various schools tuned into Radio Quezada and followed the broadcasts with their students. Written material was given to both teachers and students as reinforcement. The teachers then expanded on the subject matter presented in the broadcast. In the tomato unit, they built small seed boxes with the children. As the plants grew, and the tomatoes appeared

and ripened, the broadcasts expanded in content to include other subjects such as those mentioned above. The students were advised about how to care for the plants, how to protect them from insects, proper fertilizers to use, how to transplant them, etc.

In the second unit, students learned history and social studies pertinent to their region through the collection of stories and legends.

After the program terminated, PEMEP conducted an evaluation survey to determine its effectiveness. A relatively high proportion of the participating schools reported success with the tomatoes as well as the combined subject matter taught through that unit.

During the program, PEMEP staff wrote and prepared all materials while BVE provided all recording, mounting and audio reproduction facilities as well as air time over Radio Quezada.

### 3. Ministry of Health

From the inception of the project, education in health and nutrition had been considered both appropriate and desirable for a balanced communications program aimed at improving the lot of the campesino. Limitations inherent in project design and related evaluation, as described in the Implementation Plan and the First Interim Report, made it necessary to restrict primary message content to agriculture.

Although many of the same message preparation problems would clearly be encountered in health as in agriculture, it was not possible to establish the same rigorous system of control of technical content in matters of health and nutrition due to lack of qualified personnel. To insure relative technical accuracy and consistency in these fields, however, the Ministry of Health was requested to assign qualified personnel to BVE to advise in the preparation of messages, and to review such messages from a technical standpoint. Early in 1974, this collaboration was established. A doctor was assigned by the Ministry of Health to work with BVE staff. At first, this was on a half-day basis; later the doctor was made available full time.

After an initial series of programs in support of the national vaccination campaign in June and July 1974, health and nutrition matters were included regularly in certain of the non-agricultural radio programs. The formats of these programs were changed for obvious reasons. With the general reorganization of BVE staff which followed the signing of the budget decree at the end of April 1975, it appeared that health and nutrition programs might be reconsidered in a broader context, and that

linkage might be sought with agricultural programs -- especially in home economics and family living. Collaboration with the Ministry of Health would continue to be essential.

#### 4. Ministry of Communication and Public Works

Radio broadcasting frequencies are assigned by the Ministry of Communications and Public Works. To obtain frequency assignments for broadcasting by the two BVE radio stations, a series of formal steps was necessary, following established GOG procedures and guidelines. The support and cooperation of the Vice-Minister of Communications, who is also in charge of the national radio station, TGW, was very helpful in moving the BVE application through channels.

The Ministry of Communications and Public Works requires an application which includes data on physical location, ownership, wattage, purpose, a map of facilities, etc. These data were provided by BVE in early 1974 in the case of Quezada, and in September, 1974, for the station in Momostenango.

The original frequency assigned to Radio Quezada was provisional, and the MCPW later advised BVE that a change would have to be made from 1320 to 1310 Khz., since a station in Western Guatemala shared the 1320 assignment. Investigation revealed, however, that 1320 Khz. was no longer in use by the other station. In consequence, Radio Quezada was finally confirmed in its originally assigned frequency. At the same time (October, 1974), the radio station in Momostenango was assigned the frequency of 1380 Khz.

#### 5. National Economic Planning Council

The National Economic Planning Council is the agency primarily responsible for developing successive five-year plans for the Government of Guatemala. The current plan covers the period 1975 through 1979.

In mid-1974, the Planning Council completed a preliminary proposal for major expansion of non-formal education. That proposal contained significant elements of the BVE model, and Planning Council staff conferred frequently with project staff during the course of its development.

The draft 1975-79 plan for education, which included a revision of the above-mentioned proposal, became available in late 1974. Contacts and interaction with the Planning Council became an increasingly important activity of the Project throughout the remainder of this reporting period. (That activity is discussed in greater detail on pp 67 ).

### E. COST-BENEFIT

The Project design calls for a rigorous analysis of costs, cost effectiveness and cost-benefit relations for the mixes of communications media under investigation. That analysis was initiated during the current reporting period.

A general methodology was established and tested, using project costs through 1974. A preliminary cost analysis report was prepared in March, 1975. Later, three models based on Project media mixes were developed. Project costs were then utilized to simulate costs of a regional non-formal education system for small farmers in Guatemala for each of the three models. The models and simulated costs are summarized in "A Cost Analysis of a regional non-formal education system for small farmers in Guatemala" (Appendix F).

Preliminary projections of potential benefits were also developed as the first step in study of benefit-cost relationships. At the end of the reporting period, arrangements were being made to transfer all cost data to computer cards to facilitate analysis.

### F. FACTORS AFFECTING PERFORMANCE

Although the project functioned according to plan insofar as possible, a series of factors beyond the control of project staff affected to varying degrees both project operations and results which should be expected. Some of those factors are discussed below

#### 1. Budget Delays

A Project Agreement to cover 1975 project operations was signed by AID and GOG on August 30, 1974, after slightly more than one month of negotiation. The GOG commitment under that Agreement included significant increases for CY1975 in personnel and operating expenses plus motorcycles for use of field personnel. In money terms, the GOG commitment was to be Q82,270.

The increased Ministry of Education input included in the agreement was the result of an analysis of project requirements made by the Guatemalan Project Director and the U.S. Program Leader in collaboration with their colleagues in the Project, the Ministry of Education, and USAID/Guatemala. That analysis took into account both the existing program, and its planned

expansion in 1975. The GOG then determined the Quetzal commitment required to provide that increased input.

It was anticipated that the timely execution of the new Project Agreement coupled with the increased GOG input would result in alleviating many of the budgetary problems encountered in CY 1974 (See First Interim Report, p. 55). However, that optimism proved premature.

Although the increased budget was approved by the Ministry of Education, it was initially included under the Adult Literacy Department (as was the case in 1974). Therefore, fund transfers were necessary to provide the Project with an identifiable and independent budget.

A detailed review, in late 1974, of projected 1975 GOG inputs revealed that the increased Quetzal commitment would still not be adequate -- due at least in part to inflation. Project needs were again reassessed, and the Ministry of Education agreed to supplement the earlier approved budget by Q28,000, with that increase to go largely for personnel.

The combination of the above-mentioned factors resulted in a series of delays in making 1975 funds available to the Project. In the meantime, the Guatemalan contribution continued at approximately the 1974 funding level. That situation continued into May, 1975. In the meantime, program expansion into the Occidente was delayed, and the Contractor was forced to incur expenditures not scheduled for the 1975 U.S. contribution.

Although the fund transfer was finally approved in late May, the Guatemalan Project Director was confirmed in his position only on June 3, 1975. Other staff nominations had still not been confirmed as of that date.

(Complete documentation of the above-described situation is on file in project archives).

## 2. Staff Recruitment

Staffing problems may be considered in four categories: GOG staffing, Contract-financed long term technical assistance, Contract-financed short-term technical assistance, and Contract-financed local hire.

The situation with respect to GOG staffing is discussed elsewhere in this report.

Long term technical assistance was as programmed with the exception of a communications specialist to replace Dr. Colle

who terminated in August. That position remained vacant during the remainder of the reporting period. As a result, it was not possible to give needed attention to development, testing and use of additional media.

Short term technical assistance was as programmed with only minor modifications. The project utilized the services of the radio engineer who had installed the Quezada transmitter to perform the same function for the Momostenango installation. The anthropologist who had conducted the study of the Occidente under sub-contract with SUNY-Albany continued to serve as a consultant to the Project. An agricultural economist was recruited to carry out the benefit-cost analysis of the Project, and that work was initiated in late 1974 (see Cost-benefit Study, pp 52).

For reasons discussed elsewhere, the Contract was forced to support several local hire positions through April which the GOG had been expected to supply beginning in January 1975. The senior Guatemalan agronomist (provided by the Contract) resigned in early 1975 to accept a senior position in the Ministry of Agriculture, and his replacement was recruited. Two additional agronomist positions anticipated under the Contract were not filled, as agreement was reached that the Ministry of Agriculture would provide two field agronomists to the Project.

### 3. Technical Problems with Quezada Transmitter

The Quezada transmitter was operated at 70-100 watts through most of 1974. According to project design, the wattage was to be increased to 500 in December in order permit adequate reception of its signal in Yupiltepeque. Shortly after the power had been increased, however, the wattage dropped sharply and could not be regained.

The station operated at a reduced wattage (still adequate for good reception in the Quezada Valley) for approximately two months. In the meantime, the Radio Engineer thoroughly checked both transmitter and tower in trying to locate the cause of the power drop -- finally identified as a small piece of solder that had apparently been dropped into the transmitter during its assembly at the factory.

As a result of the above difficulty, the radio promotion campaign in Yupiltepeque had to be delayed, and listenership was relatively low in that area during the early months of 1975

### 4. Radio Quezada Coverage

The Project design called for a limited range transmitter that would permit good reception in the experimental areas, but

exclude it from the control areas. In practice, that was difficult to achieve. When broadcasting at a wattage that insured good reception without interference in the Quezada Valley; there was leakage of the signal into the Yupiltepeque Valley (the 1974 control).

According to results of radio audience surveys, more than 40 percent of the people in Yupiltepeque were listening to Radio Quezada at least occasionally by the end of 1974. As a result of no promotion in the area and erratic reception, however, impact of the station's educational programming appeared to be minimal in Yupiltepeque according to results obtained from time sample surveys.

A similar, although less serious problem was encountered in Ipala (the 1975 control area) after wattage was increased to 500. In this instance, reception in the area was even more erratic, and audience surveys indicated that less than 15 percent of the people were listening to Radio Quezada even occasionally.

#### 5. Input Price and Supply Situation

Prices paid by farmers for supplies were substantially higher in 1974 than in 1973. The situation was further aggravated by a serious shortage of fertilizers, particularly at planting time. Further, many farmers encountered difficulty in obtaining good seed of improved varieties and/or hybrids. This, in turn, affected the total acreage planted to a second crop.

The situation was somewhat less serious for 1975 plantings, as fertilizer prices had eased somewhat, and supplies were more nearly adequate.

#### 6. Demand for Agricultural Credit

Credit availability to small farmers was not a serious problem to the project in the experimental and control areas at the outset of Oriente programming in late March, 1974. Although not adequate in either area approximately the same proportion of the demand was being met in both.

As BVE educational programs on credit began to have impact, however, demand for credit increased rapidly in the experimental area (Quezada). As a result, DIGESA had to establish an office in Quezada, and to increase staff working in the area from 1 to 5 agricultural promoters. In contrast, they had little or no need to increase the number of promoters working in the control area.

