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THE ROLE OF MODERN COMMUNICATIONS TECHNOLOGY IN STRATEGIES TO ACCELERATE RURAL DEVELOPMENT

(Preliminary report on the Basic Village Education Project)

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I. THE BASIC VILLAGE EDUCATION PROJECT IN PERSPECTIVE

The need is urgent to increase the productivity of the rural population in developing countries, and to help them improve their conditions of life. Communications strategies cannot create the conditions which make such changes possible, nor can they operate in the absence of institutional support. If, however, such pre-conditions can be met, modern communications technology now provides a potentially powerful tool to accelerate the process of change and development.

A major challenge of this decade is to find out how rural development can derive full benefit from the communications tools already available. The Basic Village Education Project in Guatemala addresses itself directly to that challenge.

Although not large in total area, Guatemala has great diversity in lands and people. Two thirds of its nearly six million population live in rural areas, and more than half of those 15 years of age or older are illiterate. Productivity of the land is low. Both the urgent need and the difficult task ahead to accelerate the rate of development in rural Guatemala, which has much in common with other developing countries, are obvious. Thus, Guatemala is an appropriate setting in which to study the role and effectiveness of modern communications technology in strategies to accelerate rural development.

The Basic Village Education Project is an experimental program of information and non-formal education for the rural adult in Guatemala. It seeks to determine the effectiveness and relative costs of selected combinations of communications media which have potential for use in development programs, particularly where resources are limited.

The program is based on the following hypotheses:

1. Educational programs addressed to improvement of the rural Guatemalan must be oriented both to his current needs, and to the facilities and services available to meet those needs.
2. Present day technology offers a variety of communications systems which, properly utilized, can stimulate the interest of the rural Guatemalan and increase his capacity to take advantage of programs designed to help him raise his level of living.
3. A communications system using modern technology can multiply the effectiveness of the extensionists and teachers who are currently limited largely to person to person contact.

For experimental purposes, BVE Program content is concentrated on production and marketing of basic crops such as corn, beans, sorghum and wheat. This is an area of development in which changes in attitudes and practices can be measured in a limited time frame; and in which a minimum infra-structure already exists. The primary audience is the small, illiterate, subsistence farmer.

Consistent with its experimental nature, BVE is comprised of two equally important parts: a carefully controlled non-formal educational program which does not require literacy; and a rigorous evaluation of that program in relation to its objectives and underlying hypotheses.

Radio is the basic communications medium under test. A limited range trans-

mitter installed and operated by the Project in each region of action should permit the study of similar areas within and outside its range to measure the effectiveness of that medium in inducing change.

Two additional communications "treatments" are being tested to study radio as part of a multiple media approach which will maximize returns from resources allocated to non-formal adult education programs. These treatments represent increasing degrees of contact with farmers in providing them agricultural information and assistance.

In one part of the area reached by radio, that mass medium is supplemented by a field monitor with responsibility for working in communities having a total of 300 to 400 farm families. The monitor, an individual selected from a community in the area and trained by BVE, provides a direct link between the program and those families. Volunteer assistance is also sought in each community by the monitor.

In another portion of the area served by the radio, the monitor-volunteer contact is further supplemented by technical assistance and guidance from an agronomist. The level of agronomist assistance to those communities is equivalent to one agronomist for each 900 to 1000 farm families.

The same levels of availability of needed goods and services to farmers are maintained insofar as possible in both experimental and control areas. Otherwise, the control area outside the range of the radio receives no information or technical assistance from BVE.

The present plan calls for the BVE experiment to be carried out in two regions of Guatemala representing distinct major ethnic groups -Spanish-speaking Ladinos of southeastern Guatemala, and Quiché-speaking Indians of the western Highlands. As presently programmed, the Project will include three years of experimentation in the Ladino region, and two years in the western Indian Highlands.

The Basic Village Education Project is jointly funded by the Government of Guatemala and the United States Agency for International Development in accordance with terms of an agreement between the two governments. It is administered in Guatemala by the Guatemalan Ministry of Education, and USAID provides foreign personnel and other assistance through a contract with the Academy for Educational 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.

