COMMUNICATION FOR TECHNOLOGY TRANSFER IN AGRICULTURE PROJECT
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CTTA

Honduras Pilot Project Institutionalization Study

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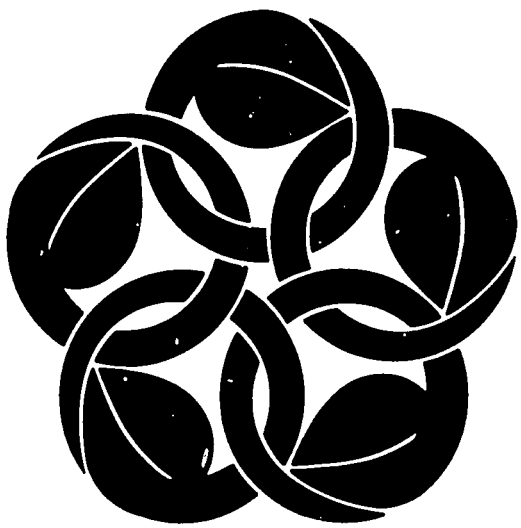

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Executive Summary

The Communication for Technology Transfer in Agriculture (CTTA) Project differs from traditional agricultural communication projects in that it embraces the entire process of technology transfer. It expands communication capacity, but is not limited to communication activities. CTTA seeks to place farmers at the center of extension activities. Farmer participation in the design of both extension and research activities is a crucial aspect of the approach.

Thus, CTTA uses multi-channel communication strategies to improve agricultural outreach services. These strategies require audience analysis and periodic evaluations to determine the extent to which the information needs of target audiences are being satisfied. A CTTA goal is to institutionalize the capacity to plan, implement, and evaluate communication strategies. Institutionalization is defined as effecting policies and working procedures to make organizations more responsive to development needs.

This report presents the results of an institutionalization assessment of CTTA Project activities in Honduras covering a 22-month period from February 1987 to December 1988. It presents a cross-sectional view of accomplishments at the different levels through which the extension system operates: agency, regional, and national.

Results of the assessment suggest that CTTA introduced significant changes in extension activities in the Comayagua pilot region. Before CTTA, extension activities were planned vertically, emphasized the farm and not the farmer, were concerned with physical outputs rather than learning objectives, and were based essentially on personal interaction with farmers. The changes that are occurring can be best summarized by quoting three extensionists who explained the differences between the working environment before and after project implementation. One extensionist said,

> *In the previous system, priorities were determined by the technician through visual observation or as a result of his experience in the field. In the current system, communities and farmers participate in expressing their problems and the needs of their crops.*

Another extensionist said,

> *CTTA has organized us. It helped us get organized to implement activities such as surveys and diagnosis, and also to focus on human aspects. We learned how to reach the farmer, and how to do transfer projects, flyers, and newsletters. Nothing of that existed before.*

A third extensionist said,

> *We do not follow up the farm anymore. We follow up the farmer. We have to train the man.*

The agency-level audience analysis that CTTA has supported helped agencies redefine their geographical priorities. New communities of basic grains producers are being served which have high potential for benefitting from technology transfer initiatives. Basic grain producers are the primary clientele for public sector extension activities. This redefinition of priorities may have implications related to the cost-effectiveness of the service delivery system in the pilot region.

CTTA influenced research activities, including the development of a research agenda for some agencies. It also helped research and extension programs in the pilot region to identify and disseminate technological options that would have cost implications for producers. Both research and extension need to develop and disseminate information about technologies that are applicable for subsistence rather than commercial farming.

Institutionalization accomplishments are most obvious at the agency and regional levels, where support for CTTA always has been strong. However, future support may depend on the agenda of the new regional director of extension in Comayagua.

There also are some significant national-level accomplishments. A service delivery methodology for which CTTA is partially responsible, and which includes a CTTA approach to extension, was adopted as the national service delivery methodology. CTTA activities are also being expanded to new regions. However, much remains

to be accomplished to ensure that the new methodology is universally adopted and correctly and continually applied. Additionally, the DCA capacity to implement the methodology must be strengthened and corresponding funding identified. Present GOH funding constraints will likely make it necessary for DCA to rely partially on external funding (USAID and other donors) for its operating budget.

Three key factors have contributed to CTTA success: the environment where CTTA was implemented, the approach adopted to implement the project, and the characteristics of the source from which changes emanate.

Honduras needs great changes. The director of the administrative region where CTTA was housed was an innovator and greatly committed to CTTA. The project complemented his interests in reform, which included improved and expanded extension coverage, increased contact with extension clientele, and development of an improved institutional image. CTTA was implemented through an additive approach. It first sought to introduce a few core changes, upon which it built larger and more comprehensive modifications. CTTA's first focus was at the agency level, where positive impact was quickly achieved, thus building confidence in the methodology. CTTA also responded to the regional goal to simplify the developmental investigation, and participated in designing the Unified Methodology for the Delivery of Services. The expatriate communication advisor played an important leadership role in the implementing agency.

During the remaining period of the project, efforts should be made to:

- consolidate the activities that it has initiated,
- promote the CTTA approach at the national level,
- lobby for including learning objectives in annual planning and performance reports,
- train extensionists in other regions in the technology transfer project approach,
- train extensionists in rapid appraisal techniques that can be used in evaluating technology transfer projects, and
- continue developing the skills of DCA staff in research and introduce the use of pre-coded questionnaire for future survey activities.

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I. Introduction

The Communication for Technology Transfer in Agriculture (CTTA) Project proposes to use communication strategies based on multiple channels, integrating interpersonal, group, and mass-media approaches, to improve agricultural outreach. This involves strengthening the linkages between farmers and extension services, farmers and research, and extension and research. Based on a social marketing approach, these communication strategies require an audience analysis and periodic evaluations to determine the extent to which the audience's information needs are being satisfied.

The CTTA Project is intended to demonstrate to the international community and to public sector administrators the efficiency and cost-effectiveness of these technology transfer strategies, particularly when coverage and the impact of technology dissemination and adoption are taken into account. In addition, the project is intended to institutionalize the capacity to plan and implement these strategies in support of extension activities so that they may continue after external funding ends.

Generally speaking, institutionalization implies effecting policies and working procedures to make organizations or institutions more responsive to development needs. The USAID Policy Paper on Institutional Development casts institutionalization in the same manner (A.I.D. *Policy Paper, Institutional Development,* 1983, p. 2). It further suggests that several means can lead to that end. To obtain institutionalization, personnel may need to be trained, inputs and infrastructure may need to be made available, management systems may have to be improved, interinstitutional coordination may have to be strengthened, and alternative organizational arrangements may have to be put in place.

Institutional development should allow the supported institutions to learn about, adapt to, and have impact upon the environment in which they work. Key institutions that affect development are those that generate, adapt, and disseminate knowledge and technology at different levels.