The credit situation during the first half of 1975, in the Oriente was characterized by heavy farmer demand and limited capacity of DIGESA to process credit applications due to insufficient personnel. The RM area in Quezada was hit especially hard in this respect -- 23 farmers in this area, who had made credit applications, had not been visited by the DIGESA agronomist to complete the credit application form by the time they needed to plan for their 1975 crop. Through prompt action by the BVE-MOE coordinating committee, arrangements were made for a DIGESA agronomist to be assigned temporarily to the area with the specific objective of clearing credit applications for those farmers who had qualified. This action was accomplished in time for most of the above farmers to take advantage of the loan money in their crop planning operations.

A related situation occurred in the broadcast area which affected BVE radio programs covering credit and credit applications. Radio Quezada was broadcasting the second series of credit messages when an urgent call was received from the local DIGESA supervisor requesting that all broadcasting of credit messages be stopped until further notice. They were completely covered up by credit applications and were doubtful that they could serve even those requests on hand. The project complied with that request even though it required that programming already produced be discarded.

#### 7. Mid-Season Drought in 1974

Yields and total production of basic grains in the Oriente were depressed by a serious drought starting in mid-season and continuing into harvest. Although the drought was general throughout the experimental and control areas, they were not necessarily affected equally due to difference in farmer practices between the two areas.

#### G. STAFF DEVELOPMENT

Since the inception of the project, major attention has been given to development of staff of Guatemalans capable of planning and operating a program such as BVE. To do so requires development of not only a diversity of individual skills and areas of specialization, but also the ability to organize the operation in such a way that each function is accomplished on time and in its proper relation to every other function.

Staff development is, of course, a continuous process that is never finished. It requires constant training, feedback and self-criticism to maintain and improve the quality

of the program's output and its impact on the audience it seeks to reach. Nevertheless, an assessment of progress toward achieving the above-stated goal, after slightly more than one year of educational programming would appear appropriate.

The following brief resume, by category of function, is based on on-going work of project staff during the reporting period.

#### Agricultural section

Capable of: doing field reconnaissance surveys; developing message calendars, technical contents and agricultural program message strategies; training, supervising and assessing performance of monitors; analyzing and evaluating feedback from the field; orienting production staff in basic agronomic requirements of messages; planning and conducting crop demonstrations.

#### Production Unit

Capable of: producing scripts that are technically correct yet interesting to the audience (in both Spanish and Quiché); recording, editing and reproducing cassette-mounted programs to meet a daily schedule. Potential for: producing multiple copies of flipcharts in color or black and white plus smaller handouts for use in radio forums.

#### Evaluation team

Capable of: handling field operations for surveys --including sample control, interviews, logistics, and clean-up operations in both Spanish and Quiché speaking areas.

#### Monitors

Capable of: organizing and conducting farmer radio forum meetings in rural communities; providing regular feedback from the communities to the project; conducting simple crop demonstrations under the supervision of the agronomist.

#### Administration and management:

Capable of: administering and supervising the operation of a non-formal education program of the

size and scope of BVE.

Several factors have contributed significantly to the progress indicated above. Although few of the staff had had previous experience in non-formal education or -- except for the agronomists -- in agriculture, they were highly motivated, possessed basic skills such as ability to write, etc. and were eager to learn new skills and techniques. Staff turn-over has been relatively low. Finally, an operating framework has been established which facilitates coordination and management (see following section, Systems Development).

In brief, the project now has a core staff capable of carrying on the continuing educational program at its present level. There is, however, need for further development in all categories, particularly in the graphic arts. Assuming no major staff changes and continued project support as anticipated, further significant progress in staff capability to improve both quality and diversity of programming is expected during the coming year.

In contributing to Guatemalan staff development, foreign advisory staff have adhered insofar as possible to the principle of working together with Guatemalan colleagues to develop systems, procedures and skills that are directed toward achievement of project objectives. Essentially all staff training has been accomplished within the project, taking advantage of long and short term advisors, and of local resources.

#### H. SYSTEMS DEVELOPMENT

The BVE operational framework, established in 1973 and early 1974, was designed to facilitate development, execution and evaluation of an educational program directed toward achievement of project objectives. Toward that end, a series of inter-related systems was developed as described in the First Interim Report.

Systems development and refinement continued to receive major emphasis during the current reporting period. Although proven in practice to be basically sound, the initial systems required extensive modifications: to improve quality of output; to increase efficiency; and to adjust to available facilities, staff capabilities and field conditions.

A series of reports planned for the coming year (see p 70) will include detailed information on systems employed by the project.

CHAPTER VPROJECT COSTS

Increased operating costs were encountered during the July 1974 to June 1975 period due to planned program expansion, inflation, the Momostenango radio station installation and GOG budget difficulties.

Purchase and installation of the radio transmitter and tower at Momostenango represented a major cost over-run. Although the cost of the basic transmitter without accessories for that station was slightly less than for the transmitter earlier installed in Quezada, the price of the tower more than doubled. For reasons discussed elsewhere (pp. 43 ), it was necessary to use a diesel-electric system to power the Momostenango station. Such a system not only increased initial installation costs, but would later result in increased operating costs. Finally, both technical and logistics problems extending over a period of months resulted in greater than expected installation costs.

Expansion of the project as planned (additional experimental and control areas in the Oriente, and establishment of the BVE program in the Occidente) required additional staff, more travel, and greatly increased field-related evaluation costs.

Both U.S. and GOG contributions were to increase in the current reporting period, with the GOG committed to provide all additional personnel needed for planned 1975 program expansion. However, the Ministry of Education had difficulty in establishing its budget for BVE as part of the national budget. As consequences, the level of expenditure by GOG for the first half of CY1975 was substantially lower than had been anticipated, and Contract costs were higher than expected. The situation began to improve in this regard in the last two months of the reporting period following GOG approval (retroactive to April 30) of the Ministry of Education's 1975 budget for the project.

Activities associated with new area selection, establishment of relations with local authorities, development of message content, and preparation for programming in the Occidente required increased travel by project staff throughout the reporting period. With the exception of a small allotment of gasoline from the Ministry of Education, all such travel costs were borne by the Contractor.

The number of interviews conducted in the baseline/follow

up survey of 1974 was approximately triple the number conducted in the 1973 baseline survey. Also, the number of time sample interviews conducted monthly in 1975 was double the number for 1974. Although some economies were possible as a result of first year experience, the total cost of field surveys nevertheless increased substantially.

Prices of nearly all materials and supplies increased during the report year, adding still further to project costs.

Detailed accounts of project costs are maintained by the Academy for Educational Development.

CHAPTER VI

INTERACTION WITH AID

The Project benefitted from continuing interaction with and support from both AID/W and USAID/Guatemala. Particular attention is called to four aspects.

The situation with respect to GOG financial support of the Project is discussed elsewhere (pp 52 ). Beginning in late 1974, USAID/Guatemala intervened directly in working with Project leaders and the Ministry of Education to insure that the GOG contribution would be adequate for 1975 operations.

In January, 1975, the Program Leader participated in a Planning Council-sponsored seminar on non-formal education as a member of the AID/W-USAID/Guatemala team. During the remainder of the reporting period, he collaborated closely with USAID/Guatemala in developing the parameters for possible AID support to an expanded GOG non-formal education program (see pp 67 ).

As the result of interaction with AID/W over a period of months in early 1975, representatives of AID/W and USAID/Guatemala met in Guatemala in mid-May, 1975, with AED, Project field staff, and evaluation staff from Florida. In a two-day meeting followed by a one-day field trip, the Project was subjected to an intensive in-course assessment from which specific plans emerged for needed adjustments in operations and evaluation.

In mid-June, 1975, a comprehensive review of the Project was held in Washington before an audience representing several divisions of AID plus other interested observers. That review was in response to a request from AID received in early 1974. (See pp. 68 ) Project Outreach, for additional details).

CHAPTER VIIPROJECT DOCUMENTATIONA. OFFICIAL DOCUMENTS

Relevant official planning and implementation documents are on file in project archives.

B. STAFF AND CONSULTANT REPORTS 1/

1. Arnold, Jerrold C., Jaime Solórzano, and Rene Peña. January, 1975. Scriptwriting Training Course -- Occidente. Typed Report.
2. Arnold, Jerrold C. and Howard E. Ray. December, 1974. Guía Para la Selección, Adiestramiento, Capacitación y Utilización de Monitores. Typed Report.
3. Arnold, Jerrold C., May, 1975. El Uso de Parcelas Demostrativas en el Programa EBR en Guatemala. Typed Report.
4. Bradford, William E., 1974-1975. Monthly reports on Guatemala BVE Project. Typed Reports.
5. BVE Staff, Baseline Study, First Phase 1973: Frequency Distribution of Responses. English and Spanish. Undated. Mimeographed.
6. BVE Staff. Baseline Study 1974: Frequency Distribution of Responses. English and Spanish. (For Staff Use Only) Undated. Mimeographed.
7. BVE Staff. June, 1975. Mixes of Communications Media Utilized in the Project. Mimeographed.
8. BVE Staff. June, 1975. The Story of One BVE Radio Program (Revista Agrícola No. 303). Mimeographed.
9. BVE Staff. June, 1975. The Story of one BVE Radio Forum. (Radio Foro 10-75). Mimeographed.
10. BVE Staff. June, 1975. The Setting and The People. Mimeographed.

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1/ Reports prepared by the evaluation team at the University of South Florida are listed in "Basic Village Education-Guatemala, Evaluation Component, Second Interim Report, September, 1975"

11. Monterroso, José Luis. January, 1975. Actividades de la Sección Agrícola y Responsabilidades del Personal. Typed Report.
12. Monterroso, José Luis. February, 1975. Guía Para la Elaboración de Contenidos Agro-Técnicos. Typed Report.
13. Monterroso, José Luis. January, 1975. Lineamientos del Programa Revista Agrícola. Typed Report.
14. Monterroso, José Luis. January, 1975. Monitor Training Course -- Occidente. Typed Report.
15. Monterroso, José Luis and Jerrold C. Arnold. June, 1975 (revised) Actividades de la Sección Agrícola y Responsabilidades del Personal. Organización de Trabajo de EBR en la Sección Agrícola. Typed Report.
16. Monterroso, José Luis, Jaime Carrera, Jaime Solórzano and René Peña. 1974-1975. Agricultural Subject Matter Resource Materials. (series of 26 mimeographed reports including 13 major themes) Typed reports.
17. Norvell, Douglass G. and Gordon A. Straub. June, 1975. A Cost Analysis of a Regional Non-Formal Education System for Small Farmers in Guatemala. (Preliminary Draft for Discussion Purposes Only). Mimeographed.
18. Ray, Howard E. and Jerrold C. Arnold. June, 1975. The Educational Challenge. Visual Presentation.
19. Ray, Howard E. June, 1975. Draft Plan for Program Material Testing in the BVE Project. Typed Report.
20. Ray, Howard E. June, 1975. Selection of Site and Type of Installation for BVE Radio Station in Occidente. Typed Report.
21. Ray, Howard E. The Basic Village Education Project in Overview (Slide Presentation) Presented in Washington At June Conference, 1975. Mimeographed.
22. Straub, Gordon A. June 1975. Monitor selection in the Occidente. Mimeographed.
23. Straub, Gordon A. and Jaime Solórzano. May, 1975. Información Crítica Concerniente a la Región Occidental del Programa EBR. Typed Report. Mimeographed.
24. Straub, Gordon A. April, 1975. Selection of EBR Experimental and Control Areas -- Occidente. Typed Report.

