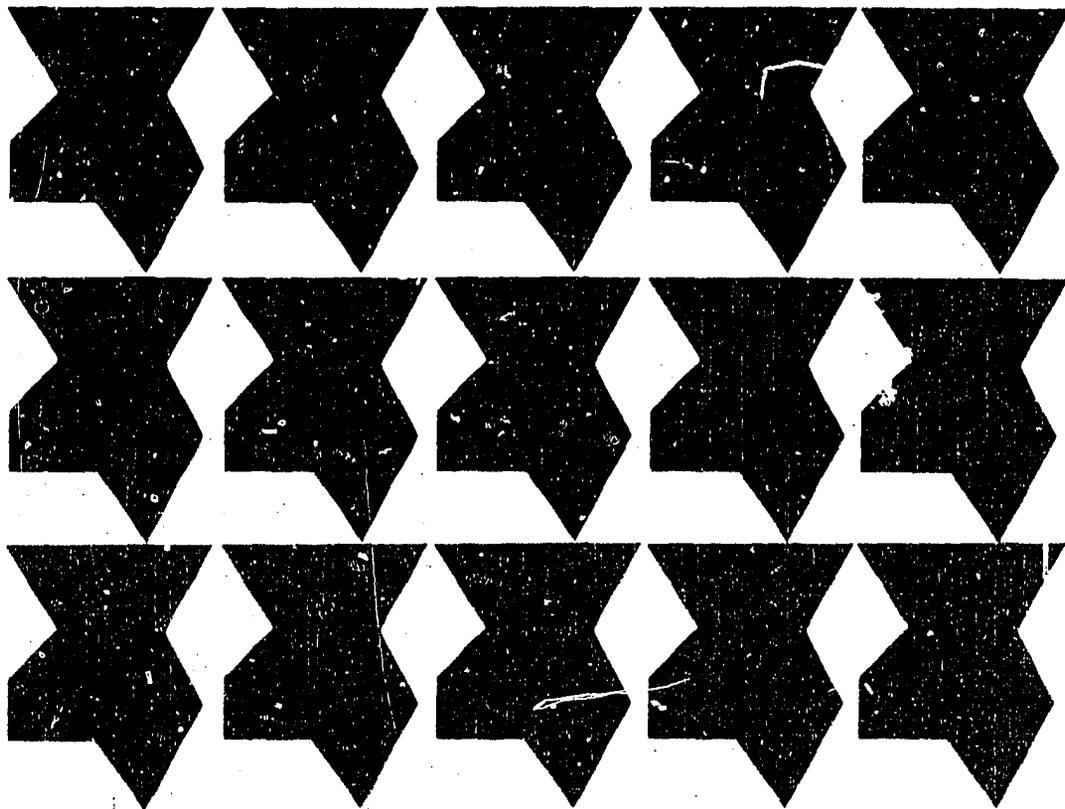


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Case Studies in Development Assistance No.2

# The Basic Village Education Project in Guatemala



Agency for International Development  
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THE BASIC VILLAGE EDUCATION PROJECT IN GUATEMALA

by

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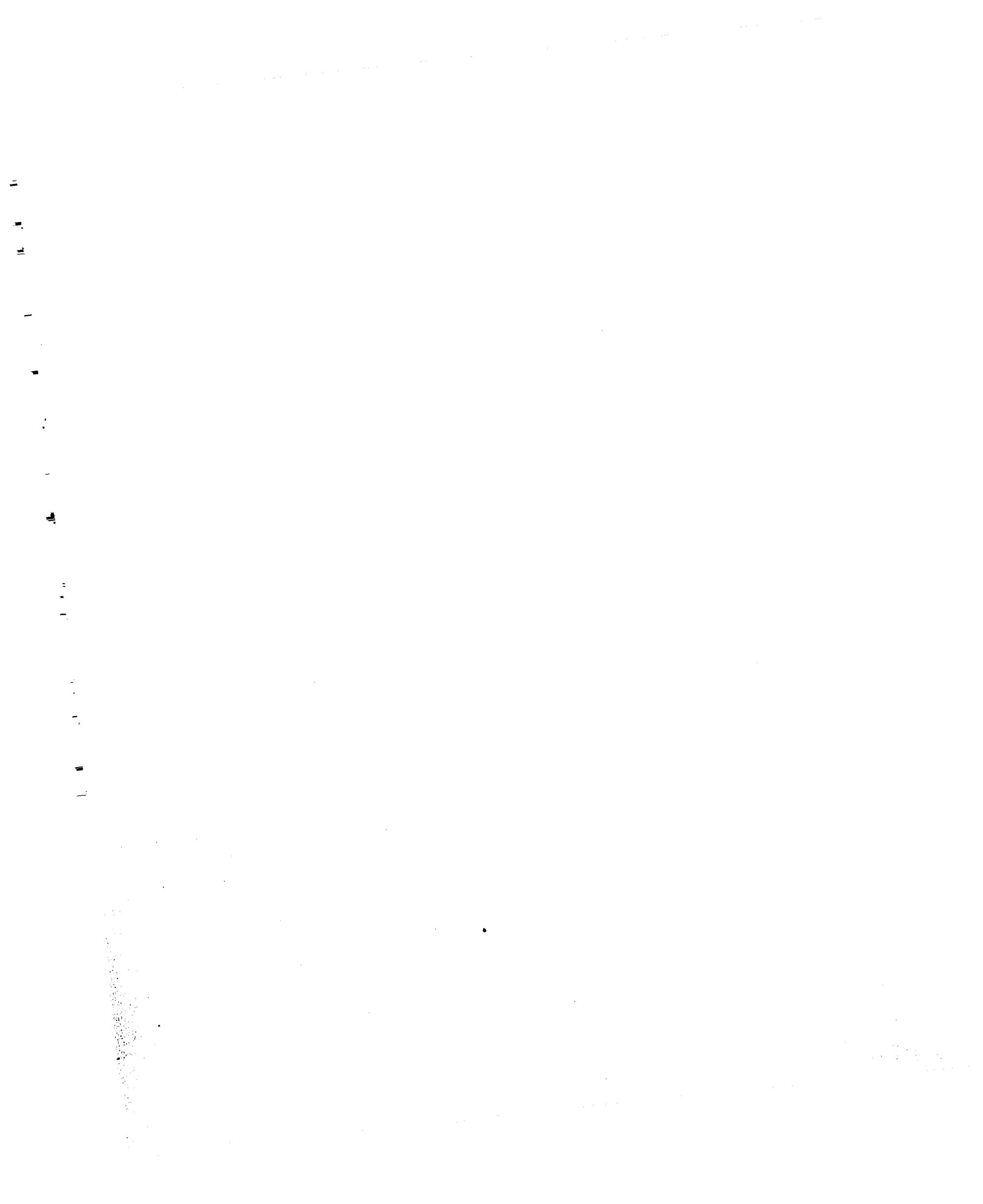
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The views expressed herein are those of the author only and should not be attributed to the Agency for International Development.

## PREFACE

The purpose of this case study is to familiarize AID personnel with an experimental project in rural development that reflects the intent of the "New Directions" mandate contained in the 1973 Foreign Assistance Act. The experience of this project, it is hoped, will contribute to our knowledge of how to design and implement projects aimed at the difficult to reach rural poor, and particularly the small subsistence farmer. While all of the results of this project are not yet in, preliminary information suggests that the Basic Village Education Project in Guatemala has successfully utilized radio education to significantly alter the agricultural knowledge, attitudes, and practices exhibited by the small farmer. This project has attracted a great deal of attention in Washington and in other field missions because it is a "controlled" experiment that has an extensive built-in evaluation component which should allow us to measure with unusual accuracy the impact of this project and its various sub-elements on the target population. The purpose of this case study is to summarize the project's experience to date in a manner that will help us become cognizant of the problems and possibilities encountered in trying to carry out rural development projects.

This case study was researched and written during August and September, 1976. Five days were spent in Guatemala talking to the project staff and reading project files at the USAID Mission. The Academy for Educational Development in Washington, D. C., - the project contractor - the project's field staff, and the USAID Mission were all most cooperative in providing information on the project, and their assistance is greatly appreciated.



## I. THE ORIGINS OF THE PROJECT

The origins of the Basic Village Education Project date back to before 1970, when Robert Culbertson became Director of the USAID Mission in Guatemala. Culbertson arrived in Guatemala with a strong interest in the possibilities for using radio as an educational tool, an interest that had developed during his tenure as Deputy Assistant Secretary for Social and Civic Development in 1968-69. Shortly after his arrival in Guatemala, therefore, he and his staff began to explore the feasibility of undertaking a radio education project directed at the rural population.

The AID mission in Guatemala had been placing high priority on rural development since the late 1960's, and this orientation has continued during the 1970's. In 1970, the mission received approval for a 23 million dollar rural development sector loan which had evolved over a period of several years, beginning in 1967 under Deane R. Hinton who was Mission Director at the time. This loan financed cooperative development, basic grain and crop production, agricultural marketing programs, assistance to the handicraft industry, and other programs directed at the rural areas. This loan was notable in that for the first time substantial resources were being directed at the Highlands, where most of the Indian population lives.

In the area of education, the existing program consisted of an eight million dollar rural primary education loan which financed school construction, teacher training, and the development of a new curriculum more relevant to the needs of the rural population. This project concentrated on the expansion of the formal educational system, which was a

slow and expensive process. While it was useful, it was having only a limited impact. The problem facing the mission was the realization that educational opportunity in rural areas was declining due to population growth, and it was clear that the Guatemalan government did not possess the resources or the capability to undertake a massive expansion of the formal educational system. In addition, the adult literacy programs undertaken in Guatemala by AID, UNESCO, and various missionary groups had not been very successful.