In the context of the CTTA Project, institutionalization is defined as the adoption by host government institutions of the methods and procedures developed through CTTA assistance. Indicators of successful institutionalization include:

- creating an organization to implement CTTA methods and approaches;
- developing among counterpart communication staff and extension personnel in the implementing agency competence to use the CTTA methodology;
- defining policies that may permit the enforcement of CTTA approaches and methodologies;
- expanding such approaches and methodologies beyond the original project's coverage area either geographically or programmatically; and
- committing local government funds for long-term support of such approaches and methodologies.

Applied Communication Technology, Inc. (ACT) was contracted to evaluate the impact of the CTTA Project at implementing agency and farmer levels. The *evaluation plan for the Honduras Pilot Site* called for periodic assessments of accomplishments in institutionalization. This report presents the conclusions of the first assessment.

The investigation was conducted in December 1988; 22 months after long-term, expatriate, technical assistance personnel implemented the project. This period does not begin with the official project start-up date, which was about six months earlier.

The scope of work for this study (Annex I) is in accordance with the definition of institutionalization outlined above and with the indicators that were established to measure institutionalization accomplishments.

This report includes five sections. The first describes the methodology used in the study. The second summarizes the expectations of the CTTA Project held by public sector officials at regional and national levels and establishes the context in which the project was developed. The third section presents the evolution of project activities for the period under assessment, and emphasizes the approaches and resulting changes introduced by CTTA. The fourth section describes accomplishments achieved to date and their possible sustainability. The final section lists lessons learned in the process.

II. Methodology

In Honduras, the CTTA Project has sought to introduce changes at the different institutional levels (agency, regional, and national) through which the extension system operates within the Ministry of Natural Resources (MNR). Therefore, the general purpose of this investigation was to detect the modifications introduced by the project at each level.

The study was conducted within time limitations placed upon it by budgetary restrictions that eventually resulted in suspending ACT involvement in CTTA Honduras. There was competition for time with other CTTA-related ACT activities in Honduras.

A cross-sectional approach was adopted to carry out the investigation at the agency level. Five of the ten extension agencies in the project region were visited. The agencies were chosen to represent different levels of CTTA institutionalization: low, intermediate, and high. The agencies were selected by the evaluator based on an original categorization made of all the project agencies by staff of the Comayagua Office of the Department of Agricultural Communication (DCA), the project's implementing agency. The original categorization was done following the same classification principle described above. Final selection was based on the proximity or similarity of agencies categorized. Table 1 lists the agencies visited and the selection category in which each belongs.

Table 1. Selection category and names of extension agencies visited.

Selection Category	Agencies Visited
Low institutionalization anticipated	La Paz
Intermediate institutionalization anticipated	Ajuterique, Taulabe
High institutionalization anticipated	San Luis, Lajas

At the agency level, the evaluator interviewed the persons responsible for extension and research (Annex II). He used a guide (Annex III) to conduct semi-guided interviews, but in some cases also asked additional questions. Due to time constraints, some interviews were done collectively. Collective interviews were conducted by discipline. No collective interviews were gathered from both researchers and extensionists.

At the regional level, information was obtained through key informant interviews (Annex II) using an interview guide (Annex III). Interviewees included the ex-director and sub-director of extension, the regional director of research, and some staff members of the DCA regional office in Comayagua. The regional director of extension was absent during the interviews.

At the national level, interviews were held with two informants: the National Director of DCA and the National Director of Extension. Time constraints made it impossible to accomplish ACT's original intent to visit with the National Director of Research, the Livestock General Director, staff of the Ministry of Planning and Budgeting (SECPLAN) who allocate resources to DCA, and staff of regional offices where CTTA is expanding its activities.

Additionally, the investigator worked on other CTTA Project evaluation activities for 20 months before the current study, which undoubtedly influenced and enriched this investigation.

III. The CTTA Project: Expectations and Inception

Using communication media to support technology transfer activities to farmers is not new within the MNR. An agricultural communication unit was established as part of the National Extension Department about 10 years before CTTA was implemented. Funding from international donors supported previous communication activities, which commonly included the use of radio programs to support extension. Two of the key communication staff members who helped implement CTTA are journalists who completed their university course work and received short-term overseas training in radio broadcasting through former communication assistance projects within MNR.

Before CTTA, however, communication activities were generally considered by communication personnel in MNR as piecemeal efforts with little ability to change the extension system and increase efficiency and coverage. In addition, early communication activities had little or no possibility of continuing after financial support from international funding agencies ceased. The communication staff has repeatedly argued that lack of success and sustainability of previous communication efforts was because agricultural communication was equated only with media production.

For several reasons, some MNR staff members were convinced that the CTTA Project would help the Ministry communication unit overcome the difficulties and perceptions of the past.

1. The Letter of Understanding signed between USAID/Tegucigalpa and the Government of Honduras (GOH) for implementing CTTA required the creation of a new communication section, the Department of Agricultural Communication (DCA), which would give status and independence of action to planned communication activities. By separating DCA from the National Extension Department, communication activities could be protected from the common personnel turnover which characterized Extension -- the head of the National Extension Department averages six months in office.

2. CTTA would provide and support long-term technical assistance, which would permit thorough definition of communication strategies to reach farmers, and allow for continuity of activities over time. This was an aspect of the project that was considered crucial to forming a national team of communicators that could continue and/or modify technology transfer strategies after external funding ended.

3. Under CTTA, the MNR would be able to obtain basic equipment needed to carry out communication activities during and after the project period. The existence of the equipment would motivate the GOH to identify and allocate financial resources to invest in long-term support of communications.

In Comayagua, the regional level, CTTA was initiated a few months after a new extension director was appointed. He was interested in reorganizing the extension system within the region. The reorganization included

- redefining coverage areas for specific extension agencies,
- transferring extensionists from regional headquarters to extension agency offices,
- rationing the use of limited logistical resources,
- identifying new farmer clients within agencies to expand the reach of extension, and
- developing stronger linkages with the farming population.

With each of these changes, the Regional Director sought to help build a new, more credible, institutional image of the MNR.

The CTTA Project was welcomed with enthusiasm by the new Director. The project represented some of the reorganization plans he favored. For instance, the social marketing process suggested by CTTA encouraged a bottom-up approach to planning extension programs, which complemented the Regional Director's idea that extension interventions should begin by identifying farmer needs. Thus CTTA would help develop the desired stronger linkages with the clientele. In addition, using a combination of communication media would increase extension coverage despite the region's limited supplies of logistical support. Thus, CTTA implementation was seen as helping to strengthen actions already initiated by the Regional Director when he restructured the geographical boundaries of the extension agencies and increased their number from eight to ten.

Some DCA staff members believed, however, that one of the initial challenges for the CTTA Project was to demonstrate to extension officials nationally and regionally, that communication specialists were not their rivals. Rather, the message to be conveyed was that communication specialists were charged with helping to accomplish the objectives established by the extensionists.