25. Terzuola, Robert G. March, 1975. Signal Penetration Test/Analysis. Typed Report.
26. Terzuola, Robert G. November, 1975. BVE Radio Listener Survey. Typed Report.
27. Terzuola, Robert G. June 75. Outline for Consumer Cassette Pilot/Feasibility Study. Typed Report.
28. Terzuola, Robert G. July 1975. Consumer Cassette Volunteer Orientation Report. Typed Report.
29. Terzuola, Robert G. January, 1975. Selection of Monitors for Yupiltepeque Sub-Areas, 1975. Typed Report.
30. Terzuola, Robert G. November, 1974. Proposed Procedure for Selection of Candidates for Monitor Training in Oriente - 1974. Typed Report.
31. Terzuola, Robert G. December, 1974. Outline for Group Dynamics/Human Relations Component of Monitor Training Program - 1974. Typed Report.
32. Terzuola, Robert G. December 1974. Outline for Projected "Monitor Only" treatment. Typed Report.
33. Terzuola, Robert G. January 1974. Utilization of Oriente II Monitors in Cacahuatpeque. Typed Report.
34. Terzuola, Robert G. June, 1975. Performance Report for Yupiltepeque RM and Ipala M Monitor. Typed Report.
35. Terzuola, Robert G. February, 1975. Evaluation Activities Conducted by BVE Program. September 1973-February 1975. Typed Report.
36. Terzuola, Robert G. December, 1975. 1st. Follow-Up Survey Interviewers Trainers Report. Typed Report.
37. Terzuola, Robert G. April, 1975. Time Sample Procedures 1975. Typed Report.
38. Terzuola, Robert G. April, 1975. Revision in Time Sampling Procedures. Typed Report.
39. Terzuola, Robert G. November, 1974. 1974 Baseline/Follow-up Survey instrument: Preparation and Utilization. Typed Report.
40. Terzuola, Robert G. November, 1974. 1974 Survey Field Report. Typed Report.
41. Terzuola, Robert G. November, 1974. Increasing Efficiency of follow-up Surveys - 1975. Typed Report.

42. Terzuola, Robert G. Printout/Questionnaire check; Baseline /Follow-up Survey 1974. April, 1974. Typed Report.

#### C. PROFESSIONAL MEETINGS AND PAPERS

1. Ray, Howard E., and José Luis Monterroso. Transferencia de Tecnología. Prepared for presentation at the Intensive Course "Systems of Agricultural Production in the Tropics" Departamento de Cosechas y Suelos del Trópico, CATIE, Turrialba, Costa Rica, March, 1975.
2. Colle, Royal D., Robert Terzuola and Susana Fernandez. Stretching Manpower Resources for Non-Formal Education in Rural Development: A Case Study in Communications. Prepared for the Adult Education Research Conference held in St. Louis, Mo. 1975.

#### D. DOCUMENTARY FILM

The 16-mm color documentary movie produced under subcontract with FILMTREK of Guatemala was in the final stages of editing by the end of June, 1975. It was shown for the first time at the BVE Project review in Washington in mid-June, while still in the answer print stage.

Running time of the completed film is approximately 20 minutes. It describes the BVE Project, its setting, objectives, design, how it was developed and how it operates. The narrative sound track is in English.

#### E. PHOTOGRAPHS

The file of black-and-white photographs and color transparencies produced by the one-man photographic unit was increasingly useful during the second year of the project.

The black-and-white photos were used in exhibits and special displays for promotional purposes, as for example in the communities of Yupiltepeque when the broadcasting radius of Radio Quezada was extended to the larger target audience. More significantly, there was greater use during this period of both black-and-white photos and color transparencies, especially the former, in the guidance and orientation of artists/draftsmen preparing visuals

for radio forums. These materials showed the artists the types of dress, farm implements used, and practices followed in the experimental areas, and served as practical models for their drawings.

The color transparencies were used principally for orientation and presentations to visitors and analysis of the project, in the form of four separate slide presentations which were developed.

As of June 30, 1975, the project photographic library included 861 color transparencies and 1022 black-and-white photographs.

#### F. ARCHIVES

A significant part of project documentation is the continuous flow of memoranda, working papers, field trip reports, notes to the file, etc., relating to the project. File copies of all such materials are retained in the archives.

Copies of all program materials produced (written, graphic and audio material) are also maintained in the archives. (See Table 1 for numbers and descriptions of graphic and audio materials produced during period July, 1974 - June, 1975)

A small project library containing music, recorded sound effects and written reference materials is also maintained in project offices.

## CHAPTER VIII

### PROJECT OUTREACH

The Project continued to receive wide attention both in Guatemala and elsewhere. As discussed below, both the number of visitors and requests for written information increased dramatically. There was a similar increase in demands on staff time for presentations and consultation with various programs and individuals.

#### A. IN GUATEMALA

The preliminary proposal of the National Economic Planning Council for a multi-ministry non-formal education program reported in the First Interim Report was incorporated into the GOG's Five Year Plan (1975-79) after further development and modification. As discussed earlier (pages 51 and 61) BVE had extensive opportunity to interact with Planning Council personnel in relation to that plan, particularly during the first half of 1975.

Following the earlier-mentioned meetings organized in January, 1975, the U.S. Program Leader assisted the Planning Council in more detailed planning for the national program. As a part of that activity, a PERT was developed which identified the essential systems and sub-systems required for planning and implementation, and the time frame required in order to initiate educational programming in accordance with Plan projections. Systems developed in BVE provided the basis for translating the national plan into action terms.

Coordination between BVE and the Ministry of Agriculture is discussed earlier (pp 47). In terms of project outreach, the letter of understanding with DIGESA whereby DIGESA agronomists would have access to certain BVE materials was considered a significant step. Early reactions of DIGESA field staff to those materials were positive.

In addition to the above, project staff participated in numerous meetings and briefings with public and private sector groups and individuals. Among the visitors to project headquarters were Lic. Guillermo Putzeys (Minister of Education) and Lic. Ricardo Peña Pinto (Vice-Minister), the Junta Nacional de Educación Extra Escolar and several representatives of the Human Resources Division of the National Economic Planning Council. Visitors were also received from representatives in Guatemala of eight other national and international agencies including UNESCO, IICA, USAID/Guatemala, and ROCAP

## B. OUTSIDE GUATEMALA

### 1. Visitors to the Project

Regional interest in the BVE experience was evidenced by the number and diverse affiliations of persons from outside Guatemala who visited the project during the reporting period. Briefings were given to visitors from ten Latin American countries plus the United States, seven U.S. universities, and eight organizations (including AID/Washington) operating in the international field.

### 2. CATIE, Costa Rica

The U.S. Program Leader was requested to present a paper on technology transfer, based on BVE experience, to participate in an intensive short course organized by the Central American Agricultural research institute at Turrialba, Costa Rica. Participants included agronomists from countries in Central and South America. Although unable to participate personally, a paper was prepared in collaboration with Ing. Monterroso, then coordinator of the BVE Agricultural Section, and was presented in Turrialba by Monterroso. An English translation of that paper is found in Appendix G.

### 3. Adult Education Research Conference

Results of the pilot study on consumer cassettes (see pp.28 ) were used as the basis for preparation of a paper (Appendix D) presented by Colle at the Adult Education Research Conference held in St. Louis, Mo. in April, 1975.

### 4. Comprehensive Project Review

During the course of meetings with AID/W in April, 1974, the desirability of a comprehensive BVE project review in mid-1975 was expressed. In follow-up, such a review was held June 16-17, 1975. Participants from the project included Moseley, Nesman, Carnack and Ray.

Materials prepared for distribution to participants in the review included:

Mixes of communications media utilized in the Project (reproduced as Appendix A)

The setting and the people

The Basic Village Education Project in overview  
(reproduced as Appendix H)

The story of one BVE radio program (reproduced  
in part as Appendix I)

The story of one BVE Radio forum (reproduced in  
part as Appendix J)

A cost analysis of a regional non-formal education  
system for small farmers in Guatemala (reproduced  
as Appendix F)

Evaluation report for Washington review (prepared  
by University of South Florida)

The review was conducted in an informal setting to facilitate  
interchange of ideas. The following agenda served as a guide to the  
discussion:

June 16, morning

Overview and orientation

- |                      |   |           |
|----------------------|---|-----------|
| A. Program operation | - | H. Ray    |
| B. Evaluation        | - | E. Nesman |
| C. Discussion        |   |           |

June 16, afternoon

Discussion, focussed on:

- A. Social impact considerations - R. Carmack
- B. Media mixes - radio forum
- C. Achieving inter-ministerial coordination
- D. Information needed for evaluation in operational projects

June 17, morning

- A. Cost evaluation methodology
- B. Project film
- C. Products in terms of results
- D. Products in terms of "how to do the job"

The review was beneficial from the standpoint of project staff  
who participated. Not only did it provide a forum for presentation  
of the project, but also an opportunity for interaction on both  
the project as it presently functions, and insures which must be  
faced in carrying it to completion and beyond.

C. PROJECTED PUBLICATIONS

As indicated earlier, a number of reports were prepared during the reporting period in addition to the First Interim Report. Several of those reports were still awaiting final review and editing, however, at the end of the reporting period.

Projected for the coming year are a series of reports covering specific operational aspects of the project, as well as editing and reproduction of materials presently in draft form. Emphasis in such reports will be placed on "how to do it." The tentative list of subjects to be covered includes titles such as:

- How to develop and administer baseline studies
- How to select and train interviewers
- How to identify, train and update monitors
- How to organize and produce programs
- How to prepare an agricultural calendar
- How to prepare a script
- How to test program materials
- How to develop inter-ministerial coordination

The objective will be to have (by the end of the project) a complete series that, taken together, will constitute an operational manual for a program such as BVE

CHAPTER IXIMPLICATIONS FOR THE FUTURE

After more than a year in operation, technical feasibility of the integrated use of radio and other media in a sharply focused adult non-formal education program has been demonstrated. Although results to date are promising, it is still too early to draw definitive conclusions about the various media mixes utilized in terms of their effectiveness or their costs in relation to benefits accrued.