Radio, on the other hand, offered the possibility of communicating knowledge to the rural population in a manner that did not rely on literacy and which could achieve broad coverage at a low unit cost. Through radio one could communicate knowledge that was useful and relevant to the rural population, knowledge that they could immediately use to begin improving the quality of life in the countryside. Given the reality of the government's limited capability to deliver agricultural, health, and other services to the rural areas, radio education appeared as an attractive and relatively inexpensive alternative to supplement existing efforts in the areas of education, health, and agriculture.

Combined with this interest in radio, the mission was looking at the same time at the activities of a missionary priest who was using a battery-powered slide projector to present lectures on health and nutrition. While he was encountering technical problems with this system, he was also reporting a high level of interest and very good turnouts at his presentations. The idea of using a "village monitor" to present visual materials was then linked to the use of radio, using the monitor as a

supplement. Radio education courses and village monitors utilizing illustrated materials which did not require literacy (such as "comic-book" type pamphlets) have been used successfully in several countries, including India and Colombia. Less common, however, has been the use of village monitors in combination with radio. This technique, which combined audio material with visual material could serve as the functional equivalent of educational television, which was not a feasible alternative in the Guatemalan setting.

During 1970, the mission wrote several concept papers developing the idea of a radio education project directed at the rural population. This process culminated in the submission to Washington of a proposed project in the form of an Intensive Review Request. The IRR asked for several million dollars to conduct a five-year program, which would start out on a small, experimental basis and gradually expand as progress was made in learning how to conduct such a project. In early 1971 the IRR was reviewed in Washington, where the reaction was one of interest mixed with caution. The prevailing reaction was that it was an intriguing and ambitious project, but that it needed to undergo further analysis and development before it could be funded. At this point, Dr. Stanley Applegate, Chief of the Education, Science, and Technology Division of the Office of Development Resources in the Latin American Bureau agreed to utilize one million dollars from the regional education budget of the Latin American Bureau to fund a carefully controlled, experimental pilot project to test the relative cost and effectiveness of radio and radio combined with other means of communication as a means of imparting knowledge to the rural population of Guatemala.

The Academy for Educational Development in Washington, D. C., received the contract to perform the feasibility study and later received the contract to implement the project. The Academy sent ten experts in the fields of education, communication, and the social sciences to Guatemala between May, 1972, and January, 1973 to conduct feasibility studies. Such factors as communication delivery systems, demography, geography, the anthropological/cultural setting, and the administrative capability of various government agencies were examined. Conversations were held with the Ministries of Education, Agriculture, and Health to ascertain their willingness to participate in a radio education project, and the availability of local resources in the areas of graphic arts, recording and broadcasting was determined.

The feasibility studies concluded that an experimental, pilot project in radio education directed at rural adults would be a feasible and worthwhile undertaking. They found that considerable expertise in the area of communications existed in Guatemala, that government ministries were interested in such a project, and that adequate administrative capability existed or could be developed for the project. A variety of subject matter was considered for inclusion in the programming, chiefly in the areas of health, nutrition, and agriculture. No final determination was made, however, regarding the specific educational content of the project and these studies did not develop an experimental design or a concrete implementation plan. They recommended that the educational radio programming be supplemented with radio which would utilize visual materials (posters

and filmstrips, etc.) and suggested that the project begin in January, 1973 and continue for 18 months.

A Program Agreement was signed with the Ministry of Education in the spring of 1973, and in May a three-man team (William Bradford, Howard Ray, and Thomas Rich) was sent to Guatemala to develop a detailed implementation plan which was completed August 15, 1973. Working in cooperation with the Ministry of Education and the USAID Mission's Education Officer, they surveyed and selected sites for the project, developed the experimental design and evaluation model to be used, and continued to examine the cultural, organizational, demographic, and agricultural factors that were shaping the design of the project.

The feasibility studies had envisioned the use of radio to reach adult illiterates with a broad spectrum of health, nutrition, and agricultural messages but in the course of developing the implementation plan it was decided to limit the programming content to agriculture. This decision was based on the conclusion that it would take many years to evaluate the impact of a health and nutrition program on the rural population and the fact that an inadequate infrastructure existed in the health field. In agriculture, on the other hand, a basic infrastructure of services was in place (although it was admittedly inadequate) and the results of an agricultural education project, they felt, could be measured in a limited period of time - i.e., they believed that changes in agricultural practices and production could be measured after two to three years of programming. Also, since programming capability and resources would be limited, they did not feel that more than one subject area could be

developed in a meaningful manner (after the program became operational some health messages were added to the programming with the help of personnel on loan on a part-time basis from the Ministry of Health, but their impact is not evaluated).

The team developing the implementation plan also concluded that more time (three years of programming instead of the 18 months envisioned in the feasibility studies) and more money (\$1.2 million in U.S. grant funds and \$320,000 in matching funds from the Guatemalan government) would be needed than had been originally estimated. It was also determined that experimental stations established specifically for the project would be more suitable than using existing commercial radio stations. By having its own stations, the project could better maintain the experimental and control elements of the project design and could achieve greater "localization" of programming to meet the needs of specific areas. It was also felt that by establishing their own station on the grounds of the pilot school in Quezada, it would eventually be integrated into the programs of the Ministry of Education which sooner or later was expected to utilize radio in its literacy training programs and in the formal educational system in general.

The implementation plan called for operations to begin in 1974 in the Oriente (a Spanish-speaking area) and the next year in the Highlands (a Quiche-speaking area). This procedure was adopted because less was known about the agricultural practices prevalent in the Highlands, less agricultural infrastructure existed there, and it constituted a more difficult cultural environment within which to operate. They also felt that not enough was known about the special cultural and social situation in the

western Highlands region that might dictate the use of a different approach, different uses of radio, monitors, etc., and even different styles of message programming compared to the Spanish-speaking eastern region. A special anthropological study of the Quiche-speaking area was therefore recommended by the planning team as a pre-condition to beginning operations in the Highlands. Such a study was carried out in the first half of 1974 by Dr. Robert Carmack of SUNY at Albany. This study was not only of value for delineating the cultural factors that would have to be taken into account, but was also useful in selecting sites for the experimental and control areas.

The first field surveys, which collected the base-line data which would be used to measure the future impact of project activities, were conducted in October, 1973. The first BVE radio station, "Radio Quezada Educativa," began broadcasting in March, 1974.

## II. BACKGROUND CHARACTERISTICS OF THE TARGET GROUPS

Guatemala is a small, poor, agricultural country of about 5.8 million people, about half of whom are Indian. About 64% of the population lives in the rural areas and over 60% of the labor force is engaged in agriculture. The Basic Village Education Project is being undertaken in two highly different cultural and geographic settings. The first is among the Spanish-speaking Ladinos - or Mestizos - of southeastern Guatemala (the Oriente) and the second is among the Quiche-speaking Indians who make up 80% of the 1.6 million people who live in the central Highlands (the

Occidente).<sup>1</sup> Only about 20% of the Quiche-speaking Indians speak Spanish, and they have historically been exploited by the Ladinos and (until recently) ignored by the government.

The rural inhabitants of Guatemala suffer from low income and literacy levels, poor health, and high infant mortality rates. Per capita income in the rural areas averages about 75-100 dollars annually (compared to a national per capita income of \$406 in 1973). Guatemala has one of the highest illiteracy rates in Latin America and one of the lowest per capita school enrollments. The illiteracy rate was estimated to be about 62% in the early 1960's, but is substantially higher in the rural areas. In 1971, only 38% of the population between 5-14 was in school. Education is available to about 65% of the rural population, but only 2% of those who enter the first grade complete the sixth grade. In the Indian Highlands 79% of the population over 15 is illiterate, and only 11% of the Indian population has ever attended school (compared to 18% of all rural inhabitants and 29% of the national population).<sup>2</sup>

The majority of Guatemala's approximately 450,000 farms are small "minifundias." About 40% are less than 1.4 hectares in size, and 90% of

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A "Ladino" is generally defined as a Guatemalan of whatever racial origin, generally of Indian or mixed Indian and Spanish descent, who speaks Spanish, wears western dress, and does not belong to an Indian Community. An "Indian" is generally defined as one who uses one of the Indian languages or dialects, wears traditional Indian clothing, and belongs to an Indian Community. The distinction is thus ethnic and cultural, rather than racial.

2

The BVE Project's base-line study found a literacy rate of 40% among the farmers in their sample in the Oriente, and a 30% literacy rate among the Indian farmers in the Highlands.

the farmers own less than seven hectares, and occupy about 20% of the nation's agricultural lands. Land tenure statistics reveal that 2% of the farmers own 72% of the land, while 89% of the farmers own 14% - usually the poorest quality, most hilly land. The small farmers grow primarily corn, beans, and wheat, and to a lesser degree, potatoes and sorghum. Productivity levels are low (many small farmers in the Highlands average 7-8 bushels of corn per acre) and several studies have shown that yields can be doubled or tripled with the use of fertilizer, insecticides, and other inputs. Production increases in the last decade have come primarily from increasing the area cultivated, and fertilizer use remains low (32 Kg. per cultivated hectare compared to 81 and 132 Kg. in Costa Rica and El Salvador, respectively). Population growth has increased pressure on the land, particularly in the Highlands.

The Guatemalan government possesses a rather limited capability to deliver basic services (such as health and education) to the rural areas, and this capability is substantially lower in the Highlands than in the Oriente. Since 1970, when a five-year development plan placing top priority on rural development was adopted, the flow of resources to the rural areas has increased and for the first time significant programs have been directed to the Indians in the Highlands. Nevertheless, the Indians remain a very difficult target group to reach with development programs due to a variety of cultural, linguistic, political, and historical reasons.

### III. THE PROJECT DESIGN

This project is designed to test the effectiveness of radio and various degrees of personal contact with the small farmer as means of

imparting knowledge about agricultural technology among subsistence farmers in two different cultural and geographic environments. The first experimental area is located among the Ladinos of southeastern Guatemala (the Oriente), while the second is located in the Indian culture of the western Highlands (the Occidente). The project entails three years of operations in the Oriente and two years of operations in the Highlands. Two radio stations were established to implement this experiment, one in Quezada (for the Oriente) and another in Momostenango (for the Highlands). Each station broadcasts eight hours a day, from 5 to 9 a.m., and from 4 to 8 p.m., Monday through Saturday.