IV. Evolution of Activities and Changes Introduced by CTTA

The changes in communication/extension processes introduced by the CTTA Project evolved as implementation proceeded, although many were initiated when the current long-term advisor assumed his responsibilities. Little can be said about changes initiated from September 1986 to February 1987, which was during the term of the interim long-term advisor. This is a period normally remembered as one of few accomplishments and partial confusion. A major activity during this period was an attempt to carry out a developmental investigation[1] in specific extension agencies. However, the data collected were never fully analyzed.[2]

The changes introduced from March 1987 onward may have been both internal and external to the DCA unit. During the time addressed by this study, strong expatriate technical assistance and leadership guided the project through three implementation stages: initiation, expansion, and initiation of formative evaluation.

A. Initiation

During the initiation stage, project activities seem to have been connected to two objectives:

- putting the house in order, and
- consulting with farmers to plan future interventions. (This was the first thorough attempt at audience analysis.)

Within DCA, putting the house in order meant

- clarifying the basic structure and functions to be performed by the DCA sub-sections (e.g. Media Production, Communication Research, Regional Comayagua Office), including annexation of the Center for Agricultural Documentation and Information which was previously part of the Sectoral Planning Directorate, and
- adopting a "management by objectives" approach to project implementation.

This approach required that all DCA sub-units define mini-projects related to the activities they were expected to implement. Mini-projects were to be associated with the support that communication was to provide for extension activities. Each mini-project was to include a

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[1] Two developmental investigations were carried out. The first was initiated by the interim, long-term, expatriate advisor, from September 1987 to January 1988. The second was completed after the permanent, long-term, expatriate advisor began working in Honduras in March 1987. This refers to the first developmental investigation.

[2] A memo dated March 6, 1987 from the Field director in Honduras read,

. . . I consider that there are serious errors in the design and execution of the initial investigation . . . As a consequence, there have been serious difficulties to process and analyze the data collected . . . the information gathered during the first phase must be . . . complemented and enriched during this year.

clearly defined objective, achievable within a certain time frame, and a list of specific resources required for its accomplishment.

Examples of mini-projects include "Publish MNR's Annual Report to Congress," "Inventory all Documents Published by the MNR," "Evaluate the Role of Radio in the Transfer of Agricultural Technology," "Analyze the Extension Services in the Comayagua Region," "Analyze the Research Services in the Comayagua Region," etc. DCA staff were trained to design and present the mini-projects; they were designed and officially approved; and through the process, their implementation became mandatory.

The mini-project review process was done collectively, with all DCA staff members present. This mechanism allowed all personnel to become acquainted with the work of colleagues in other divisions, and helped develop team spirit. In addition, it gave the DCA Director the opportunity to provide subordinates with needed guidelines for the work to be accomplished during the year. Therefore, defining and approving mini-projects helped establish guidelines for and facilitate supervision and evaluation of the performance of DCA sub-units and their staff.

Outside DCA, putting the house in order originally meant arriving at a clear definition, at the agency level, of the technologies available for transfer to farmers. This step was crucial in determining the content of the messages that CTTA would help disseminate. DCA staff agronomists in Comayagua played an important catalytic role in discussions among personnel of the extension agencies where CTTA began implementation; San Luis, San Jeronimo, and El Rosario. Through these discussions, agency personnel reached consensus as to what technologies existed and could be transferred to farmers within the different agroecological sub-systems in the agencies (flatland, hillside, and highland).

The exercise encouraged and helped extensionists to update the technical guides that they used to direct their field work. Furthermore, the exercise highlighted the similarity of available technology for equivalent agroecological subsystems across agencies, thus showing that message content was not necessarily bound to individual agencies. For example, the planners found that land preparation recommendations, hence message content, for all Comayagua flatland and for all highland were the same. Findings were similar for recommendations to control certain pests of beans.

Initiating full project implementation meant initiating radio programming. The availability of radios in rural Honduras was well documented, hence project implementors believed it would be an excellent media through which to reach farmers, particularly those living in isolated areas.

The first radio programming focused on broadcasting motivational radio spots. They were produced to generate among farmers interest in the soon-to-be-implemented technology transfer interventions. Subsequently, a 15-minute, daily radio program, *La Milpa*, was initiated. *La Milpa* used a regular radio character, performing within a dramatic format, to discuss and recommend agricultural practices to farmers. Radio programs and individual messages were scheduled to coincide with the schedule of farmers' activities. Programming

was monitored and questions were asked about content and format during the second developmental investigation survey.

Based upon project findings, *La Milpa* was expanded to 30 minutes, the form in which messages were delivered was modified, and, for a time, the program was broadcast twice daily. The radio broadcasts dealt with all aspects of crop cultivation, from soil preparation through harvest.

With the initiation of radio activities, CTTA introduced within DCA the need to consult with its target audience and to adjust the form and content of messages based upon its needs and preferences. By doing so, CTTA stressed the importance of bottom-up planning, and of carrying out action research with minimal technical rigor. This required learning about and applying basic concepts of social research related to sampling, instrument design, and data gathering and analysis.

The radio spots mentioned above were designed after their content had been validated in the field. Field validation of different types of radio spots sought to identify level of attractiveness, level of involvement generated among the target audience, and their level of understanding by farmers. Degree of dramatization and the extent to which the messages were given through monologues or dialogues was found to affect farmer interest in and acceptance of the messages contained in the spots. Findings from the developmental investigation also were used to decide on which radio station it was best to broadcast the spots and the program, and what time would be best for the broadcasts.

The importance of action-oriented research was not limited to planning radio programming. It was also used in developing printed materials. Trials were conducted to anticipate the need for printed materials to support messages broadcast over radio. These trials led DCA staff to study and identify the most effective visual images that could be used in print materials (e.g. shadowed drawings versus silhouettes and caricatures versus realistic drawings). The trials also led DCA staff to try to learn if farmers preferred to read horizontal or vertical images and to learn how many images could be effectively presented in a sequence. All these aspects were considered to be important for determining the potential for farmer understanding of and retention of information disseminated through print media. Findings from developmental investigation surveys also generated important information that was used to prepare messages for dissemination through printed materials.

Conducting research in different areas and at different depths required personnel training. Training was initiated along with efforts to validate message content and form for radio spots and printed materials, and was continued throughout planning and execution of the developmental investigation survey.

DCA personnel were trained for the initial research activities related to message preparation. However, for subsequent research activities related to developmental investigation, training was expanded to include extension and research staff working in the three original CTTA agencies. Training included theoretical lectures and on-the-job training. Topics included sample size determination, the application of Bloom's taxonomy for the construction of an instrument intended to measure knowledge and understanding of given

technologies, questionnaire administration, ordering and coding responses, tallying frequencies, and basic understanding of results.

Among officials at the regional level, there was an impression that this training benefited DCA personnel more than extension agency personnel. Their impression was based on several factors.

- DCA staff were more fully exposed to the different contents of the training.
- DCA staff lead in conducting the mentioned research.
- What was originally conceived as on-the-job-training for extension personnel may have become specific, on-the-spot assistance provided by such personnel to an activity managed and controlled by DCA staff. For example, extensionists tallied frequencies but were not cognizant of how the data would be analyzed and used.[3]

Irrespective of who benefitted most from the training and who achieved greater mastery of the techniques taught, involving extensionists in data collection exposed them to a population of farmers that may have been larger than the one with which they normally were in contact. It also allowed them to play the role of listener rather than that of advisor. And finally, it helped show extensionists the advantages of consulting farmers before planning extension activities.