After ten months of planning and preparation, the BVE Program was officially launched on March 22, 1974, when the Government of Guatemala Minister of Education pressed the symbolic button to inaugurate TGME Radio Quezada, the first transmitter to be installed by the Project.

During the next three years, the Project will accumulate and evaluate a wealth of information on the use of modern communications technology in non-formal adult education relating to agriculture. The implications will be far broader, however. The experience gained in the experiment will have application not only in agricultural programs, but in other fields such as health, education and nutrition in Guatemala and throughout the developing world.

II. BASIC VILLAGE EDUCATION IN GUATEMALA:

EVALUATION OF AN EXPERIMENT IN NON-FORMAL EDUCATION

I. BACKGROUND

Despite attempts to improve formal rural education and to develop adult literacy programs, the subsistence level peasant population remains largely illiterate and slow to change. Nonformal education, through mass media, such as radio, appears to be a major communication channel for reaching enough people in a time period that will make an overall impact. The present paper is a description of the evaluation of one program designed to test this approach

The target population in Guatemala is the rural, peasant subsistence farmer, characteristic of traditional rural societies still found throughout the world. Arensberg and Niehoff (1971) describe the rural peasant and their description is applicable to that of the current population under study. These attributes are as follows, paraphrasing generally from the reference:

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

This description covers the attributes found in our population and can be generalized to other developing nations.

Rogers and Shoemaker (1971) define communication as a change in knowledge and attitudes while diffusion as overt behavior change (adoption). In the present study, the evaluation of communication, diffusion and consequences is built into the research design. It is critical to know if changes in knowledge and attitudes are reflected in overt behavior change and if this overt behavior change does have measurable consequences.

The most clear cut consequence in the present study would be change in agricultural yield. Yet, if we do not measure at all steps in the process, the meaning of the findings would be unclear. A change in knowledge, attitudes and adoption of new agricultural practices without actual major positive consequences for the farmer taking the risk would mean little. The base-line data survey and retest approach in the present study taps knowledge in a variety of areas and particularly as related to the adoption of the innovation package in part or in whole. Short term consequences would be in crop yield whereas long term consequences might well be changes in nutritional level, energy available, and cash income. Such changes may then be reflected in in-

creased readiness to accept messages through the media of radio, increased mobility, change in formal education programs within the community and a variety of other adoptions.

II. DESIGN, EVALUATION, ANALYSIS

A. Measurement of Results

The evaluation plan deals with:

1. Evaluation of the differential effectiveness of a series of communication treatments in producing change in attitude, knowledge, practice, and production in agriculture.
2. Measurement of such changes in two highly different cultural settings (Oriente-Ladino, Occidente-Mayan).
3. A cost benefit analysis following the experimental aspects of development.

Measurement of change is based primarily upon degrees of significance of differences between various treatment and control areas in changes in knowledge, attitudes, practices, and production. Given the measurement of differences, together with crop yields and program cost elements, cost effectiveness will be determined and extrapolated for a larger population by an agricultural economist.

B. Research and evaluation design

On the following pages, the outline of the evaluation plan is shown with explanatory materials at each stage in the process. Figure 1 and the materials in order reflect the nature of the target population, the selection of experimental and control groups, the establishment of baseline measures of attitude and practice and, in this case, agricultural yield, a definition of the treatments to be administered over time and re-evaluation after the agricultural cycle is complete.

Evaluation Plan for the Oriente (See Figure 1)

1. In the Department of Jutiapa, one control area and one experimental area have been selected.

Quesada is the experimental area and Yupiltepeque the control area. The experimental area was divided into three sub-units, each receiving a different treatment during the present year. The three sub-divisions are based on a combination of geographic proximity and estimated degree of interpersonal interaction, providing for three distinct areas as separate as possible within the same general geographic area. No comparable sub-divisions have been made in the control area.