Most of the programming on these stations is devoted to music, entertainment, and other types of non-agricultural programming which is necessary to attract and retain a large listening audience. About 20% of the programming is of an agricultural nature, the core of which is a daily, 30 minute "agricultural magazine" which is broadcast once in the morning and again in the afternoon. In addition to this, 30 to 40 agricultural "spot" messages are broadcast throughout the day. These messages are synchronized with the agricultural cycle so that the appropriate advice reaches the farmer at the right time during the agricultural year. Regular features of the agricultural programming include a "radio novel" called "life in the country," the agricultural "magazine," and a program called "Let's talk, Mr. Farmer," which answers questions received from individual farmers. Every Saturday afternoon, the "Radio Forum" is broadcast, which contains the agricultural "message of the week."

### The Experimental Treatments

The first experimental treatment consists of "radio only." In these areas the only contact the farmer has with the project is the radio programming which he receives on his radio. Its purpose is to measure the impact of radio alone. Another experimental treatment utilizes a local village "monitor" in addition to the radio, whose purpose is to reinforce the effect of the radio message. The monitor is selected from the local area and trained for about a month by the project before he begins to perform his duties. He is assigned to four or five villages containing a total of about 300-400 families. He visits each village once a week and invites the farmers to a "radio forum" which he conducts in the evening. He brings with him a portable cassette tape recorder and plays a 30 minute recorded message, which is the same message that is being broadcast over the radio on Saturday. The monitor illustrates the points being made in the recording with posters and flip-charts and afterwards leads a discussion of the points covered. The farmers attending the forum receive copies of the posters and flip-charts in the form of mimeographed sheets, which they keep.

Every Friday the monitor attends an orientation session with a project agronomist - his supervisor - and receives the radio forum materials for the coming week. At this time the monitor reports reactions to the forums held that week and furnishes information on local crop conditions and any problems farmers are encountering in his area. He also relays any questions from farmers which he has not been able to answer to the agronomist. They will be answered by the agronomist (and researched, if necessary) and the farmer will receive the answer the following week when the monitor returns to his village.

The monitor also conducts some very simple "strip" demonstration plots with a few selected farmers. In these plots a few rows of a farmer's field are cultivated using one or two of the practices recommended over the radio and in the radio forums, practices which do not require the presence or expertise of an agronomist.

The third type of communication mix utilized in this project adds a low level of technical assistance to the radio-monitor combination. A project agronomist works with the monitors and local farmers, conducting demonstration plots and providing advice to farmers in the area. The experimental area to which he is assigned contains about 1,000 farmers. He conducts both "complete" crop demonstrations where an entire "package" of recommended practices is utilized, and also simplified "partial" demonstrations which usually utilize only two or three recommended practices. These partial demonstrations are similar in nature to the "strip" plots conducted by the monitors.

The agronomist periodically attends radio forums conducted in his assigned area, and also serves as an important source of feedback to project staff. He prepares a weekly report which summarizes weather and crop conditions, grain prices in local markets, the status of the demonstration plots, and the coordination of activities among other agencies operating in the area (e.g., is credit available from BANDESA, the government credit-granting agency, etc.). This report also contains an analysis of the radio forum of the week. Project staff can then act upon the problems identified and take the information reported into account in their future programming.

An additional experimental treatment was added in 1975, after the project was well underway. It utilizes a monitor operating in an area where the radio signal is not received (in a portion of one of the control areas). This treatment was added in order to ascertain the effect of the monitor alone - apart from that achieved by the radio - and will allow comparison of the impact of "radio only" vs. "monitor only" in addition to "radio only" vs. "radio-monitor."

Finally, "control" areas have been identified in both the Oriente and the Highlands which are representative of the region and similar to the experimental areas (i.e., they have similar cropping patterns, a comparable level of technology, etc.). Information on crop yields, farmer income and knowledge, etc. is collected from these areas and used for comparative purposes. Two portions of the control areas are now used for the "monitor only" treatment described above.

#### The Evaluation Design

This project was designed with an extensive built-in evaluation component that calls for the collection of base-line data and the continuous measurement of the impact of project activities on the target population of small farmers throughout the life of the project. The evaluation component is being carried out by a team from the University of South Florida (Professors Edgar Nesman and Thomas Rich). The evaluation component is unusual in that unlike most AID projects, base-line data was collected in both experimental and control areas prior to initiating project activities. Both the experimental and the control areas (in each of the two different

cultural settings) are then retested throughout the life of the project. This evaluation design should allow a more precise determination of just what effect the project has had on the target population than is usually possible.

The evaluation design calls for the collection of a variety of information about small farmers' income, diet, consumption of consumer goods, etc., which will permit a comparison of the living standards measured at the beginning of the project with those observed at its completion. Information is also collected regarding crop yields and cropping patterns, etc., which will allow changes in these areas to be measured over time. The small farmer's knowledge of various agricultural practices is ascertained, as are his attitudes towards these practices. Finally, the actual practices farmers utilize are also determined and changes along these dimensions are measured throughout the life of the project. The expectations of the evaluation team (based on the literature about the communication and diffusion of agricultural technology) are that they will first observe changes in the farmer's level of knowledge, then changes in his attitudes towards new agricultural practices, and finally, after two to three years of programming, changes in the actual practices he uses.

The mechanism utilized to obtain the types of information outlined above is the personal interview. The evaluation design calls for a total of 10,250 interviews among 1500 farmers during the life of the project, which will be conducted in 49 villages in 14 experimental and control areas located in the Oriente and the Highlands. After completing the initial base-line surveys, the design calls for annual surveys which

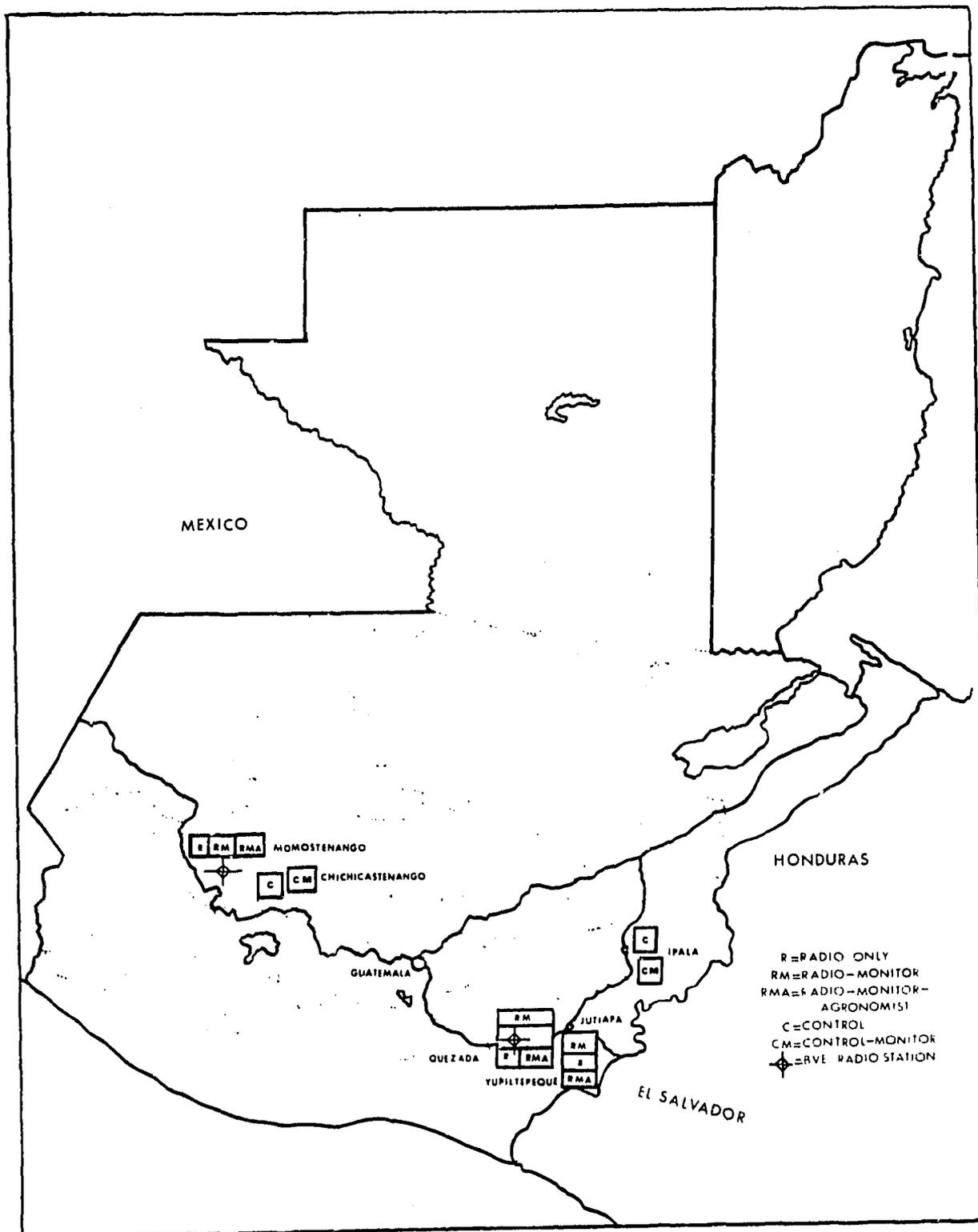


Figure 1. Basic Village Education Project experimental and control areas, 1975-76.

duplicate the base-line surveys and six time-sample surveys per year in which 20% of the sample of small farmers are interviewed to monitor the impact of the various elements of the project. Finally, audience surveys are periodically conducted to measure the size of the listening audience, its characteristics, and its reaction to various types of programming.