Data from mini-investigations to determine appropriate message content formed the basis of the earliest communication interventions. Later, data collected and analyzed during the second developmental investigation survey were used to help plan messages. The DCA analysis of the data identified several problems associated with practices of basic grain cultivators, including those related to seeds/varieties, insect and disease control, and planting distances. The investigation showed that:

- seed varieties used by farmers were not often the same as those that were recommended by research/extension,
- planting distances were not necessarily optimal,
- insect and disease control were not normally practiced when necessary, and
- farmers had difficulty distinguishing between different diseases and inputs related to either disease or insect control.

Detecting these problems was important for identifying what aspects of basic grain cultivation, especially for beans, needed to be emphasized by future extension activities and supported by communication strategies.

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[3] Project implementers have argued in this regard that extensionists were trained in data analysis and use and that regional officials may have a misconception about this training.

The analysis of data from mini-studies and from the second developmental investigation, and preparation for strategy development and communication interventions marked the end of the project initiation phase.

B. Expansion

After initiation, the challenge for CTTA was to expand to other agencies in Comayagua, to other regions in the country, and to broaden communication interventions to provide support to extension activities designed to serve crops in addition to beans. The major challenges in this phase included the following:

1. learning how to develop and accomplish project activities in the remaining seven agencies of the Comayagua pilot region,

2. learning how to initiate project activities in new regions where the MNR identified potential for and expressed interest in implementing CTTA approaches,

3. learning how to support technology transfer activities for corn and rice to be cultivated in the major cropping season of the Honduras agricultural cycle, and

4. learning how to maintain project efficiency and thus gain and/or increase project credibility.

Pressure to expand CTTA activities came from both the world-wide managers of CTTA and from regional-level MNR officials. World-wide managers of CTTA were committed to showing A.I.D./Washington and USAID/Tegucigalpa that major breakthroughs were being achieved in the field and that broad impact could be achieved efficiently through applying the CTTA approach. Regional officials were concerned that CTTA assistance was limited to a few agencies, while extension service delivery problems were generalized across the region; practical solutions that CTTA seemed to be achieving were urgently needed on a broader scale.

Regional-level pressures, however, were not limited to pressing for expansion. Local officials also were concerned about the type and content of support that CTTA should provide. Human resource development is highly valued in Honduras. Formal training, with lectures and often with diplomas of participation, is the most appreciated approach to human resource development.

Regional officials found that agricultural professionals often were unskilled in communication techniques. Agriculturalists tended to be preoccupied with the technical aspects of their work and found it difficult to communicate effectively with farmers, particularly if the farmers were from a different cultural context or had little formal education. Regional officials felt that training in oral and other communication techniques was needed to help extensionists deal with and overcome the social distance between themselves and their farmer clients. Therefore, CTTA was encouraged to train extensionists and agronomists in basic communication skills.

1. Decentralization

CTTA was faced with pressures to initiate project activities elsewhere, to deal with new cropping cycles and crops, and to train extensionists. To meet these challenges, project leadership adopted a decentralized implementation strategy for the Comayagua pilot site.

Decentralization involved redefining the roles to be played by DCA staff in Tegucigalpa and Comayagua and by extensionists in the conceptualizing and implementing communication interventions to support extension. During the initiation phase of project implementation, both DCA offices played the lead role in collecting and analyzing the data gathered from farmers and in designing the content of the radio program and supporting printed materials. These programs and materials were produced and paid for by DCA. During the expansion phase, DCA, particularly DCA Tegucigalpa, began to play an advisory, rather than a direct, role in the interventions. The long-term, expatriate communication advisor helped DCA to assume that role.

With this change, regional and agency extensionists became responsible for identifying extension priorities and for designing technology transfer mini-projects that would help serve those priorities. DCA also encouraged extension agencies and extensionists to develop and reproduce their own printed materials, even if they were of simple design. To support these changes, the CTTA advisor and DCA staff developed a manual on how to design technology transfer mini-projects and shared responsibility for training Comayagua extensionists in the process. The training included practical exercises which required participants to design one mini-project during the course.

Preparing a technology transfer mini-project included the following steps:

- clearly defining the project objectives (This generally implied changing farmers' knowledge and practices regarding an identified agricultural technology.);
- identifying and describing the types of messages to be delivered to farmers;
- identifying the means and media necessary to achieve the desired learning objectives;
- characterizing and organizing the steps to be followed in carrying out the process;
- preparing a schedule of the activities, based upon the corresponding agricultural cycle;
- listing the offices/persons with responsibility for conducting the project; and
- preparing a budget for implementing and evaluating the mini-project.

This process was intended to introduce to extension the management by objectives approach earlier introduced in DCA. The goal of the new management approach was to eliminate the existing extension methodology, which was based on accomplishing a vertical series of

activities which were not necessarily tied to the needs of the target audiences. These activities often included goals for making a certain number of farm visits, attending a certain number of group meetings with farmers, or establishing a certain number of demonstration plots. Often, they were implemented in a disconnected, isolated fashion, and did not cohesively support specific learning or adoption objectives.

Research projects also were developed as an extension of the technology transfer mini-projects. CTTA worked with researchers in Comayagua to adapt, at farm level, the technological recommendations being made by research centers and/or stations. Following the logic of the technology transfer mini-projects, the research projects were designed to accomplish a specific objective. Typically, they included indication of the number and location of trials to be conducted, a calendar of activities to be implemented, and a budget. Each research project was designed to directly involve farmers in the design, conduct, and analysis of results of the trials. This approach followed the farmer-focused philosophy that has guided CTTA.

As a result of the management by objective training, extensionists and researchers in the Comayagua Region planned their activities for the 1988-89 agricultural cycle using the technology transfer and research project philosophy (Annex IV).

By training extension workers and researchers to take a management by objective approach in designing technology transfer mini-projects and research projects, CTTA introduced a new tool for planning the overall regional extension program. The intent in planning new interventions was to generate changes that would improve the farmers' lives. Therefore, farmers became the target of the interventions, thus replacing the farm, the crop, or the technology as the focus of extension activities.

CTTA implementers, however, sought to go beyond this point. For CTTA, it was necessary for the farmers to be placed not only at the end, but also at the beginning of the change process. Until CTTA, project design tools had not given extensionists and researchers the necessary training to place the farmer at the starting point of future interventions. To achieve that, technicians needed to learn how to establish clear priorities that corresponded to research or technology transfer projects which served farmers, as identified and driven by a precise diagnosis of farmer needs. CTTA saw this diagnosis not as a desk exercise, but as a field activity in which farmers could take responsibility for describing their needs and establishing their priorities.

2. Taking the CTTA Message to other Regions

In addition to ensuring that farmers would provide the necessary inputs for planning extension and research programs, CTTA also had to respond to the MNR interest in expanding the project philosophy beyond the Comayagua Region. Several possible approaches of expansion were explored. The first was for CTTA to become involved with the team of MNR professionals that was attempting to design an extension methodology that would integrate experiences from a variety of development activities in Honduras.