2. First phase interviewing

a) Experimental site - in each of the three sub-divisions of the experimental area, a sample of 100 was drawn for baseline interviews. This interviewing was by use of a questionnaire developed to obtain baseline demographic data, agricultural knowledge and practice, and a third section on a variety of related questions concerning health, nutrition, transportation and communication practices. A list of subjects by villages was prepared from the census and provided to interviewers so that a random sample from a pre-selected acceptable list in each village was obtained. This random sample consists of approximately 10 to 30 subjects from each village

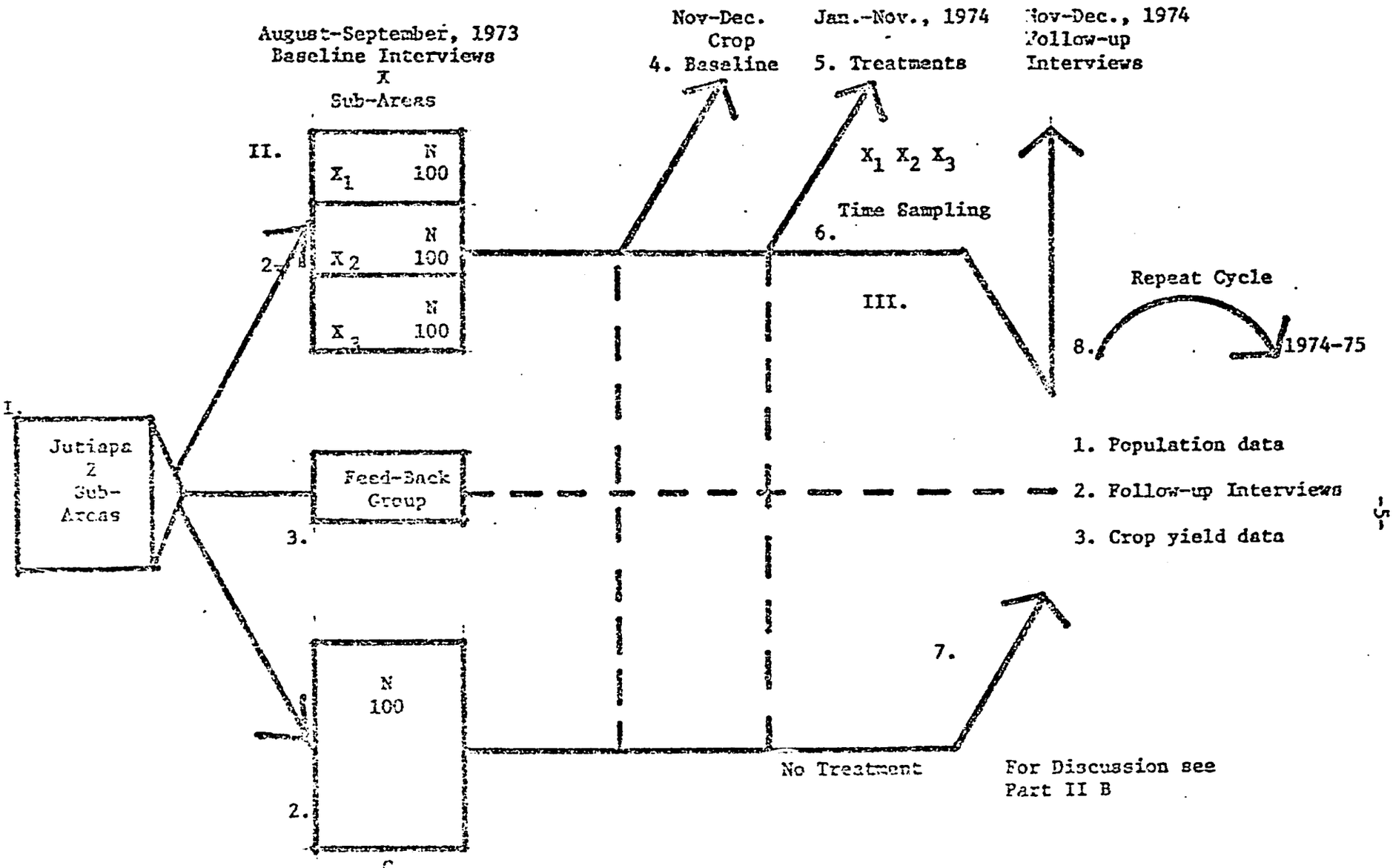

August-September, 1973
Baseline Interviews
X
Sub-Areas
Nov-Dec.
Crop
4. Baseline
Jan.-Nov., 1974
5. Treatments
Nov-Dec., 1974
Follow-up
Interviews
II.
X_1 N 100
X_2 N 100
X_3 N 100
2.
X_1 X_2 X_3
Time Sampling
6.
III.
Repeat Cycle
8.
1974-75
I.
Jutiapa
Z
Sub-Areas
Feed-Back
Group
3.
1. Population data
2. Follow-up Interviews
3. Crop yield data
N
100
2.
7.
No Treatment
For Discussion see
Part II B
C
Sub-Area
I. Selection
a. Census
b. Maps
c. Area Visits
II. Sample-Random
a. 20-30 males
per village
b. Land control
.5 - 12.0
manzanas
III. Treatments
Three levels
Radio +

FIGURE 1

within each sub-division up to a sample of 100. The sample consists of male landholders (decision makers), controlling from .5 to 12.0 manzanas of land under cultivation.

3. Second phase interviewing Subjects interviewed in the intensive sampling were contacted on an individual basis with an interview containing follow up questions concerning agricultural practice and knowledge based on analysis of the first interview data. The second major aspect of this interviewing was to obtain accurate and reliable data on major crop yields to serve as a baseline for comparison with crop yield for the coming agricultural year.

4. Treatments Beginning in March 1974, the three treatments are applied to the three experimental sub-areas. The three treatments were determined independently of the evaluation unit.

During the treatment period there will be no treatment in the control area. However, it is expected that related services such as credit will be made available in the control and experimental areas so that change will not be restricted by the lack of service inputs in either area.

5. Treatment effectiveness -Evaluation - In November of 1974, subjects in the initial sample will be re-interviewed to evaluate any changes in attitude and practice concerning agricultural production. Actual crop yield data will also be collected and compared with the original baseline data for change between experimental and control areas and for change within experimental areas subjected to different levels of treatment.

Other population data such as overall reports of fertilizer sales, general product yields and credit provided will also be utilized.

6. Second year treatment and evaluation - Because of the nature of agricultural communications and rural adoption patterns, the experimental program must continue through the second agricultural year.