#### The Formulation and Production of Program Materials

The BVE project staff consists of four U. S. citizens (Field Program Leader, Deputy Field Program Leader, and the Field Evaluation Supervisors for the Oriente and the Highlands) and about 75 Guatemalans.<sup>3</sup> This staff is organized into an agricultural production unit, a materials production unit, and evaluation team, and the group of field monitors. The agricultural unit, which is headed by two agronomists, collects agricultural data, formulates recommendations used in the project, trains the monitors, conducts the demonstration plots, and provides extension services to the "Radio-Monitor-Agronomist" experimental areas. The production unit consists of script-writers, artists, and recording technicians who produce the radio programming, the radio forums, and the illustrated materials used in the project. The evaluation team pre-tests questionnaires, trains interviewers, and conducts the field surveys which are coded in Guatemala and sent to the University of South Florida for data processing and analysis by Doctors Nesman and Rich. Finally, there are the field monitors who conduct the radio forums in the experimental villages.

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This figure includes all full-time and part-time staff from the Ministries of Agriculture and Education (which are on loan to the project) as well as the BVE staff, which includes the field monitors, radio station personnel, production and recording staff, etc.

After the project sites were selected, the project agronomists collected a variety of data on cropping practices, seed selection, use of fertilizers, crop yields, and other agricultural characteristics of these areas. This information was then used to develop the technical content of the agricultural recommendations as well as the strategy for their presentation. In formulating the recommendations, the agricultural staff operated under the assumption that in order for the messages to be effective, they would have to be presented in a style and at a level consistent with present levels of knowledge and attitudes exhibited by the farmers. They also believed that the messages had to relate specifically to presently used agricultural practices as a point of departure for future improvement. No attempt has been made to alter the farmers' cropping patterns. The primary goal of the recommendations presented has been to help the farmer improve his ability to produce corn, beans, wheat, and sorghum - crops he is currently cultivating.

With these objectives in mind, the technical data was organized into an "agricultural calendar" which contains a total of 36 recommended agricultural practices ranging from selection of seed and use of fertilizers to crop storage methods. This message calendar is synchronized with the agricultural year so that the proper message reaches the farmer at the appropriate time during the agricultural cycle. In addition to the annual message calendars (one for each region), the agricultural staff develops three other documents: a book of technical information, a guide to script-writers on how to use this information, and a bi-weekly programming strategy document. The efficient functioning of the project depends upon effective

interaction and coordination among the agricultural staff, the script-writers, the artists, and the recording and production unit. The project develops its technologically-based message programming in an impressively short period of time. It takes about six months to gather the agricultural information, develop the calendar, develop a message strategy, clear all these steps with the Ministry of Agriculture, and write and produce the scripts. About one month elapses between the time the script-writers receive their assignment and the day the message is broadcast or used in a radio forum. The script-writers confer with the agricultural technicians once a week to ensure that the scripts accurately convey the intended message. Once the script is completed, it is submitted to the Ministry of Agriculture for approval, and then sent on to the recording and production unit to be recorded on the cassette tapes for the radio forums and for use over the radio. In the Highlands, of course, the scripts and tapes must be produced in Quiche - the local Indian language.

#### The Role of the Guatemalan Government

Successful implementation of the BVE project requires that several ministries and agencies of the Guatemalan government contribute funds, staff, and services to the project and effectively coordinate their activities with one another and the BVE staff. The project implementation plan calls for the establishment of a close and coordinated working relationship between the Ministries of Education and Agriculture in the area of project-related activities. Of particular importance to the success of the project is the availability of agricultural credit (through BANDESA, Guatemala's agricultural credit bank) and technical assistance (through

DIGESA, the Guatemalan extension service) to farmers living in the experimental and control areas selected for the project. Also important, of course, is the timely contribution of matching funds, staff and other services necessary to implement the project.

The feasibility study undertaken by AED explored the willingness of Guatemalan agencies and ministries to participate in and contribute to the project, and it examined the capability of the Ministries of Agriculture and Education to cooperate and coordinate their activities relating to the BVE project. The study found interest in and support for the project in these ministries and concluded that effective coordination of their activities would be a difficult - but possible - task to achieve.

In order to accomplish this coordination, the three-man team which developed the implementation plan initially considered creation of an inter-ministerial committee. This idea was soon dropped, however, after they concluded that it would probably not function effectively. They recommended instead a less formal coordination process at the level of the operating agencies actually involved in the project, with primary operating responsibility assigned to one Ministry.

By November, 1972, the project's chief linkages were with the Ministry of Education and it was decided to house the project in the Department of Literacy Training and Adult Education, headed by Professor Mario Dardon.

In early 1973, a Project Agreement was signed with the Ministry of Education and Professor Dardon became Project Director. The Ministry of Agriculture was not a signatory to this agreement. The project's relationship to the agricultural agencies remained informal in nature. In July, 1973, DIGESA (the extension service) appointed a liaison committee to work with the project and agreed to coordinate the activities of all agricultural agencies involved in the project.

#### IV. KEY ISSUES RAISED BY THE PROJECT

Several characteristics of this project - its ambitious and rigorous operational and evaluative design, the difficult cultural setting in which half of it is being implemented, the role to be performed by various agencies of the Guatemalan government, and the manner in which it was initially formulated raised several key questions or issues which appear to be critical areas determining the project's outcome and impact.

1. How has the behavior and performance of the Guatemalan government affected implementation of the project? How did it react to the project proposal, what has been its level of support, and was inter-ministerial cooperation achieved? Experience has shown that projects which depend upon the cooperation and coordination of several ministries encounter many more problems than those that deal with only one ministry.<sup>4</sup> As integrated sector loans become more important, however, the issue of how one achieves inter-ministry cooperation and coordination becomes more salient.

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See Judith Tendler, "Inter-country Evaluation of Small Farmer Organizations: Final Report." Report prepared for the Office of Development Programs of the Latin American Bureau of AID, July, 1976.

2. How successful has project implementation been in the Highlands? Has the project been able to duplicate the experimental design followed in the Oriente in this different cultural setting? The 1974 PROP, for example, stated that radio forums would probably not be feasible in the Highlands due to cultural differences and the Indians' work habits which make evening meetings difficult.<sup>5</sup>

3. Has the project been able to follow the rigorous social science methods called for in the project design? Have they been able to conduct a "controlled" experiment (preventing "contamination," etc.) within these target groups? Can the large number of variables affecting the agricultural production process be controlled or held constant in such a manner that the differential impact of radio, radio-monitor, and radio-monitor-agronomist can be measured effectively?

4. Has the built-in feedback and evaluation design, which calls for continuous measurement of project impact, made a substantial difference in the implementation process? Has it generated on-going modifications that have proven to be important determinents of project success and impact?

5. If the project is successful, can it be replicated in Guatemala or elsewhere, and by whom and with what resources? How dependent is this project on outside technology and technical assistance? Has a cadre of Guatemalans been trained who can carry on after the contractor leaves and operate a larger application of this pilot project?

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See "Basic Village Education - Guatemala (PROP) 2/1/74, Project No. 598-15-690-551, page 4.

These are some of the issues raised by this project. Let us now examine the implementation experience to date, keeping in mind the above mentioned questions.

#### V. THE IMPLEMENTATION PROCESS IN THE ORIENTE

Programming was initiated in the Oriente in late March, 1974. During the first year of operations, the Quezada Valley was utilized as the control area and the area around Yupiltepeque served as the control area. In early 1975, the power of the radio transmitter was increased from 100 to 500 watts, and the original control area - Yupiltepeque - was converted into an additional experimental area and a new control area around Ipala was established.

Radio Quezada quickly attracted a large listening audience and became the most popular station in the valley, with audience surveys reporting that between 93% and 100% of those persons with access to a radio regularly listen to the BVE station. The first audience survey conducted in Yupiltepeque after that area began receiving the signal in early 1975, found that only 46% of those persons with access to radio were listening to Radio Quezada. Feedback from the field indicated that this lower listening rate was due to the lack of community identification with the radio station among residents of the area. In an effort to correct this situation, six "letter drops" were established in the Yupiltepeque area which allowed listeners to send letters to the station (without paying postage) and the station read more letters from this area and mentioned more events, etc. By June 1975, audience surveys were reporting a 91% listening rate, and the average for 1976 has been about 85%. There has been some overflow of the signal to the Ipala area, where 12-15% report listening to Radio Quezada, mostly on an occasional basis.

Audience surveys have consistently found that the agricultural programming is proving to be very popular. Seventy-six percent of the Quezada Valley listeners and 56% of the Yupiltepeque listeners cited the agricultural content and the "good advice" they receive as the principal reason for listening to the BVE station. The "Agricultural Magazine" was cited as the most popular program in both areas.

An important source of feedback to the project staff (in addition to the audience surveys) is the large volume of mail received by the station. Radio Quezada has received over 30,000 letters, averaging more than 1,000 letters a month (the highest one-month figure is 2,600, for December, 1975). Most of these letters contain requests for music or for announcements of events, birthdays, and meetings, etc. The number of letters asking questions relating to agriculture, however, is gradually increasing. These questions are researched and answered on the air during the "Let's Talk, Mr. Farmer" program. The project staff is encouraged by this trend, which indicates that increasing numbers of farmers are placing their trust in this source of information.

The monitors in the Oriente report a generally adequate level of interest and response to the forums among farmers. Attendance at radio forums has averaged about 11 to 12 farmers per meeting. The figures were initially higher than this, but attendance declined as the novelty wore off. Attendance has now stabilized at about 11 farmers per forum. While this figure represents a relatively low percentage of the total potential audience, the BVE staff believes that monitor contacts with individual farmers and intra-community diffusion by those who do attend the forums are effectively spreading the information presented.