Multiple development donors and projects within the MNR had led to the use of a multiplicity of research and extension approaches. Many MNR officials felt that, to the extent possible, these approaches had to be consolidated. CTTA became involved in the consolidation exercise. As a result, an integrated service delivery methodology was conceived. This methodology would affect both research and extension. It was planned to become the official service delivery methodology for all MNR projects and programs. It reflected some of the CTTA propositions regarding the needs to:

- identify and prioritize production systems within the geographical area of each extension agency;
- characterize farmer activities within geographical areas and production systems;
- prioritize the problems faced by farmers within the identified production systems;
- determine the extent to which available and disseminated technologies met farmers' needs;
- determine farmers' knowledge, attitudes, and practices regarding the disseminated technologies; and
- plan extension activities based on the technology transfer mini-project approach.

The process of designing and negotiating the research and technology transfer mini-projects, described earlier, became one of the core components of the integrated service delivery methodology. Approval of the methodology for generalized use implied for CTTA an indirect expansion to regions beyond Comayagua. CTTA Project expansion, however, did not stop there. Its implementers continued to look for other targets of opportunity. Contacts were developed in administrative regions where there was interest in modifying extension practices, and in other MNR departments which were planning new extension activities.

At the beginning of the expansion phase, the regions of La Esperanza, Olanchito, and Olancho in Southwestern, Northern, and Eastern-Central Honduras, respectively, were identified as having strong potential for adopting the CTTA methodology.

The enthusiasm of MNR officials in Olanchito encouraged CTTA implementers to plan to initiate project activities in that area in early 1989, based upon the pattern followed in Comayagua during the initiation phase. When this study of project institutionalization was being undertaken, the MNR also was contemplating the implementation of CTTA activities in Danli. For political reasons, high MNR officials view Danli as a target region for upcoming support to improve the quality of services provided to farmers. At the time of this study, CTTA implementers had visited Danli to explore the potential for project expansion.

On another front, informal contacts were made between the Director of DCA and a communication specialist working in the MNR General Directorate of Livestock, which is implementing a livestock project, PROFOGASA, funded by the InterAmerican Development Bank (IDB). PROFOGASA includes a communication component and the goal of

reaching a large, national audience with information related to livestock production. PROFOGASA's first focus was in northern and western Honduras.

The informal contacts led to an exchange of documents, further discussions, and a general presentation of CTTA principles and objectives to PROFOGASA. The presentation identified CTTA accomplishments to date, and included a description of the integrated service delivery methodology. As a result, and with DCA assistance, PROFOGASA has begun to use CTTA developmental investigation techniques to identify farmers' knowledge, attitudes, and practices regarding livestock production and management. The DCA professional who is taking the lead in helping PROFOGASA characterize livestock producers is the former director of communication research in the DCA regional office in Comayagua. He was promoted to a national level position in DCA, and is now applying knowledge learned through his involvement in the original CTTA pilot region.

C. Initiating Formative Evaluation

By the end of 1988, CTTA entered a third implementation phase -- formative evaluation. It is hard to predict how long this phase will last and the extent to which its institutionalization within the MNR will be possible, due to changing priorities which may result from uncertain project funding. However, in view of the expansion in Comayagua and elsewhere, it seemed appropriate for CTTA to begin evaluating the effectiveness of some of the ongoing activities in the Comayagua pilot region. The objective of this evaluation was to help adjust and improve project performance.

The radio program, *La Milpa*, became the object of the first assessment, which included coverage, program attractiveness, message comprehension, and technology adoption patterns. To conduct the formative evaluation, DCA staff in Comayagua once again used some of the field research techniques that were introduced by CTTA: sampling, questionnaire design, data gathering, and response coding.

CTTA implementers had long realized that DCA staff needed to develop new skills in communication research, including not only skills in data collection and processing, but also in data analysis. During the *La Milpa* evaluation, the CTTA expatriate advisor in communication trained DCA staff in statistical analysis. It is still too early, however, to assess the impact of this evaluation on the way the radio program is conducted.

V. Status of Accomplishments

As investigator of the institutionalization of CTTA Project processes in Honduras my impression is that the major CTTA contribution has been in providing a philosophy and introducing order to extension activities in Comayagua. This was achieved by proposing and implementing an ordered and rational extension/technology transfer approach in which the farmer is the focus of all efforts. CTTA helped create a structure and to develop necessary skills among communication and extension personnel to support and implement this methodology.

A. Status at the Agency Level

When I asked an extensionist what was CTTA's most important contribution to extension agency activities, he answered,

> *CTTA has organized us. It helped us get organized to implement activities such as surveys and diagnosis, and also to focus on human aspects. We have learned how to reach the farmer, and how to do transfer projects, flyers, and newsletters. Nothing of that existed before.*

1. New Planning Mechanisms and Priorities

That CTTA has brought order to extension activities is quite apparent at the extension agency level, where planning and implementing extension activities has become an integral part of the Unified Methodology for the Delivery of Services, which is summarized in Annex V.

As the diagram in Annex V illustrates, extensionists working under the Unified Methodology begin planning for activities in new communities by working from a broad to a narrow focus. They first consult secondary sources of information to learn about the geographical area covered by the agency in which they will work. They identify the communities where they will work based upon criteria including: potential productivity, concentration of farmer population, available infrastructure, and nutritional status. When communities are selected for action, the focus shifts to identifying and describing, as crop associations, the production systems commonly practiced. When the prevailing production systems have been identified, the extensionists focus on identifying the most important problems farmers have in producing their crops.

Manuals were developed to help extensionists work with farmers to identify and prioritize problems within their production systems, and demonstrations were prepared to show extensionists how farmer participation can be obtained through group interviews. The manuals and demonstrations provided essential support in helping extensionists develop the skills they needed to assume their new roles and meet their responsibilities under the new methodology.

The extensionists I interviewed generally spoke highly of the skill of DCA staff in managing

group interviews, and particularly of their ability to elicit information from farmers in a dynamic fashion. Some extensionists said the DCA demonstrations had helped them learn how to interview groups more efficiently, and in a less intimidating fashion than they had before.

During the second half of 1988, all the extensionists attached to the Comayagua extension agencies worked through the diagnostic phase of the Unified Methodology. Working through the diagnostic exercise helped the extensionists become better acquainted with their work areas.

My visits to the extension agencies examined in this study showed that important changes had taken place in the focus of extension activities since the initiation of CTTA activities. Table 2 gives an idea of the impact of those changes on extension activities in Ajuterique, Lajas, La Paz, and San Luis.

Table 2. Focus of extension activities before and after the diagnostic exercise.