In general, implications suggested in the First Interim Report are still considered valid, and are repeated in summary form below.

1. The project should provide much "what is needed" and "how to do" information of value to other countries as well as to Guatemala. (The foregoing section, Project Outreach, gives an indication of the extent to which this has already started).
2. If successful in both the Occidente and Oriente, two highly contrasting regions, some adaptations of BVE should be potentially viable for many places in the developing world.
3. If successful in reaching rural people effectively with agricultural information (the present BVE subject matter focus), it appears reasonable to assume that other needs such as health, nutrition and education could also be served effectively through similar communications systems. However, such transferability cannot be tested in the present project.
4. The time frame of the present project is minimal with respect to measurement of change in agricultural practices and production. A longer time frame would be required for an adequate assessment of rates and persistence of change over time. Even so, information on potential short term impact (two to three years) should provide valuable guidance to planners and administrators.
5. The measurement of social and economic consequences over time of induced change is a critical factor beyond the scope of the present project.

APPENDIX C

EXCERPTS FROM "ACTIVIDADES DE LA SECCION AGRICOLA  
Y RESPONSABILIDADES DEL PERSONAL"

APPENDIX CEXCERPTS FROM "ACTIVIDADES DE LA SECCION AGRICOLA Y  
RESPONSABILIDADES DEL PERSONAL" 1/Mensajes AgrícolasA. Calendario Anual

La elaboración del calendario anual en borrador (para su corrección y aprobación posterior por el Ministerio de Agricultura), requiere del conocimiento agrícola del área y de los programas del Sector Público Agrícola; la base fundamental o el principio del calendario es el tema "Siembra", que se trata con especial interés; basados en la "época de siembra" se calendarizan las actividades previas a la misma, tales como crédito, planificación de cultivos, preparación de la tierra, etc. y las actividades agrícolas posteriores a la siembra también se calendarizan tomando en cuenta la "época de siembra" ya que el período vegetativo de los cultivos determina las etapas de cada uno; en relación a su desarrollo fisiológico es que se transmiten los mensajes, por esta razón, el calendario de mensajes deberá elaborarse con anticipación de varios meses.

La preparación del borrador del calendario de mensajes está a cargo del Técnico Regional respectivo con la colaboración del Coordinador y el Asesor Agrícola; la discusión y aprobación de este calendario con los agrónomos del Ministerio de Agricultura estará a cargo del representante permanente. Se elabora una vez al principio de cada año y se revisa periódicamente durante el año.

B. Calendarios Detallados

En base al calendario anual, se elabora cada mes un calendario detallado, en éste, como su nombre lo indica, se anotan detalladamente el día o los días de transmisión de un mensaje determinado.

Este calendario también se indican los mensajes que serán reforzados con cuñas o algún programa especial debido a emergencias.

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1/ Prepared by Ing. José Luis Monterroso, January, 1975

Estos calendarios que abarcan el período de "un mes calendario" se elaboran con la suficiente anticipación (2 ó 3 meses) por cada técnico regional.

El coordinador tendrá a su cargo la revisión y ajuste de estos calendarios, el asesor agrícola deberá aprobarlos. Esta actividad se ejecuta una vez cada mes.

### C. Contenidos Técnicos

Una de las partes más importantes y de mucha significación, son los contenidos técnicos, ya que la veracidad, amplitud y enfoque que se dé a cada uno, depende en alto grado la aceptabilidad de la audiencia.

Podemos decir que los "contenidos técnicos" constituyen la base medular de los mensajes: estos contenidos se relacionan todos al proceso de producción agrícola en sus diferentes fases, en total son veinte, abarcando desde el crédito, prácticas agronómicas, hasta la información sobre el Sector Público Agrícola.

Para la elaboración de estos contenidos existe una "Guía" aparte, en base a la cual deberán prepararse cada uno de ellos por cada técnico regional en su especialidad.

El coordinador en colaboración con el Asesor Agrícola tendrá a su cargo la revisión, adaptación y ampliación de los contenidos técnicos.

El representante permanente se encargará de obtener la aprobación correspondiente del Ministerio de Agricultura, el Asesor Agrícola autoriza y ordena la reproducción y distribución del material. Esta actividad es constante en todo el año.

### D. Estrategia de mensajes

La estrategia de mensajes se divide en tres partes:

#### 1. Estrategia Texto:

En ésta se expresan los objetivos desarrollistas, que se persiguen, en función del agricultor y su agricultura, los puntos principales que el guionista debe abarcar y algunas observaciones en cuanto a la adaptación de los contenidos agró-técnicos a la situación actual del campo.

La estrategia texto sirve de orientación y guía para el que escribe el libreto, pues en los objetivos, puntos principales y observaciones se expresa "el sentido, la prioridad e impor-

tancia" de los diferentes subtemas del contenido técnico. Se efectúa una vez que se ha terminado cada contenido técnico. Es cargo del coordinador en colaboración con el Asesor Agrícola que efectúa este trabajo.

## 2. Estrategia Preliminar

Consiste en una adecuación de la estrategia texto a las diferentes épocas del año y la interrelación con el período fisiológico de las plantas. Esta adecuación se hace en forma calendarizada y con fechas específicas, y para ello sirven de guía, el calendario detallado y la estrategia texto.

Los mensajes agrícolas constituyen una parte de la programación de la radio, en consecuencia, esta estrategia preliminar se adapta a la estrategia final, que abarca el conjunto de la programación; la estrategia texto y la preliminar son elaboradas por el coordinador. La estrategia final que se hace en base a la preliminar es elaborada por el asesor agrícola quien a su vez ordena su reproducción y distribución al personal del departamento agrícola y a los guionistas respectivos. La estrategia preliminar se elabora mensualmente.

## 3. Producción de los Programas

### A. Táctica de Acción

Indica el enfoque que se dará a cada tema o punto principal de la estrategia texto, de acuerdo a una situación particular, para determinar la táctica de acción, de tal manera que puede adaptar las situaciones agrícolas predominantes en las áreas de acción a la programación de E.B.R.

Es cargo del coordinador en colaboración con el Asesor Agrícola; se ejecuta según las necesidades.

### B. Orientación Técnica

Esta orientación técnico-agrícola está dirigida a los agrónomos del programa y especialmente a los guionistas, para una mejor comprensión de los temas, se busca armonizar criterios entre agrónomos y explicar al guionista los detalles del contenido técnico; esta orientación también enfoca el sentido y el espíritu, la filosofía, la metodología y el énfasis de los varios aspectos del mensaje para que se le facilite al guionista escribir su libreto.

Esta orientación se efectúa en reuniones semanales con el personal y el coordinador, quien está asignado para esta actividad.

C. Revisión de Guiones

El guionista en base a todo lo anterior, elabora su libreto en borrador, sobre uno o varios puntos principales, el que previamente a su grabación es revisado por el Técnico Regional respectivo y por el Coordinador; luego, el Asesor le da su aprobación y ordena la reproducción mecanografiada y subsecuente grabación. Actividad semanal.

D. Consultas

Es una fase permanente, sirve como unidad de apoyo al guionista y artistas de ayudas visuales para la elaboración de sus guiones, pues consultan las dudas que van surgiendo a medida que elaboran su libreto.

Participan en esta actividad de consultoría, todo el personal de la Sección Agrícola bajo la responsabilidad del Coordinador.

APPENDIX D

Colle, R.D., S. Fernández and R. Terzuola. "Stretching manpower resources for non-formal education in rural development: A case study in Communication."

Prepared for the Adult Education Research Conference,  
St. Louis, Mo., 1975

APPENDIX DSTRETCHING MANPOWER RESOURCES FOR  
NON-FORMAL EDUCATION IN RURAL DEVELOPMENTIntroduction

Because social change and rural development generally will not take place without effective communication links between the "change agents" and the people who live in rural areas, a project was established in Guatemala to test effective ways of creating both effective and efficient links. This project is a joint undertaking of the Government of Guatemala through its Ministry of Education, and the Government of the United States of America through its Agency for International Development. The GOG-Ministry of Agriculture and the Washington-based Academy for Educational Development play key roles in the implementation of the project. An organization called Educación Básica Rural (EBR) was established to integrate the various human, economic and content resources to carry out the project.

The major thrust of the EBR program is outlined elsewhere.\* This study deals with one aspect of that program: the introduction of an innovative communication system in several small Guatemala villages. However, it seems reasonable to assume that its findings can be applied, with adaptation, to other localities in Guatemala, Latin America and elsewhere.

Inter-personal communication and rural development

Individuals' decisions are the building blocks of "social change". Hence, considerable effort and resources go into programs designed to deliver information to people which will result in a change in their behavior. No competent communication person would claim that information alone will bring about social change, but he would argue that as long as individuals have the option to weigh alternative means and goals, communication must be considered one of the key ingredients in social change strategies and programs.

A major consideration, thus, is how best to communicate in a situation where a change agency makes a deliberate effort

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\* Basic Village Education Program in Guatemala  
Academy for Educational Development, April, 1974.

to cause change. Despite all that has been written in the last 30 years about various methods, the introduction of new communication technology prompts continual reassessment, testing, and re-evaluation of techniques. The tremendous potential of "delivery systems" such as communication satellites suggests the everchanging complexion of the alternatives available. \*

Whatever the technology, there seems to be continued support for including some interpersonal contact by field personnel (extension agents, aides, village level workers, etc) to link the change agency with the client community.

Both the importance and one of the key problems of the field worker system are highlighted in Robert McNamara's 1973 address to the World Bank Group's Board of Directors. After listing "expanded extension facilities" as one of the measures necessary to increase agricultural production, McNamara contends that there is no developing country which produces enough extension agents. Noting that in developing countries, the ratio of government agricultural agents to farm families is about 1 to 3,000, he argues that:

As long as the supply of extension workers is grossly inadequate, only the large farmers will benefit, and the needs of the poor will be ignored.

Since agricultural extension systems have generally been developed longer than health, nutrition and family planning extension systems it seems fair to suggest that the number of field workers in those areas is even more inadequate.