While most of the forums are developed as part of the "agricultural calendar" for the region, the monitors have attempted to adapt them to the changing problems and conditions encountered in the field. When an outbreak of inch-worms plagued the project's experimental areas, the monitors asked that a forum be produced on the subject. This was done, and meetings were held with the farmers to instruct them in the use of insecticides appropriate for controlling the outbreak. These meetings were well attended and generated a good response on the part of the farmers. Another forum which generated an above-average response dealt with production costs. It was presented in November, 1975, as farmers were preparing to harvest their crops. At this forum special worksheets developed by the project staff were used to help farmers calculate the total cost of the inputs they had in producing their crops. These figures could then be used to estimate the amount of profit they would make given current market prices. This was a totally new experience for many of the participants, who responded with great interest (many participants later offered to share their calculations with the BVE staff for use in the project's cost/benefit study).

Only minor operational problems have been encountered in this aspect of the project. One monitor assigned to the Yupiltepeque area proved to be unsatisfactory and had to be replaced, which left one of the "Radio-Monitor" experimental areas without coverage for two months, during May and June of 1975. The monitors also were inexperienced in writing reports and providing feedback to the agronomists, and therefore had to be taught how to make and record observations and how to write feedback reports.

In the Spring of 1976, many monitors began to report frequent malfunctions in their cassette recorders, some of which had been in continuous service since March, 1974. Additional preventative maintenance and more frequent rotation with reserve machines has alleviated the problem.

The crop demonstrations conducted in the Oriente in 1974 - the first year of operations - were not very successful. Most of the 1974 demonstration plots were "high-production" plots which utilized a complete "package" of techniques, and in many cases these complete plots proved to be too ambitious an undertaking. In 1975, only a few complete plots were conducted and about 16 "strip" demonstrations were undertaken, in which only two practices - fertilization and insect control - were applied to a few rows of corn, beans, or sorghum in a cooperating farmer's field. The 1975 demonstrations proved to be far more successful. In two of the demonstration plots, the average net income from the crops produced was \$285 per hectare compared to about \$125 per hectare in surrounding fields which used prevailing practices to obtain prevailing yields. The 1976 crop demonstrations were again modified in light of past experience. The total number of sites was reduced to ten, and the "strip" plots were eliminated. The current emphasis is on a simplified version of the high production plots, in which the number of crop combinations has been reduced and the package of techniques used has been made less complex.

As noted earlier, an important element of the project design was the provision of credit to the small farmer through BANDESA, the Guatemalan agricultural credit bank. When programming began in the Quezada Valley in early 1974, some credit was available to farmers in the experimental and

control areas. Although the level of available services was inadequate, it was at about the same level in both areas and about the same proportion of the demand was being met in each area. It was expected that the BVE project activities would increase the level of demand in the experimental areas and DIGESA, the extension service which processes the credit applications for BANDESA, had promised to try to meet any increase in the demand in the project areas.

As expected, demand for credit increased greatly in the Quezada Valley in 1974. As a result, DIGESA had to establish an office in Quezada and increase its staff in the area from one to five agricultural "promoters." There was no need to increase operations in the control area, where demand for credit remained about the same. During the first half of 1975, DIGESA experienced an even heavier demand for credit and could not process all the applications being received. The "Radio-Monitor" area in the Quezada Valley generated a particularly high level of demand, and at the time when planting activities were about to begin 23 farmers had still not been visited by a DIGESA agronomist (a prerequisite to obtaining credit). The BVE Coordinating Committee arranged for DIGESA to temporarily assign another agronomist to the area to process the backlog. Later, however, the regional director of DIGESA asked the project to cease its radio messages on how to apply for credit until they could catch up. Since it was clear that DIGESA did not have the capability to process all the applications it had already received, the BVE staff complied with the request.

In 1976, the number of farmers receiving credit from BANDESA dropped significantly below the 1975 figure. This was due to the fact that BANDESA had imposed more stringent borrowing requirements for non-landowners as a result of re-payment problems encountered in previous years. Also, the price of fertilizer declined sharply after the end of the 1975 crop season, and perhaps fewer farmers needed to resort to credit in 1976 to purchase their inputs. In addition, the number of DIGESA agents in the area has declined due to turnovers in personnel.

Operations in the Oriente have also been affected by drought and fertilizer shortages. In 1974, the Oriente suffered the worst drought in ten years, and serious drought was again experienced in 1976. A project staff member stated in August that many farmers in the Oriente may not harvest any corn at all this fall. In addition, the doubling of fertilizer prices during 1974-75 resulted in a sharp decline in its availability - and its use declined. The drought has thus affected farmer incomes, which makes it more difficult to purchase fertilizer and other inputs which are recommended by the BVE project. External economic factors and weather conditions have clearly caused great fluctuations in crop yields and in the availability - and price - of critical inputs.

Other events that have affected project operations include the earthquake of February, 1976, which disrupted project operations for about a month, and delays in contributions from the Guatemalan government. In 1975, for example, there was a five month delay in the arrival of an agronomist from the Ministry of Agriculture who was to serve as the project's agronomist for the "Radio-Monitor-Agronomist" areas of the Oriente. He

was supposed to arrive in early 1975, but was not assigned to the project until June. As a result, the project had to send one of its staff agronomists to the area on a part-time basis until the DIGESA agronomist arrived. Consequently, the "RMA" areas in the Oriente received only part-time services from an agronomist during the spring of 1975.

#### VI. THE IMPLEMENTATION PROCESS IN THE HIGHLANDS

The BVE staff found it far more difficult to implement the project in the Highlands than in the Oriente. The Indians of the Highlands are very resistant to change and suspicious of outsiders.<sup>6</sup> Many unforeseen problems have been encountered in transferring the project to the Highlands, and as a result they have not been able to duplicate exactly the implementation and evaluation design that is being followed in the Oriente. The project staff has had to become very sensitive to the Indian culture and alter their programming and evaluation activities to take into account the behavior patterns encountered in this environment.

The BVE staff realized, of course, that the Highlands would be a more difficult environment within which to operate and as we noted, they decided to acquire a year of operational experience in the Oriente before beginning operations in the Highlands. The project was scheduled to begin operating in the Highlands in January, 1975, but several problems caused an eight-month delay and broadcasting in the Highlands did not commence until August 29, 1975. Because of the nature of the agricultural cycle, this meant that

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For example, the base-line survey found that 30% of the Ladino farmers had made changes in their agricultural practices during the past few years but only 10% of the Indian farmers reported any changes in their production methods.

for all practical purposes the project had lost an entire year, for they could not hope to influence agricultural practices before the spring of 1976.

The project staff learned early that extensive and frequent consultation with local authorities at all levels - from the governor of the department on down to the mayors and local village officials - was necessary in order to operate within this environment. The initiation of operations in the Highlands was delayed for three months, for example, due to the difficulties encountered in obtaining a site for the radio station. Lengthy negotiations were required to obtain the approval of local authorities for the site in Momostenango.

The project was then further delayed when the Guatemalan government held up its contributions of matching funds for five months. This action in turn led to delays in the hiring and training of local personnel who would implement the program in the Highlands. Radio Momostenango began broadcasting August 29, 1975, and the monitors initiated their activities in October, 1975. As a result of these delays, it will not be possible to measure the impact of the project on agricultural practices in the Highlands until 1977.

Radio Momostenango, like Radio Quezada, quickly attracted a large listening audience. The base-line survey revealed that about 50% of the population of the Highlands regularly listened to the radio (compared to about 80% in the Oriente). An audience survey conducted in May, 1976, found a generally high level of "listenership" but they also found a wide variation in the size of the listening audience from one community to

another. In the Momostenango area, they found that between 90-100% of those persons who regularly listen to the radio listened to the project station. In the area around Totonicapan, however, the rate was about 35%. This wide variation appears to be due largely to a strong feeling of community identification with the station in Momostenango and the absence of such a feeling in Totonicapan. In fact, project staff members report that people in Totonicapan actually feel hostility towards the Momostenangans and therefore listen to other stations in their area.

Signal "leakage" to the control areas has been a more serious problem in the Highlands than in the Oriente. In the Highlands control area of Chichicastenango they found that about 30% of those who regularly listen to the radio (about 40% of the population) listen to the project station.

The radio forums in the Highlands were initially well attended, which was probably due to the novelty of this new phenomenon and the curiosity it generated. Attendance soon began to decline, however, and feedback from the monitors indicated that the Indians felt that they were being "talked down to" and that the forums presented the material in a way that suggested that the Indians did "not know how to grow corn." In response to this decline, script-writers were told to alter the tone of the forums and to try and emphasize new techniques - such as contour plowing - that the Indians were not familiar with. Script-writers also began to attend radio forums occasionally in order to observe the impact of their materials on the audience.

Problems were also encountered in the area of the illustrated materials - the posters and flip-charts - which the monitor used to illustrate the points emphasized in the radio forum. They quickly learned that the message must be presented in a manner that precisely reflects local practice in order to be understood - and accepted - by the audience. Posters showing a man with a hat that was not typical of the local area had to be altered, as did a hoe handle that was longer than the type used by the Indians. The project staff also learned, for example, that the use of humor was not an effective means of communicating with the Indian farmer about a subject as important to him as producing corn to feed his family. In short, staff artists had to become extremely sensitive to local attitudes and customs.<sup>7</sup> In late 1975, a materials testing unit was established within the project, which focuses almost entirely on the development and testing of graphic materials prior to their use in the field.

As a result of these improvements and modifications, attendance at the radio forums has increased. During 1976, average attendance at the forums was about 8-9 farmers, which is about 25% below the average attendance of 11-12 recorded in the Oriente. This lower attendance rate is due first to the fact that it is more difficult for an outsider to come into an Indian village and attract farmers to a meeting than it is in the Oriente.

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Feedback from their illustrated materials has taught the staff that in order to be understood, drawings must be well done, accurate, realistic, and simple. "Stick" or silhouetted figures, most diagrams and "thought balloons," and pictures with depth and dimension were often not understood. They also report that farmers who are not literate have been able to find someone to read them the messages contained in the illustrated materials, including the two "historietas," or comic-book type pamphlets which have been produced by the project for mass distribution.