	Before Diagnosis	After Diagnosis
Number of communities assisted	36	32
Estimated number of farmers in the communities	1882	1289
Estimated number of hectares planted to basic grains	3998	4783
Estimated number of hectares planted to basic grains where there is extension support	837	1523
Expected increments in the number of farmers who could directly benefit from extension activities	279	507

Table 2 shows that the number of target communities and the aggregate number of farmers potentially served by extension decreased between 1987 and 1988. However, this should not be interpreted as a deterioration of services. Despite the reductions, the target communities for extension activities after the diagnosis was completed specialized in basic grain cultivation. A comparison of old versus new target communities showed that the area dedicated to basic grain cultivation had increased 22%. In addition, the data in Table 2 show that extension coverage of the area planted to basic grains increased by 82% during the period observed. Therefore, extensionists now are focusing their activities on areas where a higher concentration of basic grain farmers can be found, and also have planned to reach a greater proportion of those farmers. If we assume that farmers cultivate an average of 3 ha, independently of whether they live in the old or in the new target communities, the number of basic grain producers benefitting from extension activities may have increased from 279 to 507 since 1987.

The decision of extension agencies to work in new target communities has several important implications.

1. By targeting communities, agencies can more easily comply with the MNR mandate to support subsistence farmers of basic grains.

2. By targeting communities and farmer groups the extension service cab reach more farmers, more efficiently while employing a constant level of effort. This approach would reduce service cost per farmer (travel, salary, demonstration inputs and supervision).

3. Targeting concentrated groups of farmers will help to more rapidly expand the extension service, and to more easily incorporate new beneficiaries into the extension network.

2. Technology Transfer Projects: A New Assistance Philosophy and the Use of Multiple Media

Before CTTA was implemented in Comayagua, extensionists planned and prioritized their work based upon a general diagnosis of their agency area. They also contributed to preparing a Regional Annual Operating Plan, which listed the activities that would be carried out to meet extension objectives.

This system was criticized as being too general and superficial, and for not always including farmer participation. The resulting extension objectives were expressed in generalities, and often were not designed to provide solutions to specific problems faced by farmers. For example, one former priority was to address "inadequate management of bean fields." But, no specific problems related to bean cultivation were indicated.

Although many of these criticisms were made by communication specialists, many extensionists I interviewed also said the criticisms were valid. The 1987 Annual Report for the Ajuterique Agency, for example described the deficiencies of the previous system for identifying priorities and planning interventions. The report reads,

> *When dealing with both the problems that had been defined as priorities and the solutions that existed to solve them, some obstacles were encountered. This was due to the fact that in some cases not enough guidance was provided (from the top) and that in others not enough knowledge of the problem existed. As a result, we are asking that a diagnosis per crop be done in order to know with some degree of certainty what specific problems are affecting the crops.*

The extensionists I interviewed also pointed out that the Regional Annual Operating Plan often required them to attain unrealistic goals given the normally available resources. For example, they often were asked to plan to reach more farmers and make more field visits than were within their implementation capabilities. Some extensionists described the Annual Operating Plans as both "imposed" and "inflated."

The technology transfer project methodology introduced by CTTA was generally described as a less vertical planning system than the previous system. It allows extensionists to plan activities around learning or research objectives. Some extensionists said that if Annual Operating Plans continue to include activities to be implemented in the field, those activities should be the ones associated with the technology transfer projects.

The technology transfer project methodology was introduced by CTTA before the Unified Methodology for the Delivery of Services was designed. As a result, the technology transfer projects prepared in 1988 did not always benefit from the results of the type of diagnosis (consulting both primary and secondary source of information) that is suggested by the Unified Methodology.

The specificity of the problems addressed by the 1988 technology transfer projects varies. Highly focused projects were prepared for rice, tomato, and bean cultivation. Somewhat less focused projects were prepared for corn cultivation. The degree of variation in focus appeared to be directly related to the level of knowledge that the author of the project had of the area in which he worked.

When information from recent surveys was available, and could be used in designing the projects, their learning objectives were specific, and their focus on farmer problems was clearly specified. The opposite was true when reliable, first-hand background information was not available. Realizing these facts has encouraged extensionists to incorporate the results of the 1988 farm surveys into 1989 planning, thus continuing to refine the focus of regional extension activities on specific learning objectives that have been defined through farmer participation.

Despite the lack of uniformity among 1988 technology transfer projects, one fact seems clear. Extensionists did not believe that they are conducting "business as usual." They said that their working procedures and that the target of their concerns and efforts have changed. Their target is no longer the farm, but is now the farmer.

While describing the differences between working procedures before and after CTTA, an extensionist said,

> *In the previous system, priorities were determined by the technician through visual observation or as a result of his experience in the field. In the current system, communities and farmers participate in expressing their problems and the needs of their crops.*

With reference to the new target of extension activities since CTTA began, another extensionist said,

> *We do not follow up the farm anymore. We follow up the farmer. We have to train the man.*

A new working philosophy is being adopted. For some extensionists in Comayagua, the

concern should no longer be in making sure that a farm produces or that certain yields are attained. The concern should be in making sure that farmers know what to do to either maintain or increase current production levels of priority crops.

Extensionists have positive opinions about the new working philosophy; they see the change and agree with it. But, they fear that it may not survive over time. It is a transition period and cross-signals remain. Although technology transfer projects are being designed, annual agency performance reports required by the region's Sectoral Planning Unit must be written in terms of quantitative activities at the farm level rather than in terms of qualitative changes for the farmer. One extensionist said,

> *The annual performance reports we do should not only include statistics on quotas, but should also include our accomplishments in training. We should deal with evaluative questions and not only with numbers. Until now the reports were no more than statistical reports.*

At the agency level, the CTTA Project has introduced the idea that technology transfer projects are communication strategies to satisfy the needs of farmers; basically, their information needs regarding priority problems. These strategies may be based on the use of different media. Messages not only need to be reinforced but they may be conveyed through different channels. Many of the 1988 technology transfer projects reviewed during this investigation specified the use of different media to reach farmers. Some of them even briefly referred to the concept of supportive media use.

Most of the extensionists I talked with said that something in writing needs to be left behind after a presentation or demonstration to farmers. They said that farmers need reference guidelines to consult when they are implementing the practices they have learned. Simple printed materials are a convenient and necessary medium for refreshing farmers' memories. In addition, extensionists said the details of carrying out a practice may be better conveyed graphically or in writing than orally.

Proximity to DCA/CTTA headquarters and personalities seemed to have played an important role in the use and (re)production of printed materials to support extension activities normally based on direct farmer contact. Some extensionists have expected DCA staff to provide them with printed materials to support their teaching activities. Other extensionists have designed and produced their own support materials.

Printed information about bean, corn, and rice cultivation was tested, produced, and distributed by DCA staff in Comayagua during the first two cropping seasons of full CTTA implementation. The situation changed in the third cropping season.

DCA did not (re)produce any instructive materials. Some extension agents waited for materials to be made available to them again, and did not plan to compensate for the changes in programming. Other agents drafted print materials, had them corrected and improved by DCA, and then reproduced them using a mimeograph machine at the local school. (See Annex VI for an example of materials that have been produced at the agency level.)

A third group of technicians, as a result of interaction with DCA technicians at the regional office in Comayagua, began to actively plan the use of instructive materials to support upcoming activities and have produced drafts of drawings and captions for review by DCA. The initiative of the second group of technicians described above is particularly commendable. They were praised as examples for the rest of region, and were rewarded for their work by being sent as representatives of the Region to the Annual National Extension Convention in December 1988. Support from DCA staff will be required to move groups of extension workers in the same direction.