#### Deficiencies in field worker systems

Despite their acknowledged importance in social change, it is important to identify briefly some of the weak points in field worker systems. One has already been mentioned: The inadequate supply of field workers. In Guatemala, the nation's 69 professional extension workers were able to reach about 5% of the farms at an annual budget of U.S.\$0.50 per farmer. If every farmer in the country were to be contacted by extension agents, at least 20 times as many extension workers would be needed and the yearly cost would be \$10 per farmer. The per capita income for rural people in Guatemala is \$75. Not only is there a question as to whether it is possible to justify an expenditure of 13 percent of this income on adequate extension service, but it would take 28 years just to train enough agricultural extension agents to do the job.

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\* We have included several publications in the bibliography to illustrate some of the more recent discussions of recent alternatives and technology.

(Wolf, 23)

A need to broaden the range of the field worker's competence. There is a wide range of capabilities among field workers. In some cases, they have training beyond the secondary school level; in others, they may have no more than elementary schooling and perhaps some short-term intensive training. Whichever the case, they are seldom able to deal with information beyond "agriculture", or "nutrition" or "health". The cause of development might be better served if the scarce field worker could serve a variety of family needs. (Sometimes bueraucratic rules or jealousies prevent a field worker from going into "alien" information areas, as in the case of nutrition aides who were not supposed to deal with family planning information even though their homemakers requested it.)

Need for quality control. Although we have seen no specific data on quality control we suspect that there is considerable variability in how messages are communicated to clients from field workers. Some variability is desirable when it results from the field worker attempting to pattern his message to a particular situation. However, we assume that boredom, repetition, low motivation, and simple failure to understand content may warp the presentations of, especially, the lower level field worker.

Need for more flexibility in the learning situation. Although face-to-face contact may generally be a highly beneficial means of teaching or imparting new information, it has several drawbacks. For example, timing. The field worker's visiting time may not coincide with the client's most suitable or productive time for learning. And it may be difficult for the field worker to return later, after he has just bicycled five miles to get to the home. It is also difficult for people to initiate, face-to-face, discussion on some sensitive topics. Furthermore, clients may be reluctant or embarrassed to ask questions or ask for repetition or clarification of information in a face-to-face situation.

Thus, the question is: given the highly valued interpersonal touch provided by the field worker in non-formal education programs, how can this resource be stretched, both in terms of reach (the number of families contacted) and breadth (the range of subjected matter covered), given the limitations of numbers.

In Guatemala we explored the feasibility of using unpaid, relatively untrained village residents to carry out a modest NFE program with inhabitants of their aldeas (villages).

These workers were primarily equipped with audio cassette tape machines to carry out their task. Neither the workers themselves nor the villagers had had experience with this type of communica-

tion tool in the past. \*

#### The communication situation

In attempting to discover suitable and effective ways communicating with rural subsistence farm families in Guatemala, we were concerned with using a method that had the following characteristics:

1. It relies most heavily on oral techniques since literacy levels and literacy saturation are both very low in rural Guatemala;
2. It could be used in conjunction with relatively untrained volunteers in the aldeas;
3. It is simple enough that there would be no need for people in the field, as volunteers or as consumers of the information, to learn complicated methods or manipulate complex equipment;
4. It is inexpensive and thus could reasonably be afforded by the low level budgets that inevitably have plagued government rural development programs around the world;
5. It could be localized to take into consideration the cultural and environmental conditions characteristic of a relatively small geographic area;
6. It could be used by rural people when they were ready to be exposed to the messages prepared by EBR.
7. It has potential for two-way communication, i.e., between the "consumer" in the aldea and the people in EBR.

#### Audio cassette technology

We had used audio cassette machines successfully as a substitute for radios in "radio farm forums." There had been no difficulty in training the paid "monitors" to use them in

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\* We would like to acknowledge our indebtedness to the people from Educación Básica Rural, and from the Academy for Educational Development for cheerfully tolerating and supporting a venture that departed from the main format of the "basic village education" project. Our indebtedness extends to the Department of Communication Arts at the N.Y. State College of Agriculture and Life Sciences (Cornell University) for the generous loan of equipment for the study.

sessions with farmer groups.

Success in using audio cassette technology (ACT) in conjunction with nutrition aides to communicate with low income families in rural areas of the United States further encouraged us to examine its potential in this new setting. (Papers by Colle listed in the bibliography discuss various aspects of these U. S. experiments.)

A feasibility project was designed to answer several very fundamental questions concerning the use of audio cassette technology in the rural Guatemalan context.

The key questions investigated in the project include:

1. Can the audio cassette technology survive handling in the rural setting without being broken, stolen, lost or otherwise abused? Most persons we talked with felt that it would be handled carefully and capably; however, we had encountered enough skepticism among government, foundation, and other agency officials to feel it necessary to include this question in the study.
2. Would the volunteer and audio cassette combination work effectively to
  - a. get information to the homes,
  - b. have them listen
  - c. learn, and
  - d. act?
3. What is the cost of reaching people with the messages? We did not expect to be very definitive in answering this question for several reasons: It was difficult to assess thoroughly all the costs involved because we used some resources already available for the major EBR project, and because we were simply not equipped to carry out a careful "effects" study. We were also very much aware that some effects can only be measured over a span of time far longer than we had the luxury to commit to such a simple feasibility study.
4. What are the logistical problems in maintaining such communication system, including supplying tapes and batteries, and supervising the activities of the volunteers?

It should be emphasized that the study was designed as a pilot study -- one which would provide some clues for additional (perhaps more sophisticated) research, and some basic data for planning decisions in the overall EBR project.

Design of the Project

1. Location. Three aldeas were used as the study site. These were in the Quezada Valley in Guatemala's Oriente. However, the aldeas were not among those being used in the main EBR communication project in the same Valley.
2. Time. The Project's field phase took place during July 1974 for four weeks. Approximately six weeks of preparation preceded the field operations. An additional five days were spent in early August carrying out the evaluation.
3. Message form. Four cassette tapes were prepared for use in the aldeas. Each tape (with the same "program" on each side) was 22-29 minutes in length. Each tape contained information, stories, and music in a "magazine-type" format. Interviews, talks, dramatizations, and monologues were used. Some of the information encouraged the listener to carry out some kind of action, such as buying and planting new variety of sorghum, and making a simple mechanism for storing food and keeping it cool.
4. Distribution system. A volunteer was recruited from each of the three aldeas. (In one aldea, two volunteers worked as a team.) they were given a brief training program of three hours during which the project was explained to them and they were taught how to use the audio cassette equipment. In each aldea, two systems of distribution were planned: the "independent model" and the "dependent model."

In the independent model, cassette machines and the initial tape were left at one household in each aldea. After that household in the aldea had the unit for one day, it was shifted to another household in the same aldea. The process of shifting was left to the households and the volunteer to work out. After the second household had the machine for a day it was shifted to third -- then to a fourth, and a fifth. During the second week, the pattern was repeated with another cassette tape.

In the dependent model, the tape machines stayed in the hands of the volunteer who would take the machine with him as he visited a pre-determined household each day. He covered five such households during the week, and the repeated the cycle during the second, third, and fourth weeks.

As the experiment developed, we discovered that the

volunteers used their own ingenuity and initiative to get greater use out of the system than we had planned.

5. Evaluation. We used two methods for answering the questions we raised. First, we (literally, the authors) interviewed the volunteers, using a prepared interview schedule.

Second, two EBR staff members who had done extensive interviewing for various EBR operations in the past went to the villages to interview four categories of persons. These included: those who were involved in the independent model (Group I); those who were involved in the dependent model (Group II); a control group who lived in aldeas not being used in the study (Group III); and a sample of "spill-overs" (Group IV) -- persons who by some means or other had listened to one or more tapes but had not been included as a "household" in the project design.

The evaluation took place within one week of the time the last tape had finished its cycle and the equipment had been recovered. This prompt feedback from the field had several implications for the findings. In the first place, we would expect that information recall would be affected because of the short lapse of time. It would be helpful to do another survey after six months or a year to check on retention of information. On the other hand, questions related to behavior would be affected somewhat because some of the things recommended on the tapes (for example, trying a particular recipe, or preparing INCAPARINA, or making a cooler) had little time to be undertaken. Again, a later survey would be helpful.

### Results of the study

To provide continuity and coherence, we are reporting our results according to the questions as they were raised on Page 6.

#### 1. Can audio cassette technology survive...in the rural setting....?

We cannot be sure how many different hands the cassette equipment passed through over the four-week period. Perhaps a fair estimate is that those hardest used were passed through a minimum of 20 households (five households a week, and recycled through the same households for four successive weeks).

We know from testimony of our volunteers that some machines

were run throughout the day in a shoe repair shop; another was played regularly under a tree in the open in one community; and another was used regularly at a refreshment store where people gathered to hear it.

In no case did a machine get lost, stolen, damaged or even seriously marred. There was only one report that a machine was being "mishandled." This came from a conscientious volunteer who discovered that one family was playing the cassette machine all day long and was using up batteries faster than the volunteer thought they should. But the machine itself was unscathed.

It should be emphasized that only one person of all those involved in the field operation (volunteer or consumer) had ever used a cassette unit previously. Yet, the volunteers, who trained the people in the aldea to operate the equipment, reported no difficulties in the operation of the machines and reported that it was easy to demonstrate to the people how to operate the units.

No tapes were lost, destroyed or unwound. Each was in good enough condition to be continued on further cycles had they been needed.

2. Would the volunteer and audio cassette combination work effectively.....?

In the survey made of "consumers" in the aldeas, ten information-level questions were asked of each of the respondent groups. (See page 8, Section 5). Following are the results.

The notations used in the chart are:

Subjects: I - Independent model      III - Control group  
II - Dependent model      IV - spill over group

Score (s): The number indicates the total number of correct answers given for all 10 questions.

Total possible (Nx10) : indicates the number of people in the category multiplied by the number of questions in the test to give the total number of possible correct answers.

Percentage (%) This is S divided by Nx10. The higher the percentage, the greater the incidence of information gain.

## A. Information Gain

Subjects	S	Total Possible (N x 10)	% Correct
I (N-11)*	63	110	57
II (N-13)*	73	130	56
III (N- 7)	8	70	11
IV (N- 9)**	36	80	45

These data indicate quite clearly that people in the aldeas listened and learned from the tapes. We found also that majority of the people who were in the independent model (and thus had the opportunity to do so) listened to the tapes more than once. Although the dependent model is less conducive to this repetition, we found considerable evidence that repeat listening also took place among them.

Although liking a system is not the same as listening or learning from it, they are obviously related. We asked our interviewers to make a judgement after the interview was over as to the degree of enthusiasm or lack of enthusiasm the respondents seemed to have for the cassette system they had used. The interviewers were instructed to rate the response on a five-point scale from "enthusiastic" (1) to "not enthusiastic" (5) with "neutral" serving as a mid-point. Following are the results.