Secondly, a higher proportion (63%) of small farmers in the Highlands migrate to other areas to work (usually on coffee plantations) for several months a year than do the small farmers of the Oriente, where only 44% work outside the area. The small farmer in the Highlands is thus harder to reach because of cultural reasons and because of the higher rate of labor migration.

No crop demonstrations were conducted in the Highlands during 1975, since programming did not begin until late August and the monitors were not in place until October. In 1976, eight demonstration plots were established, one in each of the Radio-Monitor-Agronomist communities. No demonstration plots were established in the Radio-Monitor communities due to the less solid information base about which package of techniques to use, and the monitors' lack of experience in conducting crop demonstrations. Corn was the principal crop at all the sites, and a fairly complete package of techniques and practices were utilized. A short-season variety of corn was used, which allowed a second crop of beans or chiles to be planted in the same plot in the same year. This was an entirely new practice in this area and generated a great deal of interest among farmers.

The most serious operational problem the project has encountered in the Highlands concerns the reaction of the local population to the interviews and surveys required by the evaluation design. We have noted that the evaluation design calls for 10,000 interviews with 1500 farmers over the life of the project. The base-line survey, the annual surveys, the six time-sample surveys per year, and the audience reaction surveys collectively constitute an ambitious use of the personal interview technique.

This means that villages in the experimental areas can expect interviewers to visit them several times a year, which is an unprecedented presence of outsiders coming in to seek detailed information about the Indians' lives, crops, incomes, and eating habits, etc. In June of 1976, events occurred in the Jutacaj area which suggested that the local population was quickly becoming "saturated" and resistant to the intrusions of the interviewers, and for a time it appeared that the continuation of the project in the Highlands was threatened.

In May of 1976, the project conducted a survey to measure the size of its audience in the Jutacaj area. Then in June, a Guatemalan government official came into the area and conducted a survey which asked questions concerning land ownership - a sensitive issue. This official stayed at a BVE monitor's house while he was in the area, and consequently he was immediately (though mistakenly) perceived by the local population as part of the BVE project. When the monitor set out a few days later to conduct a time-sample survey, he encountered resistance. Local farmers refused to participate, and the monitor had to leave the area.

This problem was resolved only after a series of meetings with local officials and two mass meetings with the farmers (with only indigenous BVE staff members present at the second one). They explained to the farmers that the surveys were needed to "make the radio better" and asked their advice on how they could best go about pursuing their objectives. As a result of these meetings, several changes in project operating procedures were agreed to in order to regain the cooperation of the farmers. First, they agreed to eliminate the time-sample surveys, in which a different 20%

of the farmers in each experimental area were surveyed each month for six months of the year. The Indians could not understand why some - and only some - farmers were being interviewed. In the future, therefore, any survey conducted will include all of the farmers in any given village.

Secondly, they agreed to eliminate questions relating to diet, consumption of consumer goods, and other "personal" questions. The Indians objected to many of these questions and could not understand why BVE interviewers came back in the summer of 1976 to ask the same questions they had asked previously in the base-line survey. They had already told the interviewers, for example, that they ate tortillas, and could not understand why they wanted to ask them again. These questions will be asked in 1977, however, (at the end of the project) which will provide longitudinal data to compare to the base-line information collected in 1975. This will allow the University of Florida evaluation team to measure any changes in living standards that have occurred during the life of the project.

Third, the Indians asked that all BVE staff members carry official identification cards so that they will know they are connected with the radio station. This was easily done.

Fourth, the radio forums are now presented before a group of local officials each Sunday, prior to their being broadcast over the radio the following Saturday. This courtesy of informing the local power structure on a continuous basis will, it is hoped, prevent the growth of any feelings that the monitor constitutes a potential threat to local authority figures. The monitor constitutes, after all, a new type of influence in these villages. He is salaried and possesses tape recorders and other equipment that sets him apart from the average village resident. He also has ties to outside groups (even though the station broadcasts in the Indian's own language

it is well know that "foreigners" own the station) and local community leaders may fear that he will become an influential force in the community.

Fifth, the Indian farmers agreed to cooperate fully in future surveys, but refused to be paid for it and returned the dollar they had been paid for participating in the 1975 base-line survey. The Indians apparently felt that this payment created a sense of indebtedness or obligation which they wished to avoid.

These meetings and the actions taken by the project staff appear to have cleared the air and the project is now proceeding with the full cooperation of farmers in the area. Indeed, BVE staff members report that attendance at the radio forums has increased significantly since the above described events occurred and that a group of farmers have requested that a forum on potato growing be produced and offered some of their land for a demonstration plot. A radio forum on potato growing has been and the demonstration plot is now operational.

When the BVE project began operating in the Highlands, little credit and virtually no technical assistance was available in project areas through BANDESA and DIGESA. These agencies have increased the level of services

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All survey respondents in both areas had been paid for participating in the surveys to compensate for time lost in the fields. A dollar represents -on the average - one day's wage in the agricultural sector in the Highlands. In the Oriente, where wages are higher but communications are better and less time was lost because of travel to and from the interview, seventy-five cents was the amount of payment.

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A BVE staff member cites a rumor circulating at this time that the payments were for their land, which would be taken away from them eventually.

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The base-line survey found, for example, that only 3.6% of the farmers reported any contact with an agronomist during the previous year.

provided to some degree, but the current level remains inadequate.

Given the difficult cultural setting within which this half of the project is being undertaken, implementation has proceeded rather well. Despite the fear expressed in the PROP that radio forums would not be feasible in the Highlands, they have been conducted successfully and attendance is only 25% below that found in the Oriente - despite the higher rate of seasonal migration found in the Highlands. The feedback mechanisms have been well used by the project staff, who have effectively adapted their operations to the local environment. While the changes in the evaluation procedures have caused some frustration on the part of the University of South Florida evaluation team, these changes do not appear to prevent an adequate evaluation of the project's impact since an end-of-project survey will be conducted in 1977. Generally, the experimental design has been kept intact. The radio station has attracted a large audience, and the monitors and agronomist are performing their duties as planned.

#### VII. The Role of the Guatemalan Government

Successful implementation of the BVE project, we have noted, rested upon a timely and adequate contribution of funds, staff and services and on effective cooperation and coordination between the Ministry of Education and the Ministry of Agriculture. The manner in which this project was designed and undertaken, however, appears to have affected the early reactions of government agencies towards the project and the initial degree of support provided. The BVE project was conceived and designed by the AID Mission and the Academy for Educational Development. While

several government ministries were consulted during the feasibility studies and the development of the implementation plan, there was relatively little Guatemalan government input into the project. Dr. Howard Ray, the project director, reports that because of the manner in which the project was initially undertaken, they encountered some initially "cool" attitudes towards it. Dr. Ray reports some initial "footdragging" within the Ministry of Education was, he feels, partially due to their feeling that the project was "being pushed on them." Also, while the Minister of Agriculture was interested in the project he did not want to become too closely identified with it until it proved to be workable. Once the project was underway, however, these initial attitudes quickly dissipated and the Ministry of Education became a strong advocate of the project and is now planning a national program based on the BVE experiment.

In the Ministry of Agriculture, a similar reaction occurred - although for different reasons. The Program Agreement, we will recall, was signed with the Ministry of Education and not the Ministry of Agriculture, even though the latter was expected to contribute important services and inputs to the project. This action created some hard feelings within the Ministry of Agriculture. Nevertheless, in July, 1973, a BVE-Ministry of Agriculture Coordinating Committee was created when DIGESA (the extension service) appointed a liaison committee to work with the project. This committee also exhibited an initially "cool" attitude towards the project and indulged in several months of "fence-sitting." After it realized, however, that the Ministry of Education was not trying to compete

with it or intrude into its jurisdiction, smooth and effective working relationships were established. The members of the committee gradually came to view the project as "our project" and have contributed staff and services as best as they could given their limited resources.

The project thus achieved smooth working relationships with the Ministries of Education and Agriculture, and obtained the strong personal support of both Ministers (as well as the support of the Planning Council) during the first eight months of operations. These effective working relationships have grown stronger during the life of the project and have survived changes in personnel at both the ministerial and the agency level. In January, 1976, for example, personnel changes at the Ministry of Agriculture resulted in the replacement of the members of the liaison committee. Good working relationships have been maintained, however, and these changes have not adversely affected the functioning of the project.

The project's relationship to DIGESA was somewhat institutionalized by the signing of a "letter of understanding" in May, 1975. This letter continued existing arrangements and outlined additional obligations by both parties to the agreement. The Ministry of Agriculture agreed to assign two agronomists to the project, which became the field agronomists in the Oriente and the Highlands. The project, in turn, agreed to provide training and orientation to DIGESA personnel in the use of the illustrated materials developed by the project. Selected materials have been made available for DIGESA's use, and it has agreed not to use them in the project's control areas. This agreement reflects the fact that smooth working relationships between the project and the ministry have been facilitated by the cooperation and assistance the project has provided to the Ministry.

The BVE stations, for example, regularly make announcements about Ministry of Agriculture activities, when extension personnel will be in different communities, etc., and they also cooperated with the Ministry in developing a set of responses to the drought suffered in 1974. Indeed, Dr. Ray believes that their working relationships with the Ministry have worked out better under the present system than they would have had a formal Program Agreement been signed with the Ministry. While the lack of a formal agreement may have caused problems initially, in retrospect Dr. Ray feels it has turned out to be an advantage in that it has allowed the evolution of a cooperative relationship based on mutual assistance which on the one hand provided needed inputs to the project while at the same time permitting the BVE staff to retain complete control over the design and implementation of the experiment.