The radio program, *La Milpa*, has supported extension work since its initiation. Due to the geographical coverage of the broadcasting station, however, radio support has been uneven. This study showed that the extension agencies furthest away from Comayagua benefitted less from the radio broadcasts than did those agencies close to the town.

La Milpa broadcast three categories of messages: those related to soil conservation, those related to specific crops, and general announcements. Technical guidelines from each agency in the region have provided the background information for program content. Crop-specific messages were tailored to coincide with farmer activities during the cropping season.

The programmer who chose the content and prepared the scripts for *La Milpa* said that the messages were written to be simple and repetitive to ensure that farmers received persistent exposure to the same ideas. He said, "Most of what we do is to try to hammer the messages home." He also said that the messages were not only crop, but also agency specific.

Occasionally, the extensionists I interviewed said that specific technical messages, in the form of specially designed spots, should be broadcast by radio to targeted audiences. However, extensionists said they most often use radio to announce meetings and activities. They saw radio as a practical and effective medium for disseminating timely messages that require immediate action from hard-to-reach audiences.

Some of the extensionists I interviewed asked for another course on how to prepare technology transfer projects. They said that designing technology transfer projects was difficult, and that it would be helpful to go through the exercise again in a workshop setting where they would be able to ask questions and learn from mistakes.

Both regional officials and extension agents expressed some concern about the follow-up of technology transfer projects. Some regional officials said that during the first year of implementation of the methodology, there were agencies where projects were defined too late in the agricultural cycle, thus precluding their full implementation/impact. These officials said that further analysis of the effectiveness of the methodology is necessary, which would allow for adopting the necessary corrective actions in the future. This point of view reflected a management concern about ensuring that the job gets done.

Extensionists were concerned about evaluating technology transfer projects. To them, evaluation is a mechanism through which they can improve their field activities. They

wanted to know if the new approach to training farmers was accomplishing its intended objectives, and if not, how it could be improved. The extensionists said they need to be trained in quick appraisal techniques that would allow them to assess their own work and to transmit the results to their supervisors.

3. Agricultural Research: A Developed Interest in Farmer Involvement

CTTA supports the belief that agricultural research priorities should be based on diagnosis of farmer needs. In the agencies I visited during this investigation, I found that the ongoing diagnoses of farmer needs were in fact being used to identify research priorities Examples of the types of issues identified through diagnosis of farmer needs for resolution through research included the following:

- identification of bean varieties for highland cultivation with multiple tolerance of poor soils and drought and pest resistance;
- development of improved water use and management techniques for onion growers who plant on sloping land and who are changing from furrow to bed cultivation;
- identification of corn varieties suitable for cultivation in irrigated fields where corn and sorghum have been intercropped; and
- identification of corn varieties with resistance to *Diplodia sp.*, commonly referred to as "maiz muerto."

Some people I interviewed also said that, in other agencies, CTTA-sponsored activities have helped detect the need to identify new varieties of cabbage resistant to *Xantomonas campestris* attacks.

The interrelationship between research and extension that has developed as a result of CTTA has been possible partially because, at the Comayagua regional level, the roles of researcher and extension agency director are interchangeable. The Comayagua policy of rotating personnel allows a person to move from the role of researcher to that of agency director, or vice-versa. It is therefore possible that the person who was agency director when audience analysis studies were completed might have rotated to become a researcher by the time that corresponding research projects were being designed. This situation has helped develop among agency personnel a sensitivity to farmer- extension- and research-related issues.

The concept that greater farmer participation in conducting farm research trials is needed to improve research activities is not widely followed in Comayagua. In some of the agencies I visited, on-farm research trials are seen as activities that must be funded, initiated, and controlled by extension. However, some breakthroughs are occurring. In one agency, varietal trials were conducted by farmers, who provided the labor and many of the necessary inputs. Farmers also were involved in follow-up activities. For these trials, researcher participation was limited to instructional issues. Experiences from these trials have been replicated in other research activities of the agency. Of the trials, the agency

director said,

> *Before it was the researcher who conducted the trials. . . producers were not trusted. Now, in this agency the farmers come up with the needed materials. . .they provide the sticks, the inputs, and do the plowing. Farmers take responsibility for the activities that must be accomplished. Researchers now limit their interventions to training the farmer. . .For farmers, this is challenging. For higher motivation and love, the trial has to be theirs. We started doing this in the highlands. Now we do it in the valley as well.*

B. Status at the Regional Level

1. Regional Director's Role: Innovator, Supporter, Arbitrator, or Executive

As earlier written, CTTA was from the beginning perceived by the Regional Director of Comayagua as providing the appropriate means through which to achieve his major objectives; improved service to farmers through increased extension coverage with better information, within an environment of limited resources. The Regional Director exhibited significant commitment to CTTA, as indicated by the following levels of support provided to the project by the regional office.

- The regional office provided office space for DCA/CTTA and seconded a full-time agronomist to the Comayagua DCA unit.

- The Director approved involvement of agency staff in the CTTA developmental investigation in the initial three project agencies.

- The Director participated in the team that designed the Unified Methodology for the Delivery of Services.

- The Director promoted the successful regional implementation of the diagnostic phase of the Unified Methodology. A team composed of the Regional Sub-Director, the Regional Extension Director, the Regional DCA Director visited agencies in the region during the diagnosis. Their visits demonstrated to extensionists the political commitment to the implementation of the Unified Methodology, provided guidance to facilitate the adoption of new working procedures, and provided moral support during a period of transition.

  The extensionists I interviewed said that the Regional Director of Comayagua strongly supported the activity. By December 1988, most of the agencies in the region were writing up the conclusions of the diagnosis. Agency personnel normally take annual leave late December. The Regional Director said that approval of annual leave would depend on submission to the Regional Office of final reports of the diagnostic exercise.

- The Director lobbied the Sectoral Planning Unit (DPS) to include human resource development objectives in the region's annual operating plans and performance

reports, which would in turn reflect the learning objectives included in the technology transfer projects designed by extensionists.

- The Director supported explanation and discussion of CTTA approaches and activities in extension forums such as the Annual National Extension Congress, where the CTTA methodology and accomplishments were accepted as an innovative regional approach to improving extension activities.

- The Director defended project objectives and approaches in meetings and presentations of regional activities to different audiences including donor agency representatives, public sector finance officers, and high level MNR officials.

The support provided for CTTA at the regional level was possible because the regional director coordinated and integrated in a productive manner the interests of different organizational and geographical units within the region. During the developmental investigation, some concern was expressed regarding the type of instruments (e.g., surveys) that were used to collect data, the amount of time that was necessary to process the data, and the competition with other extension activities that was represented by the need to collect, code, and process the data. There also was some concern about the necessary linkage between communication and extension; should communication play a limited or expanded role in extension process? The Director's role in defining the Unified Methodology probably helped clarify roles and reduce fears of overlapping responsibilities. Furthermore, it assured support from regional officials for implementing the new methodology.