\* We are not fully confident as to exactly how many respondents were in each of these categories. As mentioned earlier, the team of volunteers in one community encountered very heavy use of a machine when it was left in a home, so they modified the design somewhat, by converting independent households into dependent households when they felt it would serve the best interests of the project.

\*\* This represents a small sample of the "spill-over" audience. We do not have an accurate accounting of this group because data was not collected on the number of persons who gathered to listen under a tree or at the refreshment store. In some cases, volunteers were stopped on the roadway by persons who wanted to hear the tapes. In another case, a whole visiting soccer team asked to listen to them. We are somewhat surprised that the scores for IV are as high as they are because nothing in the study design established conditions for repeat listening by spill-over listeners.

## B. Enthusiasm for system of getting information.

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	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
I	7	4	0	0	0
II	12	1	0	0	0

---

Overwhelmingly, the consumers were enthusiastic about the process -- and no one surveyed rated the system as low as "neutral."

Behavior measures. We indicated earlier what some of the behavior measures were. In this data, we are reporting all behavior changes together although some of the actions encouraged involve more complexity than others.

In this data, S indicates the number of actions actually taken, and Nx5 indicates the number of total "actions" that the Group as whole could have taken as a result of the tapes. The percentage indicates the ratio of actions taken, to those total actions possible.

## C. Behavior change

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	<u>S=</u>	<u>Nx5=</u>	<u>%</u>
I	23	55	42
II	31	65	47
III	7	35	20
IV	9	40	23

---

Again, it seems quite clear that information on the tapes provoked people in the aldeas to carry out various kinds of action. Groups I and II carried out more activities discussed on the tapes than the control group or the spill-over group. We checked this from another point, also. We asked the volunteers if they knew of anything that happened as a result of the tapes.

In one community, they reported that a great deal of sorghum seed of the new variety mentioned in the tapes had been purchased. We checked this with the regular agronomist (Extension Agent). His report substantiated these observations. According to his report, 10 quintales (1000 pounds) of improved sorghum seed had been sold in the communities when we promoted it. According to the agronomist, indications from the people in these communities show that many farmers planted sorghum as a second crop in accordance with our recommendations even though they did not customarily plant sorghum.

An action that was not included in the list of five compiled was "discussion." The volunteers reported that in more than 50% of the situations in which they participated (i.e., the dependent model) spontaneous discussion of the content followed the playing of the tape. Often, they said, points not understood by some members of the group would be explained by other members. There is also evidence that discussion often followed playing of the tapes in the independent model.

### 3. The cost of reaching people and the role of the volunteers.

As can be expected from field research where generous use is made of untrained and relatively inexperienced people, surprises occur. One of the major "surprises" that appeared in this study was the ingenuity and the resourcefulness of the volunteers. These were unpaid people who did this job while also carrying out their regular activities in the community. One was a farmer, two were 6th grade students (about 18 years old), another was a tailor. Often, the volunteers discovered ways of extending the coverage of the cassettes beyond what they had been instructed to do. We expected some spill-over audience based on our previous experience with this type of system, but it went beyond our expectations. One of our volunteers estimated that he reached 100 farmers a week with his equipment and tapes. This was about 5 times the number specified in his instructions. If we are rather conservative in estimating the costs of tape and equipment, we estimate the cost of reaching each farmer to be approximately 2-3 cents per week for approximately 25 minutes "exposure" time. This figure is based on depreciating a tape machine in six months' time, "losing" one tape a week, and using two sets of batteries a week (which is about the rate used in this test by all of the volunteers). Obviously this does not include the production costs involved -- something we were not able to estimate very effectively. However it should be remembered that content, once developed, can be recycled in other communities and in other years.

In estimating costs, farmers reached, and effects, we are on very unsteady ground. It will take more controlled tests than we were able to undertake to get a more satisfactory estimate.

One effect that we did not try systematically to measure was the impact on the volunteer. But some general observations

are worth reporting. We did ask questions which allowed us to conclude that the volunteers themselves learned from the tapes; they tried some of the actions recommended, and they became respected sources of information in the community as a result of their involvement with the cassette communication system. In fact, the volunteers became transmitters themselves of the information that had been communicated on the tape.

Each of the volunteers from the three different villages carried some stigma that would otherwise have kept him from being a respected source of information in the villages. One was illiterate, one was a military agent, believed to hold the job for his own benefit (a type of traitor), and the volunteers from the third village were two sixth grade boys, who because of their age were thought of as inexperienced. Yet as mentioned earlier, in a month's time, we were able to see them transformed into sought-out sources of information.

Informal discussions motivated by the cassette contents that usually took place after the farmers listened to the tapes added cohesiveness to the village groups. As a result of one of these spontaneous meetings, one of the volunteers was able to get the village men organized to repair a seven-mile stretch of road into town. Although the tapes carried no material or message to directly motivate them to cooperate, the system itself brought the men together and gave them the initial ground for communicating that led them to act together for the common good.

We have seen in previous cassette communication research the impact made on the para-professionals and volunteers who ostensibly serve as carriers of the technology. What actually seems to happen is that these people undergo changes in their competence and, in some cases, in their personality and social relations, which make them more valuable as volunteers even without the aid of the cassette equipment. What we have, in fact is not only a system of communication for "consumers" but a latent training system for volunteers.

We did not try to activate a feedback system. However, at the end of the study, two volunteers (the highschool boys) requested a microphone so they could go back to their communities to record comments of their constituents. Obviously, the possibility existed, and the volunteers themselves recognized it.

#### 4. What are the logistical problems....?

None of the volunteers or the consumers reported any difficulty in getting batteries, or in operating equipment, receiving the tape recorder, or getting the tapes. The volunteers created their own system for controlling the replacement of batteries. They provided consumers with batteries when they said they needed them -- but before giving new batteries the volunteers required that the consumers surrender the expended batteries. We are confident

that the volunteers headed off any possibility of profiteering from replacement batteries. It should be remembered also, that the circulation of machines in the independent model was largely accomplished by forces already existing in the aldea. The mechanism for moving the machine from one household to another were worked out among the parties concerned, and although there was sentiment for retaining machines longer in some households, we found no evidence of the machines not moving to their appointed places when they were supposed to.

#### Summary

Several things emerge from this study. Because it was a feasibility study conducted under considerably less than the optimum research conditions, these should perhaps be treated as suggestive rather than definitive. But they point to the need for examining the potential of audio cassette technology as a very important communication system for reaching subsistence type farmers.

Among the observations we would like to underscore are the following:

1. Rural people are quite capable of handling audio cassette technology without abusing it.
2. They can and do learn from the system.
3. They can be stimulated to act -- in fact, where other systems seem not to have made an impact, audio cassette technology used as we have described seems to motivate action.
4. The dependent and the independent models seem to operate equally well. We need more information on the conditions under which each operates best. Our volunteers were divided as to which they liked using best. We suspect it relates a good deal to their other responsibilities in the community as much as it does to the systems themselves.
5. The cost of communicating via audio cassette seems well within the budget of any government which takes rural development seriously.
6. Volunteers can be used effectively to provide personal contact. Though their training may be brief, they can deliver messages widely into the community without the information losing "integrity". In our pilot study, persons were contacted that the regular agronomist might never have reached. On the other hand the agronomist had more opportunity to collect and develop material that could spread through this network. We did not push the possibility as far as we might have; but it was clear

that a field worker, supported by volunteers and a cassette system, could expand content to meet needs of the community that transcend individual ministries.

A final note

There is much yet to learn about the potential of this type of communication. We see, for example, excellent possibilities of trying it in with visual materials such as slides, filmstrips, booklets with pictures and a limited number of words, etc. There is a need to discover more about whether the appeal and power of the system lies partly (or mostly) in its novelty or whether it has durability over great lengths of time. It seems possible, for example, to use an audio cassette system such as we have described for periods of two or three months in a community, and then shift it to another community with another set of indigenous volunteers. Later it could be cycled back to the already initiated community with additional new information. A rural development agency could, for example, cycle a cassette communication system among four or five communities, with each using it three or four times a year. We anticipate not only the reaching of a great number of farm families, but the latent training of volunteers as a by-product.

Despite many questions that still exist, we think the evidence indicates that the system can stretch manpower resources in rural development. We think it may be as powerful a system as satellites and television. The need now is to move ahead and refine our research through vigorous longer term action programs in the field.

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**APPENDIX B**

**CARTA DE ENTENDIMIENTO ENTRE**  
**EDUCACION BASICA RURAL DEL MINISTERIO**  
**DE EDUCACION Y "DIGESA"**  
**DEL MINISTERIO DE AGRICULTURA**

**CARTA DE ENTENDIMIENTO****ENTRE****EDUCACION BASICA RURAL DEL MINISTERIO DE EDUCACION****Y****DIGESA DEL MINISTERIO DE AGRICULTURA**

Con el fin de que la Dirección General de Servicios Agrícolas y el Programa de Educación Básica Rural, alcancen sus propios objetivos y aprovechar con mayor eficiencia los programas educativos agrícolas desarrollados para mejorar la comunicación con el pequeño y mediano agricultor y capacitarlo para elevar su productividad y desarrollo agro y socio-económico que son metas del Plan Nacional de Desarrollo, acuerdan coordinar sus actividades y esfuerzos educativos de la manera siguiente:

- 1o. Coordinar las acciones de ambas Instituciones a través del Comité oficialmente designado para el efecto. Dicho Comité está encargado de recomendar los mecanismos necesarios para el cumplimiento de este Convenio.
- 2o. Coordinar esfuerzos y recursos para la preparación y la reproducción de materiales audiovisuales relacionados a cultivos alimenticios básicos y otros temas, seleccionados por el Comité de Coordinación DIGESA/EBR, que sean de interés al desarrollo de la Agricultura.
- 3o. DIGESA cooperará con EBR en los aspectos siguientes:
  - a. Continuará proveyendo un Delegado Permanente con atribuciones específicas, dotándolo de los viáticos correspondientes.
  - b. Los Jefes Regionales de DIGESA, de común acuerdo con EBR elegirán a dos Promotores (Peritos Agrónomos) que se asignarán a las áreas experimentales de Educación Básica Rural, uno para los municipios de Quesada y Yupiltepeque y otro para el municipio de Momostenango, quienes bajo la dependencia de EBR, trabajarán a tiempo completo.
  - c. Proporcionará vehículos provisionalmente a los Promotores hasta que EBR provea de otros en forma permanente.