In spite of the effective working relationships described above and the personal support of the two relevant ministers, the project has suffered continuously from irregular and inadequate contributions of matching funds from the Guatemalan government. The funds have been slow in coming and far below agreed upon levels (the 1974 PROP lists a total Guatemalan contribution of \$300,000 over the life of the project). While this situation is certainly not unique or unusual - either in Guatemala or elsewhere in Latin America - the project director feels that some of the delays they have encountered can again be traced to the manner in which the project was initially presented to the Guatemalan government. The Guatemalan budgetary process operates on a calendar year basis, and project funds were not approved in time to be included in the 1974 budget

as a separate and identifiable project. Funds received, therefore, had to be shifted from other areas. For calendar year 1975, the government agreed to contribute \$100,000, but these funds were held up for unknown reasons for five months in the Ministry of Education, and did not become available until May, 1975.<sup>11</sup> The full amount was not received, however, and contributions have continued to fall far below expected levels.

In addition to funds and staff, the other critical input to be furnished by the government was credit and technical assistance to farmers in project areas through BANDESA and DIGESA. Both these agencies have made a conscious effort to respond to the demands placed upon them by the project. They have had to operate, of course, within the confines of their limited budget and staff (DIGESA had a total of 78 extension agents for the entire country in 1973). While they have increased their presence in both project areas, more services have been provided in the Oriente than in the Highlands, and the level is still inadequate in both areas. BANDESA streamlined its credit application procedures in response to the demand generated by the project, but tightened up their lending procedures after experiencing repayment problems.

We have noted that the government's initial coolness and neutrality towards this project has evolved into strong support - not only within the Ministries of Education and Agriculture, but also in the National Planning Council. As a result of the government's participation in this

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It has been speculated that the funds were held up by persons within the Ministry of Education who felt they had been ignored and had not been consulted adequately in developing the project, or that it was related to internal bureaucratic struggles relating to the autonomy and power of the Department of Adult Literacy and Training, where the project is housed.

project, it is planning a large-scale expanded version of the Basic Village Education project as part of its 1975-79 development plan, which is being supported (and funded) by AID, the Inter-American Development Bank, UNESCO, and the Guatemalan government. The government is utilizing the Academy for Educational Development to develop and plan this new project and expects to also utilize the Guatemalans who have been trained through the BVE project. Unlike the pilot project, the government is participating fully in the design of the project - indeed, they were the initiators in this case. In fact, BVE staff members report that the government's initial proposals called for a massive project that would require over 1,000 monitors, which the BVE staff has been trying to scale down to a more manageable size.

The desire of the government to launch a large-scale radio education project modeled after the BVE project raises the question of whether a trained cadre of Guatemalans now exists to undertake an operational program after the BVE experiment ends in late 1977. Dr. Ray, the Field Program Leader for the Academy for Educational Development, feels that the project has trained a group of people who can carry on after the contractor's staff has left. Whether this pilot project can be expanded to a national, massive program is, however, another question. For a variety of understandable reasons, including political reasons, there is great pressure to undertake a large program. This threatens not only to strain the limited skills and resources developed thus far, but the available impact data suggests that "local and personalized programming" is the key to effectiveness (due to the variety of languages, dialects, and local customs) and it is not at all clear what the optimal "coverage area" should be for a project of this type.

## VIII. EVALUATION, IMPACT, AND IMPLICATIONS

The Basic Village Education Project has now completed one year of programming in the Highlands, two years in Yupiltepeque, and three years in the Quezada Valley. Impact data has now been collected and analyzed by the University of South Florida evaluation team for two years of programming in the Quezada Valley (1974-75) and one year (1975) in Yupiltepeque. Unfortunately, no impact data is yet available for the Highlands, since 1976 constituted the first full year of programming there. All that can be stated thus far is that the BVE station in the Highlands has attracted a large audience and that feedback reports from the monitors and the agronomist indicate that many farmers who attend the radio forums and the crop demonstration meetings have adopted several of the recommended practices. The magnitude of changes in agricultural practices in the Highlands must await the completion of the year-end survey to be conducted in late 1977.

The evaluation team notes that the findings of the impact data analyzed thus far be considered tentative and incomplete. Nevertheless, the Third Interim Report of the evaluation team (July, 1976) contains a great deal of data on the impact of project activities in the Oriente. These findings are based on interviews with about 125 farmers from each experimental treatment area (R, RM, RMA, C, CM) and are summarized below.

First, they have found that the proportion of farmers owning and listening to radio has increased substantially in the experimental areas. The baseline survey found that 77% of the farmers in the Quezada Valley listened to the radio every day and by 1975 this figure had increased to 93%. In 1973, 46% owned their own radio; by 1975 this figure had risen

to 68%. The 1973 base-line survey found that in Quezada 46% used the radio as a source of agricultural information. In 1975, 93% stated that they used the radio as an important source of agricultural information. The comparable figures for Yupiltepeque are 41% for 1974 which rose to 75% in 1975. Also, in 1974, 38% of the Quezada farmers reported that the radio was their primary source of new information about the use of fertilizer, which rose to 47% in 1975.

There has also been a greater increase in the level of knowledge, proportion of favorable attitudes, and use of recommended practices in the experimental areas (R, RM, RMA, CM) than in the control areas. In 1974, the experimental areas in the Quezada Valley registered a 25% increase in knowledge of the recommended agricultural practices over the base-line level, and an additional 9% increase was recorded in 1975. A 24% increase was reported in Yupiltepeque in 1975 (the first year of programming there) which is about the same as the increase measured during the first year of programming in Quezada. In contrast, a 13% increase was measured in the control areas in 1974, and a 1% increase in 1975.

In the area of farmers' attitudes, a 39% increase in favorable attitudes towards recommended practices was found in Quezada in 1974, with an additional 11% increase observed in 1975. In Yupiltepeque, a 21% increase in favorable attitudes was found in 1975. In the control areas, a 30% increase in favorable attitudes was recorded in 1974, and a 2% increase in 1975.

Changes in the use of recommended practices reveal a somewhat different pattern. In 1974, a -2% adoption rate was recorded in Quezada, and a -4% in

control area. This negative change rate reflects the shortage of fertilizer (due to its high price) and the drought suffered that year. Several of the recommended practices relate to the use of fertilizer, and fewer farmers used fertilizer in 1974 than in 1973. In 1975, Quezada registered a 32% increase in the use of recommended practices, Yupiltepeque registered a 21% increase, and the control area registered a 4% increase.

The above figures represent the average change in all experimental areas compared to the control areas. In order to ascertain the impact of the monitors and the agronomist, we must examine the figures for each type of treatment area. In the Quezada monitor treatment areas (RM), the increase in knowledge was 10% in 1975 over 1974, compared to 9% in the radio-only (R) treatment areas. In Yupiltepeque (first year programming) the increase was 40% in the "RM" area compared to 14% in the "R" area. In the monitor-only (CM) area (also first year programming) the increase was 10% compared to 1% in the control area.

In the area of attitudes, an 11% increase in favorable attitudes was observed in the Quezada "RM" areas and in the "R" (radio-only) areas. In Yupiltepeque, a 40% increase in favorable attitudes was recorded in the "RM" area compared to a 14% increase in the "R" area. In the "CM" (monitor-only) area, an 11% increase was measured, and a 2% increase was observed in the control area.

Regarding changes in the use of recommended practices, we find a 34% increase in the use of recommended practices in Quezada "RM" in 1975 compared to 1974, versus a 22% increase in the Quezada "R" area. In Yupiltepeque, however, we find a 20% increase in the "RM" area and a 29% increase

in the "R" treatment area. In the "CM" treatment area a 14% increase occurred and in the control area a 4% increase in the use of recommended practices occurred.

In the areas where an agronomist was added, no additional increase in knowledge is observed. We find an 8% increase in Quezada RMA compared to a 10% increase in Quezada RM. In Yupiltepeque, we find a 23% increase in the RMA area compared to 40% in the RM area. Nor is there any additional increase in favorable attitudes in the RMA areas. In Quezada RMA we find a 10% increase; in Quezada RM an 11% increase. In Yupiltepeque, the increase is 20% in the RMA area and 40% in the RM area (see Table I).

TABLE I  
CHANGES IN KNOWLEDGE, ATTITUDE AND PRACTICE, 1974-1975  
IN ORIENTE AS MEASURED IN 1975 TIME SAMPLE SURVEY

<u>Treatment Sub-areas</u>	<u>Knowledge</u>	<u>% Change 1974-1975*</u>	
		<u>Attitude</u>	<u>Practice</u>
<u>Quezada</u>			
R	8.9	11.2	21.7
RM	10.4	11.1	33.7
RMA	8.4	-9.5	45.7
Quezada Total	9.3	10.6	31.8
<u>Yupi</u>			
R	13.5	13.7	29.0
RM	39.8	40.2	20.4
RMA	23.2	20.6	13.5
Yupi Total	24.3	23.5	20.5
<u>Ipala</u>			
C (Control)	1.0	2.0	4.3
CM	9.9	10.1	14.1
Ipala Total	6.3	6.8	9.5
Total All Areas	12.9	13.5	23.1

\*Percent change compared to 1974 base.

Source: Third Interim Report, Evaluation Component, University of South Florida, July 1976.

The absolute levels of knowledge, attitudes, and practices relating to the 17 recommended agricultural practices measured (out of a total of 36 contained in the BVE programming) show that the level of knowledge and the prevalence of favorable attitudes is more than twice as high as the rate of use of these practices. The level of knowledge about these 17 practices reached a level of 47% in 1975, compared to a level of 41% found in 1974, representing a 13% increase. The level of favorable attitudes reached in 1975 in the Oriente was 46%, which was a 13.5% increase over the 1974 level of 40%. The level of use of recommended practices increased from 16.6% in 1974 to 20.5% in 1975, representing a 23% increase. The practices which were adopted the most in 1975 related to the use of fertilizer on corn and the selection of seed corn (see Table II, practices no. 3,6,7, 10, and 11).