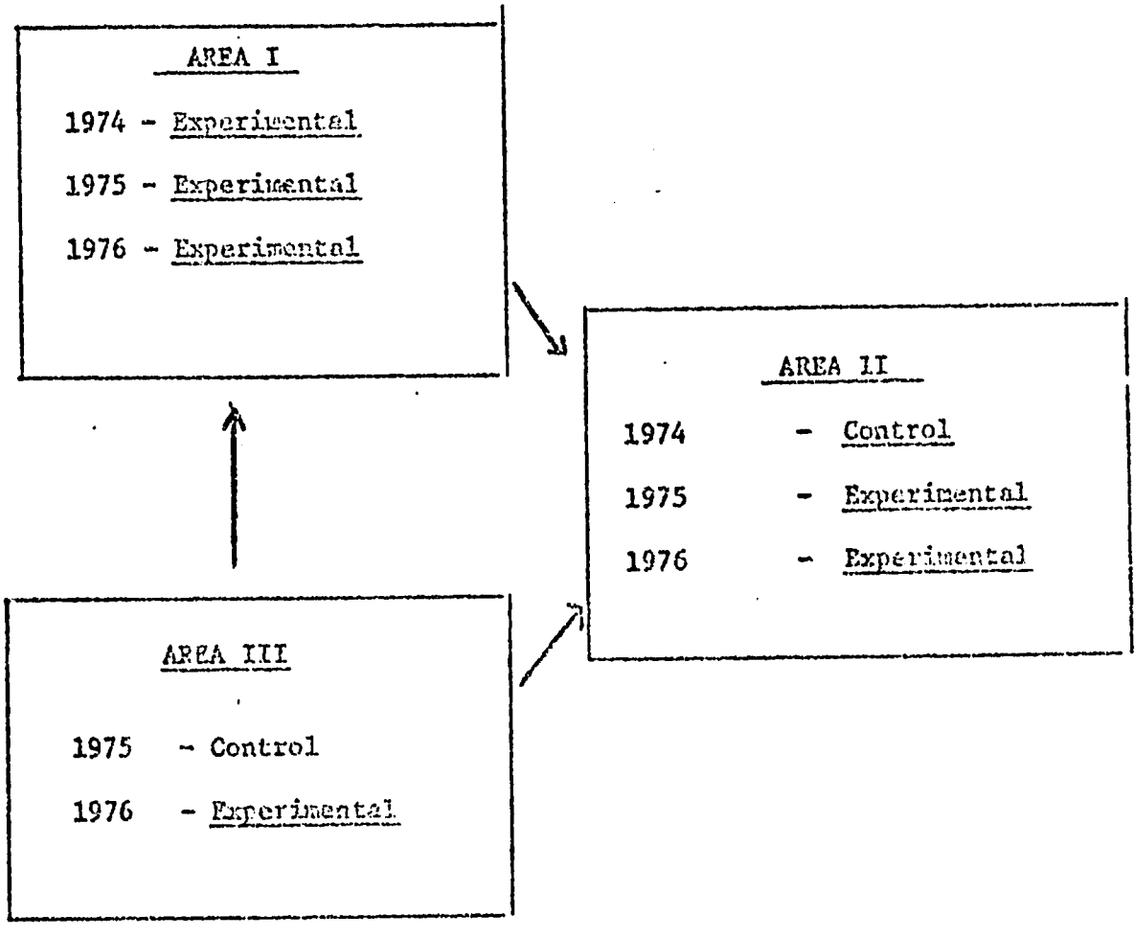
Proposed Evaluation Plan for the Occidente

The basic evaluation concepts proposed for the Ladino area will be applied in the Indian communities of the Occidente. Because of limited information concerning the modernization process in the Mayan area including such information as the use of radio and radio listening habits, during the first year field studies are being conducted to be ready to implement a modified design beginning September 1974. The same principles of intensive study for site selection, development of experimental and control areas, provision of appropriate treatments, collection of baseline data and later re-evaluation based on the agricultural calendar will be followed. Dr. Robert Carmack, State University of New York, is doing the preliminary study.

Experimental Replication in Three Areas Figure 2

The experimental design provides for replication of the experiment. In the Ladino area three areas have been identified as suitable for experimental or control areas. Area I is the experimental area for 1973-74 and Area II is the control area with no action taken in Area III. In the 1974-75 design, experimental area, control Area II becomes a first year experimental area, and Area III becomes a control. At the end of that year then it would be possible to have two years of information on the impact on Area II, and a carefully studied population in Area III serving as control.

Fig. 2 Time sequence of Areas used for experiment and control illustrating one complete cycle of experimentation in the Oriente



D. Data Processing and analysis

The major dimensions of analysis are as follows:

1. The first stage of the analysis provides a descriptive profile of Treatment Areas 1, 2 and 3 in Quesada and a profile of the control sample in Yupiltepeque. Analysis of differences by items of the questionnaire in terms of background, sources of information, agricultural knowledge, land-holding, etc. on this first run insure matching of the experimental and control areas.

   This level of analysis primarily involves descriptive statistics for population profiles, chi squares or analysis of variance depending on the nature of the data.

2. At the end of the crop cycle in November of 1974, a refined version of the initial questionnaire will be re-administered, along with collection of crop yield data. The analysis will concentrate on differences within the three treatment areas to determine first if there is a measurable difference in effectiveness and second to determine the extent of this effectiveness to later be related to cost/benefit analysis.