- d. Proveerá viáticos para los dos Promotores asignados.
- e. En apoyo a la actividad crediticia y de asistencia técnica que se impulsa, continuará destacando Promotores Agrícolas en las áreas de Quesada y Yupiltepeque.
- f. Continuará proporcionando información técnica para el desarrollo de programas DIGESA/EBR en el campo.
- g. Reproducirá los materiales audiovisuales necesarios para el desarrollo de Programas DIGESA/EBR en el campo.

**40. EBR cooperará con DIGESA en los aspectos siguientes:**

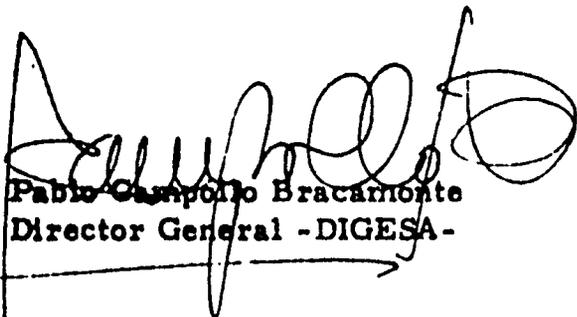
- a. Adiestramiento inicial de personal regional seleccionado por el Comité de Coordinación DIGESA/EBR, en la utilización de sus programas educativos de tipo agrícola.
- b. Proveerá los materiales siguientes:
  - 1. Calendarios de mensajes agrícolas (anual y mensual).
  - 2. Guías Tecnológicas (Contenidos Técnicos).
  - 3. Estrategias de Programación.
  - 4. Horarios de programas de radio.
- c. Orientación periódica a los Jefes Regionales, Jefes Sub-regionales y Supervisores de acuerdo a los calendarios y contenidos aprobados por ambas Instituciones.
- d. Asesoría técnica cuando el desarrollo de los programas lo requiera.
- e. Continuará la divulgación y promoción por la radio de las actividades y servicios de DIGESA.
- f. Proveerá combustible, materiales y equipo necesarios en el trabajo como Agrónomo del Campo de EBR a los Promotores proporcionados por DIGESA.
- g. Los Promotores asignados a EBR tendrán la responsabilidad de mantener informada a DIGESA, por medio de EBR, utilizando el sistema de información oficial.

Actividades de Coordinación General:

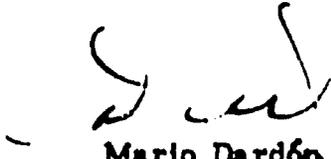
- 1o. Establecer un Comité Regional presidido por el Jefe Regional respectivo.
- 2o. Establecer un sistema de coordinación permanente entre el Comité Central y los Comités Regionales a través de sesiones ordinarias y extraordinarias.
- 3o. Analizar mensualmente el desarrollo del programa integrado, a través del intercambio y discusión de la información vertida por ambas Instituciones.

El presente Convenio tendrá validez durante el presente año, pudiendo ser renovado de común acuerdo entre DIGESA/EBR y entrará en vigor, una vez aprobado, el 8 de mayo de 1975.

Guatemala, 8 de mayo de 1975.



Pablo Caspillo Bracamonte  
Director General -DIGESA-



Mario Dardón  
Director Educación Básica Rural

**APPENDIX F**

**A COST-ANALYSIS OF A REGIONAL**  
**NON-FORMAL EDUCATION SYSTEM FOR**  
**SMALL FARMERS IN GUATEMALA**

Preliminary Draft for Discussion  
purposes only, not for reproduction

THE BASIC VILLAGE EDUCATION PROJECT  
(PROGRAMA DE EDUCACION BASICA RURAL)  
Guatemala

A Cost-Analysis of a Regional Non-Formal  
Education System for Small Farmers in Guatemala

This report has been prepared by the Academy for Educational Development under Contract No. AID/CM/la-C-73-19 for Division of Education, Science and Technology, Office of Development Resources, Bureau for Latin America of the Agency for International Development.

June 1975

### 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).

The Basic Village Education Project is jointly funded by the Government of Guatemala and the 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 are provided by the Academy for Educational Development, supported under contract No. AID/CM/1a-C-73-19 with the 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.

A COST ANALYSIS OF A REGIONAL NON-FORMAL  
EDUCATION SYSTEM FOR SMALL FARMERS IN GUATEMALA

By Douglass G. Norvell and  
Gordon A. Straub 1/

Introduction

This paper analyzes the costs of a regional non-formal education program aimed at the small farmer in Guatemala. The Program is designed to help these farmers acquire knowledge and information which will change their attitudes towards, and increase their adoption of, improved agricultural practices. It is expected that these changes will reflect themselves in a general improvement in the quality of life within the target group.

The present paper is based on preliminary data drawn from the experience of the Basic Village Education (BVE) Project in the Oriente region of southwest Guatemala. Eventually this analysis will form a part of the study of relative cost-effectiveness of the separate delivery systems in the BVE Project, and of their benefit - cost ratios.

After analyzing existing cost data of the project, this paper utilizes costs which have been simulated or "scaled-up" to a regional level, taking into consideration anticipated economies of scale. The models used are based on the original design of the project; they consist of three distinct delivery systems, each with a different combination of radio transmission and direct personal contacts with farmers and farm groups. These combinations of "Message treatment" are described in detail elsewhere. 2/

The paper contains: 1) a statement of the problem; 2) a description of the methodology employed; 3) presentation of the data, 4) an explanation of how the data will be employed in a later benefit-cost analysis; and 5) some conclusions.

The Problem

The analysis attempts to answer the question, posed by a Gua-

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- 1/ The writers are an agricultural economist and field supervisor for the BVE Project.
- 2/ Academy for Educational Development, June, 1975. Mixes of Communications Media Utilized in the Project. Guatemala City, Guatemala. Preliminary Mimeo Report, un-numbered.

temalan planning official, "What would it cost to implement any one of the three non-formal education systems at the regional level in Guatemala?". The delivery systems are: radio broadcasting (Model I), radio broadcasts combined with personal contact by monitors (Model II), and radio broadcasts combined with personal contact by monitors and agronomists (Model III). It should be emphasized that each model is "freestanding", and independent of the other two. The costs will appear to be accumulative in nature only because of the initial project design. Eventually, other models will be employed (i.e. Monitor only) that will more appropriately illustrate the non-accumulative nature of the costs.

The models will be applied to a region with the following characteristics: 1. A population of 500,000 persons, 6 to a family evenly distributed across the landscape, with access to transportation facilities. 2. Seventy five percent of the population listen to the radio an average of 2.5 hours per day. These data closely resemble conditions found in three Departments of southeastern Guatemala where the present experimental program is in operation.

### Methodology

The costs will be stated in terms of both cash and economic costs. The cash costs are simply the expenditures that would be required to implement any one of the three models. The economic costs differ from the cash costs in the following aspects. First, the cash costs do not include overhead to the extent that the programs could be implemented by a Ministry without expanding its facilities. However, the economic costs do include an overhead charge to reflect the alternative uses, or "opportunity costs", of the resources that are employed by the Ministry to backstop the project. This procedure assumes: 1) that there is opportunity within a given Ministry to utilize its current limited resources more intensively; and 2) that decisions must be made concerning distribution of those resources among various projects (hence the "opportunity costs.")

Cash costs reflect expenditures for capital items in the first year, while the economic costs are spread over the useful life of the item. In this case, the economic costs will tend to be less than the cash costs.

The time frame of the analysis is two years. During the first year, the start-up activities of the project are carried out; such as planning and project design, and installation of equipment. From conception to operation, the BVE project took longer than two years, but the experience gained should permit subsequent projects to be implemented in a much shorter period of time. At the beginning of the second year, the project starts operations, and continues

until the end of the year.

The methodology employed to compute costs follows that developed by Dean Jamison and Steven Klees in The Cost of Instructional Radio and Television for Developing Countries (Academy for Educational Development, Washington, 1973). There are two slight departures from the Jamison-Klees approach. First, different cost categories were used to conform with the basic design of the Project. Second, while Jamison and Klee refined their costs to a per student per hour basis, BVE costs are stated in terms of the costs per farmer exposed to a particular information delivery system (Models I, II or III).

The difference in the time dimensions reflects the differences in formal and non-formal education. While cost per student per hour may accurately describe a situation where education is brought to a fixed audience on a regular basis, it does not describe the system employed in the BVE. The BVE non-formal systems enter the small farmer's stream of consciousness at different intervals, for different periods of time and with different degrees of intensity. Radios may be listened to carefully, or in a relaxed manner. Agronomists will reach some farmers indirectly through the use of demonstration plots, and others on a one-to-one basis. Monitors work with both groups and individuals. Therefore, the most appropriate means to describe the effect of the models is in terms of the total number of farmers exposed, on a continuing basis.

### Model I

Model I is a system that reaches farmers by broadcasting a variety of radio programs 6 days a week. The number of farmers exposed to Model I is calculated as follows:

1.  $P \times R = L$  where

P is the total population  
R is the listening rate,  
L is the population listening

2.  $L/S = F$  where,

S is the number of persons per family  
F is the number of heads of families (farmers) listening.

Moreover, the calculations assume that each farmer listens 2.5 hours a day 6 days a week. All of these data are drawn from the initial experiences of the BVE project in the Oriente of Guatemala.

Table 1 (P.7) shows the costs of Model I from the start up through the first year of operation. Categories 1, 2, and 3 are

self explanatory. Category 4, Message Content, includes the costs incurred in deciding what information should go into a message. Category 5 is the cost of assessing the impact of the messages through various feedback mechanisms. Category 6 represents the costs of producing and delivering the messages after the content is decided upon.

Category 6 includes the costs that farmers spend on batteries in listening to the radio. Once the radio station is established and broadcasting, this is the only variable cost of exposing additional farmers to the system. The variable costs do not include depreciation, nor maintenance of radios on the grounds that farmers already own radios. One could consider that the battery costs of farmers are not substantial on the grounds that farmers already listen to the radio and merely substitute one program for another. However, it was decided to include battery costs to avoid overlooking a major cost item. The battery costs were calculated as follows:

1)  $B/L = H$  when:

B is the cost of a set of new batteries  
L is the hours of life for a set of batteries  
H is the cost of using the batteries per hour.

Then,

2)  $H \times Y = C$  where;

Y is the hours of listening per year  
C is the cost per family per year.

These cost estimates were drawn from the experimental program. It should be noted that battery costs can become a large amount reaching \$170,625 in the case of 62,500 families listening. On a large scale project, a logistic system might be developed for the use of rechargeable batteries with substantial cost savings.

Table 2 (P. 8 ) presents an analysis of how the total number of families listening affects the per unit costs. As would be expected where the costs of the radio are largely fixed, the per unit cost decreases sharply with an increase in the size of the audience.