TABLE II

LEVEL OF USE OF RECOMMENDED PRACTICES IN 1974 AND IN 1975

Practices	1 Reported Use-1974	2 Reported Use-1975
1. Stored corn harvest (shelled) in drums or granary.	180	175
2. Weeded corn crop before weeds reached four inches high.	146	147
3. Applied fertilizer just before the corn flowered.	47	80
4. Stored corn seed and protected with "Phostoxin" or "Folidol."	40	45
5. Planted corn combined with beans in first planting.	33	35
6. Selected corn seed from the best ears of the best stalks.	29	34

Practices	1 Reported Use-1974	2 Reported Use-1975
7. Hilled and applied fertilizer at same time on corn at flowering time.	27	46
8. Stored beans and protected with "Phostoxin," "Folidol," "Malathion," or "Methyl Bromide."	23	25
9. Applied soil insecticide just before turning soil.	18	15
10. Use complete fertilizer when planting corn.	17	20
11. Applied nitrogen fertilizer on corn at flowering time.	17	35
12. Used "Dipterex," "Folidol," or "Lebaycid" to control diabrotica beetle in beans.*	16	9
13. Requested credit for crops which was approved and used.	10	12
14. selected bean seed from best plants and pods before harvest.	8	10
15. Sent a soil sample to Ministry of Agriculture for analysis.	4	3
16. Used hybrid seed corn (H3, H5, H102) which was treated and purchased recently in sacks.	2	2
17. Used "Volaton" insecticide to disinfect soil	<u>1</u>	<u>3</u>
Total Use	618	696
Total Possible Use	3400	3400

N = 200 unless otherwise indicated

\* - Only considered if diabrotica beetle was a problem

Source: Third Interim Report, Evaluation Component, University of South Florida, July, 1976.

The survey data also reveals that the BVE radio is the most frequently mentioned source of the new knowledge, attitudes, and practices exhibited by farmers in the Oriente in 1975, and the monitor is mentioned as the second most frequent source of information (see Tables III, IV, and V).

TABLE III  
 SOURCES OF NEW KNOWLEDGE OF RECOMMENDED PRACTICES  
 REPORTED IN 1975 BY FARMERS IN ORIENTE AREA OF GUATEMALA

Source	Number of Farmers Reporting
1. BVE Radio	79
2. BVE Monitor	36
3. Friends and Neighbors	20
4. Non-BVE Agronomist	17
5. BVE Radio and Monitor	15
6. "Nothing New"	6
7. BVE Radio plus "Other Source"	5
8. Personal Experience	1
9. BVE Monitor plus "Other Source"	1
10. BVE Radio and Monitor plus "Other Source"	1
11. No Answer	1
Total Reporting New Knowledge of Recommended Practices	182

TABLE IV  
 INFORMATION SOURCES ASSOCIATED WITH FAVORABLE CHANGE  
 IN ATTITUDES TOWARD RECOMMENDED PRACTICES IN 1975

Source	Number of Farmers Reporting Information Source
1. BVE Radio	84
2. BVE Monitor	34
3. Friends and Neighbors	19
4. Non-BVE Agronomist	16
5. BVE Radio + Monitor	16
6. BVE Radio + "Another Source"	7
7. Nothing New	6
8. BVE Radio and Monitor + "Another Source"	1
9. Personal Experience	1
10. BVE Monitor + "Another Source"	1
11. No Answer	1
Total Responses	186

TABLE V  
SOURCES OF INFORMATION REPORTED BY FARMERS  
ADOPTING RECOMMENDED PRACTICES IN 1975

Information Source	Number of Adopters Reporting Source
1. Radio Quezada	50
2. Past Information ("Nothing new")	31
3. Radio Quezada and "Another Source"	14
4. Friends and Neighbors	14
5. From personal experience and observation	13
6. Radio Quezada and BVE Monitor	12
7. From Non-BVE Agronomist	5
8. From BVE Monitor	3
9. From Radio Quezada, BVE Monitor, and "Another Source"	<u>1</u>
Total	143

Source: Third Interim Report, Evaluation Component, University of South Florida, July, 1976.

In the area of crop yields, the evaluation team has not found any consistent pattern of impact deriving from the BVE project. The 1974 data shows no impact by the monitor or agronomist on crop yields, and all crops suffered from the serious drought experienced that year. In 1975, no consistent pattern of impact was found, with the exception of a strong relationship between increases in bean and sorghum yields and an increase in the concentration of BVE experimental treatments in Yupiltepeque. As Table VI indicates, bean yields (and sorghum yields, which are not shown) increase significantly as the monitor and agronomist are added to the treatment area. Generally, the evaluation team feels that climatic conditions have had a greater impact on 1975 crop yields (which increased greatly in most areas of the Oriente except Ipala) than the increment of new practices adopted in 1975, and that it is very

difficult to measure the impact of the agronomist in such a short (two year) period. Also complicating matters is the fact that agronomist from Guatemalan government agencies, and from the Cuna del Sol cooperative (a member of FECOAR, another AID funded project) also operate in project areas and they do not, of course, restrict themselves to "RMA" areas. It is unclear how much impact, if any, their activities have had. Thus far it would appear that changing climatic conditions - from year to year and from one project area to another - account for the changes in crop yields observed.

TABLE VI  
CHANGES IN CROP YIELDS, 1974-1975 IN ORIENTE  
AS MEASURED IN JANUARY CROP SURVEYS

<u>Treatment Sub-areas</u>	<u>% Change 1974-1975*</u>	
	<u>Corn Yields</u>	<u>Bean Yields</u>
<u>Quezada</u>		
R	41.3	16.9
RM	39.9	14.2
RMA	75.4	36.5
<u>Yupi</u>		
R	57.0	11.8
RM	41.4	33.9
RMA	45.0	50.6
<u>Ipala</u>		
C (Control)	-9.1	37.0
CM	-25.6	5.5

\*Change compared to 1974 base. All changes are positive unless otherwise indicated. All yield data is tentative and subject to further analysis.

Source: Third Interim Report, Evaluation Component, University of South Florida, July, 1976.

The evaluation team assigned each farmer in their sample a "practice score" based on the number of recommended practices they were using (thus allowing them to rank the farmers into high, moderate, and low levels of use) and a "change score" based upon the number of practices that were adopted between 1974 and 1975. Their correlation analysis found that neither high practice levels nor high change rates are associated with an increase in the concentration of the BVE experimental treatments. They do not believe that they have found any consistent evidence to suggest that a differential impact is obtained with the use of a monitor over the radio alone. There is some evidence that the monitor is affecting levels of knowledge and attitudes, but it is not high enough to be significantly different from the impact of the radio alone.

An analysis was also made of farmers who attended the radio forums. They found that those who attended the forums had a higher practice score than did non-attenders, but they did not report as many changes (adoptions of new practices) as did the non-attenders. This appears to reflect the fact that more "progressive" farmers, who are already using many of the recommended practices, are the ones who attend the forums.

The evaluator team examined several characteristics that could be expected to affect a farmer's "change" and "practice" scores. Significantly, they found that neither literacy nor land ownership appears to be an important factor in explaining the changes observed in the Oriente between 1974-75. Farmers exhibiting a high level of agricultural practice are more likely to be literate and own more land than those who exhibit a low practice score. But farmers who obtained the highest change score

are not more likely to be literate, and often owned little or no land. No association was found, therefore, between a high change score and literacy or land ownership. This would suggest that literacy and land ownership were important factors leading to better agricultural practices in the past, but recent changes are not associated with these factors. It thus appears that the high change farmers have changed their agricultural practices in spite of their lack of literacy and land ownership, and that this has been achieved as a result of the BVE program.

Finally, the evaluation team believes that their data reveal a "readiness effect" - which they had expected. They have found slow but significant changes in agricultural practices, and believe that the changes in knowledge and attitudes now being observed will turn into changes in practice in 1976 and 1977, and that it is quite possible that these changes will occur at an increasingly rapid rate. If this assumption is true, then the fact that only two years of programming are planned for the Highlands - where it is admittedly more difficult to change agricultural practices - raises the question of whether a longer period of programming will be required there before observing significant change.

The partial and tentative findings presented above suggest that the Basic Village Education System is proving to be a highly successful mechanism for changing agricultural knowledge, attitudes, and practices. Contrary to the initial expectations of the evaluation team, significant changes in agricultural practices have been observed in the first two years of programming in the Oriente. The success achieved by this project appears to be due to the highly effective nature of the local field

programming, which is itself based on the effective utilization of the multiple feedback mechanisms built into the project design. The feedback reports from the monitors and agronomists, the collection of extensive data regarding local agricultural practices, the letters and audience surveys, etc., have allowed the project staff to tailor their programming to specific local needs and desires and to make continuous, on-going modifications in their programming as conditions dictate.

These feedback mechanisms have not only allowed the project staff to produce the "right" agricultural recommendations at the right time and in the right place, etc. They have also produced a strong feeling of community identification with the station on the part of the target group. The 90% plus listening rates the stations have achieved illustrate the fact that the radio is perceived to be "part of the community," it is "their radio." They listen to it, participate in its programming, and heed its advice.<sup>12</sup> As the evaluation team notes, this project raises the question as to whether this radio system operates - and is perceived as - a personal communication system rather than as an impersonal broadcaster of knowledge coming from an unknown place.

Just how important the "community identification" factor is to project success must await further analysis of future survey data. Only then will

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The influence of the radio is symbolized by an incident relating to insecticide recommendations. The BVE station had, mistakenly, recommended an insecticide using the brand name rather than the generic name. A farmer went into a local store and asked for the insecticide, which the storeowner did not have. He offered to sell the farmer another kind, but the farmer refused, saying that he would only use the specific item recommended by the radio.

we know whether the project's impact has been significantly less in Yupiltepeque and in areas outside of Momostenango, or whether the feeling of community identification can be extended to a larger area (extension appears to be more possible in the Oriente than in the Highlands).

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