3. In addition to the standard experimental comparisons made between treatment and non-treatment groups, samples will be studied to determine the nature and characteristics of subjects who respond most to the treatment or who changed most in the control condition. High change subjects will be compared with low change subjects and studied on the wide range of demographic, agricultural and social variables. In addition to looking at experimental and control groups it should be possible to identify target populations within groups.

   Since there will be increasingly complex sets of variables as subjects are studied across the total sample it may be necessary to utilize more complex multi-variate analysis of the data to insure that maximum information has been gained from the study.

III. THE BASIC VILLAGE PROJECT IN OPERATION

Two factors guide the operations of the Basic Village Education Program. First, they must meet the stringent requirements set forth in a Project Implementation Plan developed in mid-1973. And second, those operations must be synchronized with the agricultural cycle.

Direct responsibility for direction and management of the Project rests jointly with the Guatemalan Project Director and with the Program Leader provided by the Academy for Educational Development. They are assisted by both Guatemalan and U.S. personnel.

In providing necessary physical facilities for the Project, the objective has been to take advantage of the latest developments in communications technology. Emphasis has been on obtaining utility, flexibility, and acceptable quality at minimum cost. A major innovation is the use of a cassette recording system for audio communication. In addition to providing versatility, adoption of such a system has resulted in substantial savings in both production and transmission.

To date, the Project has installed one radio transmitter (in Quezada, Department of Jutiapa) to serve the 1974 experimental area. Only a portion of its 1000 watt potential is being utilized at present, in order to restrict the range of the station during the experimental period. Recording studios and graphic arts facilities have been installed at Project headquarters in Guatemala City where most message materials are prepared.

To date, greatest emphasis has been placed on production of audio materials. In the near future, however, the visual aids phase of the Program will be expanded both in terms of the amount and the variety of material utilized.

The staff of the Program Production Unit includes scriptwriters, artists, sound technicians, a photographer, archivist, secretaries, and a director of the Unit. In all, fifteen or sixteen people plus two foreign advisers comprise this unit at present.

Production staff training was an early priority, as most personnel had little or no previous training or experience in the specific jobs to which they were assigned. Both local resources and foreign advisers were utilized for this purpose.

Two agronomists, one employed by the Project and another assigned to BVE by the Ministry of Agriculture, have primary responsibility to develop agricultural subject matter content for the Program. All subject matter content is cleared with the Ministry of Agriculture before use by the Project.

To capture and maintain a radio audience, not only must the educational messages be correct and attractive to the listener, but other programs of local interest must also be included in the broadcasting schedule. Agricultural messages are delivered primarily through one daily 30-minute program which is reinforced by a radio forum broadcast each Saturday. Other daily programs designed especially for local interest include a family-oriented program, a drama, a local social

service program, news, and a variety of music programs. The BVE station is on the air eight hours each day Monday through Saturday, but does not broadcast on Sunday.

The basic communications tool of the field monitor is the audio-cassette recorder, supplemented with visual aids of various types. A component of the message delivery system not yet operational is the local volunteer.

In the most intensive treatment area, the agronomist features crop demonstrations as a major communications vehicle. In addition, he takes advantage of both radio and monitor to supplement his own personal contacts with farmers.

Results of the Project will be assessed through the formal independent evaluation by the University of South Florida. Constant feedback from the farmers in the experimental areas is also essential to assure that program materials are on target, and that they are well received, understood and accepted. The prime source of regular systematic program feedback is the field monitor. This is supplemented by letters, comments and inquiries received by the radio station, and periodic spot checks in the field.

Due to the nature of BVE subject matter content, and its relationship to other education and development programs, close coordination must be maintained with a number of agencies. Of these the most important is the Ministry of Agriculture which is the principal source of technical information for the Project; and whose programs which provide goods and services to farmers are essential to the success of the experiment. The PEMEP program, an experimental program in elementary education, is another entity with whom the BVE Project maintains close working relationships.

Major attention has been given to organizing BVE Project operations in such a way as to achieve and maintain both the integrity of the experiment and the interest of the target audience within the constraints of time, available personnel, and cost.

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