### Model II

Model II is a system that reaches farmers by radio broadcasts and with a personal contact system utilizing monitors. The total number of families reached by the complete system (radio and monitors) is assumed to be 31,250 at the onset. In addition to these families, the remainder in the region are assumed (based on BVE experience) that one monitor could serve 170 families.

Table 3 (P.9 ) illustrates the costs of providing radio and monitor to 31,250 families, and radio alone to the remaining 31,250. Table 4 (P.10) shows an analysis of how the total costs is affected by the number of families receiving the complete package. The per unit costs cannot be displayed except where total saturation is achieved. At any point prior to total saturation, the number of farmers receiving the complete package (Radio plus monitor) and the partial package (radio only) will not be the same units. Therefore, to state the per unit costs would be mixing apples and oranges. However, at the total saturation level (62,500 families) the units converge, and it is possible to state per unit costs.

### Model III

Model III is a system that reaches farmers through two treatments: radio and personal contact with monitors and agronomists. The agronomists are assumed (based on BVE experience) to be able to serve 600 families. Table 5 (p. 11) demonstrates the costs of reaching 31, 250 families with complete package of model III and the remaining 31,25 with radio only. Table 6 (p.12 ) is an analysis of the costs of the total package at different levels of exposure. Tables 5 & 6 can be directly compared to Tables 3 and 4.

### Relation to the Benefit - Cost Analysis

The cost data for Models I, II and III will ultimately form the basis for the benefit-cost analysis of the three alternatives. As the BVE project progresses, improved cost data will be generated, but the basic format will remain the same.

In simulating the benefits, the farmers reached by the delivery systems of Models I, II and III will be treated as "students", some of whom will acquire new knowledge, change their attitudes and adopt new practices. The probabilities of this process occurring will be established by the BVE Project.

Upon adopting new practices, it is expected that farmers will increase production, and will also increase their costs. The benefits of the delivery systems of the different models will be the value of the increased production minus the costs of the increased inputs, with a value inputed to the farmer's labor where appropriate. The "student-farmers" cannot be expected to change practices immediately. Hopefully, increased production will result as early as the third year of a program. Meanwhile, the costs begin in the first year. Therefore, the costs and benefits will be stated in terms of present value, with an appropriate lag (again based

on BVE experience) before the increase in production. At some point in time, the costs of the program will be assumed to decrease substantially.

Using the "student-farmer" analogy, a farmer has "enrolled" when the delivery system begins. When farmers adopt new practices, they will have "graduated" and will increase their income. After they "graduate", their educational costs will decrease sharply. In the process of being educated, some will "fail". There will be a dropout rate. Those that do not elect to listen to the radio, not work with monitors and/or agronomists will never have "enrolled".

In the final analysis, the benefits of a non-formal education program will be compared with the costs to determine if it is a feasible use of public funds. Also, a cost-effectiveness analysis will be conducted to determine which delivery system is the most efficient.

### Conclusions

The cost data of Tables 2, 4 and 6 show that, at maximum program exposure, costs of Models II and III are approximately 2.5 and 3.4 times the cost of Model I, respectively. That proportionality does not hold at lower exposure levels, however, due largely to differences in fixed and variable costs as shown in Table 7.

Model I has high fixed costs and low variable costs. Models II and III have only slightly more fixed costs, but the variable costs rise sharply.

In terms of planning from the cost standpoint, Model I might be ideal for a situation where budget uncertainty reigns. Once the radio delivery system was installed and functioning, the cost of extending the coverage would be small. On the other hand, models II and III would require larger expenditures to extend coverage.

Ideally, the final judgment will rest on the comparisons of benefits and costs.

Table 1. Simulated cash and economic costs during the start-up period and first year of operation for a regional non-formal education system designed to bring agricultural information to small farmers by means of radio (Model I). 1/

<u>Category</u>	<u>Costs</u>	
	<u>Cash</u> (U.S. \$)	<u>Economic</u> (U.S. \$)
1. Feasibility Studies	27,754	27,754
2. Project Design and pre-planning	70,323	82,822
3. Administrative costs	154,486	177,137
4. Message content	63,128	70,707
5. Message Appraisal	34,421	39,359
6. Radio Delivery System		
a. Pre-production	52,286	61,111
b. Production	33,683	33,797
c. Delivery	<u>239,789</u>	<u>217,525</u>
7. TOTAL COSTS	675,870	710,212

1/ Based on a total number of 62,500 farmers exposed.

Table 2. Simulated economic costs of Model I with different numbers of farmers exposed.

<u>No. of Farmers</u> <u>Exposed to Radio (<math>N_1</math>)</u>	<u>Total Economic</u> <u>costs (<math>TC_1</math>) <sup>1/</sup></u> <u>(U.S. \$) <sup>1/</sup></u>	<u>Cost per farmer</u> <u>exposed (<math>TC_1/N_1</math>)</u> <u>(U.S. \$) <sup>1/</sup></u>
0	539,596	0
6,250	556,658	89.06
12,500	573,721	45.89
18,750	590,783	31.51
25,000	607,845	24.31
31,250	624,907	20.00
37,500	641,969	17.12
43,750	659,031	15.06
50,000	676,093	13.52
56,250	693,155	12.32
62,500 <sup>2/</sup>	710,212	11.36

<sup>1/</sup> Based on the cost function:  $TC_1 = 539,596 + N_1 (2.73)$  where:  
 $TC_1$  = total economic cost.  
 $N_1$  = No. of farmers exposed to radio.

<sup>2/</sup> Base number of farmers exposed.

Table 3. Simulated cash and economic costs during the start-up period and first year of operation for a regional non-formal education system designed to bring agricultural information to small farmers by radio and personal contact by monitors. (Model II). 1/

<u>Category</u>	<u>Costs</u>	
	<u>Cash</u> (U.S. \$)	<u>Economic</u> (U.S. \$)
1. Feasibility studies	27,754	27,754
2. Project design and Pre-planning	70,323	82,822
3. Administrative costs	154,486	177,137
4. Message content	63,128	70,707
5. Message Appraisal	34,121	39,359
6. Radio Delivery System		
a. Pre-production	52,286	61,111
b. Production	33,683	33,797
c. Delivery	240,334	217,534
7. Personal contact Delivery System		
a. Pre-production	12,122	13,464
b. Production	14,015	11,921
c. Delivery	<u>550,386</u>	<u>515,825</u>
8. TOTAL COSTS	1,252,938	1,251,431

1/ Based on total number of 31,250 farmers exposed to the radio and personal contact system, and another 31,250 receiving radio alone.

Table 4. Simulated economic costs of Model II with different numbers of farmers exposed to complete package (Radio Monitor).

<u>No. of Farmers Exposed to to-tal package (N<sub>2</sub>)</u>	<u>No. of Farmers Exposed to ra-dio only. (N<sub>3</sub>)</u>	<u>Economic Total Costs (TC<sub>2</sub>)<sup>1/</sup> (U.S. \$)</u>	<u>Cost per farm-er exposed (U.S. \$)</u>
0	62,500	735,606	-
6,250	56,250	838,730	-
12,500	50,000	941.854	-
18,750	43,750	1,044,978	-
25,000	37,500	1,148.102	-
31,250 <sup>2/</sup>	31,250	1,251,231	-
37,500	25,000	1,354,350	-
43,750	18,750	1,457,474	-
50,000	12,500	1,560,598	-
56,250	6,250	1,663,722	-
62,500	0	1,766,846	28.27

<sup>1/</sup> Based on the cost function:  $TC_2 = 564,981 + N_2 (19.23) + N_3 (2.73)$  where:

TC<sub>2</sub> = Total economic cost  
N<sub>2</sub><sup>2</sup> = No. of farmers exposed to both radio and personal contact  
N<sub>3</sub> = No. of farmers exposed to radio only

<sup>2/</sup> Base No. of farmers exposed

Table 5. Simulated cash and economic cost during the start-up period and first year of operation for a regional non-formal education system designed to bring agricultural information to small farmers by radio and personal contact by monitor and agronomist (Model III). 1/

<u>Category</u>	<u>Costs</u>	
	<u>Cash</u> (U.S. \$)	<u>Economic</u> (U.S. \$)
1. Feasibility Studies	27,754	27,754
2. Project design and Pre-planning	70,353	82,822
3. Administrative costs	154,486	177,137
4. Message Content	63,128	70,707
5. Message Appraisal	34,121	39,359
6. Radio Delivery System		
a. Pre-production	52,286	61,111
b. Production	33,683	33,797
c. Delivery	240,432	217,647
7. Personal Contact Delivery System		
a. Pre-production	12,122	13,464
b. Production	14,015	11,921
c. Delivery	<u>917,068</u>	<u>838,405</u>
8. TOTAL COSTS	1,619,718	1,574,124

1/ Based on a total number of 31,250 farmers exposed to the radio and personal contact system, and another 31,250 receiving it alone.

Table 6. Simulated Economic costs of Model III with different numbers of farmers exposed to the complete package (Radio, monitor and agronomist).

<u>No. of Farmers ex- posed to total package (N<sub>4</sub>)</u>	<u>No. of farmers exposed to ra- dio only (N<sub>5</sub>)</u>	<u>Total economic Costs (TC<sub>3</sub>) 1/ (U.S. \$)</u>	<u>Cost per farmer exposed (U.S. \$)</u>
0	62,500	735,606	-
6,250	56,250	903,231	-
12,500	50,000	1,070,856	-
18,750	43,750	1,238,481	-
25,000	37,500	1,406,106	-
31,250 <u>2/</u>	31,250	1,573,731	-
37,500	25,000	1,741,356	-
43,750	18,750	1,908,981	-
50,000	12,500	2,076,606	-
56,250	6,250	2,244,231	-
62,500	0	2,411,856	38.59

1/ Based on cost function:  $TC_3 = 564,981 + N_4 (29.55) + N_5 (2.73)$  where:

TC<sub>3</sub> = total economic cost

N<sub>4</sub> = No. of farmers exposed to both radio and personal contact

N<sub>5</sub> = No. of farmers exposed to radio only

2/ Base number of farmers exposed.

Table 7. Fixed costs and variable costs per farmer exposed to the three delivery systems (Models I, II, and III) for a non-formal education system for small farmers in Guatemala.

<u>Model</u>	<u>Fixed costs</u> (U.S. \$)	<u>Variable cost</u> <u>per farmer</u> <u>4/</u> (U.S. \$)
I <u>1/</u>	539,596	2.73
II <u>2/</u>	564,981	19.23
III <u>3/</u>	564,981	29.55

1/ Model I is radio only

2/ Model II es radio plus monitor

3/ Model III is radio, monitor, plus agronomist

4/ The unit costs of extending the coverage of the system to include more farmers