The Regional Director's support for implementing CTTA implementation in Comayagua was so high that the announcement that he would be replaced in early 1989 raised questions about the project's future.

1. First, would the new director have an agenda different from that of his predecessor?

2. Would that agenda complement CTTA activities in Comayagua?

3. How would the new director reconcile the competing points of view regarding extension delivery to the region?

Some regional officials believed that CTTA activity in Comayagua had overbalanced 1987-1988 activities with data gathering and planning, and felt that too much time might have been devoted to developmental investigation and to the diagnoses suggested by the Unified Methodology. They looked forward to the new director as being more action-oriented than innovation driven, a doer rather than a thinker, and a person concerned with results and with completing a job. Therefore, they felt that the new director would be less inclined than his predecessor to support additional field research, data analysis, and planning.

In my judgement, an action-oriented director could only benefit CTTA, particularly in the project's current stage of implementation. The first, and most comprehensive audience analysis phase was completed in 1988. The analysis defined target communities within

agencies and provided significant information on farmer needs and concerns. Therefore, the anticipated approach of the new director in supporting implementation of more focused extension services is precisely what would be needed to increase the impact of the technology transfer projects on farmers, farm production, and productivity. If the new regional director supports the CTTA process, his action orientation could be very useful.

2. Communication in the Research-Extension-Farmer Relay

The regional research office in Comayagua provides information based upon which technical guidelines are developed for extensionists to use in serving farmers. The regional research office presently is inclined to present information in a generic form that extensionists can incorporate into their own field experiences. Researchers said the guidelines need to be expressed in terms of recommendation domains, which can be adjusted to serve local conditions. (See Annex VII for an example of the type of technical guidelines that are being generated by regional research staff.)

To use an input as an example, the technical guideline might indicate the type of input that is needed for a certain operation, but leave the decision as to the brand to be recommended to extensionists. Extensionists would then choose the brand to recommend based upon price, local availability, etc. Flexibility of choice is particularly important in Honduras because of the frequent scarcity of inputs.

Regional research officials said that the information used by CTTA to design messages, and the information broadcast by radio and disseminated through printed materials must incorporate the field expertise of extensionists. Research officials said they were not sure if CTTA had incorporated lessons learned by extensionists, or if the project was disseminating information in a relatively dogmatic form. It is difficult to judge whether or not this impression is a result of the degree of contact that the regional officials who were interviewed had with CTTA. Since CTTA was implemented, there have been three different regional research directors. The director interviewed for this evaluation had been at post for only a few months.

Independently of the validity of the applications discussed, two CTTA initiatives already discussed earlier should reduce the researchers' concerns.

1. CTTA, with full involvement from field agency staff, helped revise and update the technical guidelines before they were used to develop the messages that were disseminated.

2. CTTA introduced the technology transfer projects methodology, and by enforcing its use at the agency level, helped decentralize decision-making processes relating to the content of extension messages. Decentralization encouraged greater extensionist involvement in the design of the messages to be delivered to farmers. The technical guidelines were used as supporting documents, but extension experience was the guiding force in message development.

I feel that regional research officials need to be made aware of the implications of these CTTA initiatives. They need to know the objectives of the initiatives, and to understand that they complement researcher goals of offering generic solutions that can be adjusted to local conditions.

CTTA shares the following interests with regional research officials regarding the need to:

- eliminate the a "fixed recipe" approach to recommendations and
- provide recipients of agricultural information with more freedom of action.

However, whereas research officials are concerned with information relayed from researchers to extensionists, CTTA is most concerned with information relayed from extensionists to the farmers and from farmers to extensionists and researchers.[4] CTTA does not see that farmers should be confined or limited to the application of generalized recommendations. To the extent possible, farmers should be provided with options from which to choose the technologies most suited to their needs and resources. Adequate background information, such as cost implications, should be provided with each option. For example, bean farmers should be provided information about biological, cultural, and chemical controls for slugs so that they may decide which control is most appropriate to their needs, based upon their financial, labor, and other resources. CTTA has helped both research and extension to move in that direction. Several printed materials developed by DCA in 1987 followed this approach.

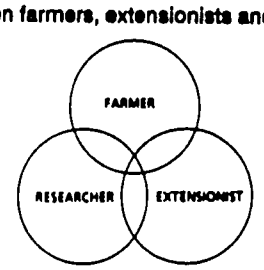
3. Using Radio to Support Extension Activities

The GOH provided funds to construct a radio production studio in Comayagua, where the program *La Milpa* is taped, and CTTA provided equipment for the studio. CTTA also trained the staff members who produce the program, and helped develop the basic skills needed to evaluate the impact of the program.

La Milpa is managed by a journalist who had about one year's experience directing news broadcasts before he began working for DCA. He said that CTTA helped him learn more about his job through in-service training, including how to

- write scripts,
- use appropriate idiomatic expressions,
- produce dramas rather than monologues,
- play roles using different voices,

[4] The CTTA-proposed relationship between farmers, extensionists and researchers is expressed in the following diagram.



- improve the use of interludes to help listeners distinguish between different sections of the program without losing the flow of the presentation, and
- to operate the new equipment.

He said that applying these learnings makes *La Milpa* less rigid, and more lively and dynamic, and thus more attractive to the target audience. To ensure that farmers understand the recommendations that are being disseminated, the radio messages are often repeated. In addition, a network of rural correspondents was being developed to generate a feeling of community participation and to feed forward to the radio program. Interest also has been generated by telling community opinion leaders about *La Milpa* and asking them to encourage community members to listen and participate. The manager said he now can train new staff in what he has learned, and the he could go to a new region and start a similar program. CTTA training and experience appears to have raised his confidence in his professional skills.

The *La Milpa* manager also helped design a study to determine *La Milpa's* acceptance by the target audience and the impact on farm practices of the messages that have been broadcast, which developed his skills in instrument design, interviewing, and data analysis. It is my opinion that if survey methodology skills are to be developed, there also is a need to emphasize the use of a sampling framework that would permit generalizations for the whole population, and to use pre-coded questionnaires when applicable.

C. Status at the National Level

Time limitations prevented me from an exhaustive analysis of the status of institutionalization at the national level. However, my general impression is that much work remains to be accomplished.

At the time of this study, the key indicators that CTTA was beginning to have an impact at the national level were:

- the expansion of the CTTA methodology to new extension regions,
- the involvement of CTTA in implementing the PRORIEGO Project,
- the support that CTTA was asked to provide for designing and implementing PROFOGASA extension activities, and
- the adoption of the Unified Methodology, which CTTA helped design, as the official MNR extension methodology.

These were significant accomplishments, particularly given the relatively limited time that has elapsed since full project implementation, the magnitude of effort necessary to have an impact at the agency and regional levels, and the considerable time and energy that were spent obtaining funding to avoid an early project termination. Nevertheless, the following issues need to be examined:

- the level of awareness that may exist among high officials relative to the meaning and implications of the CTTA approach,

- the mechanisms that must be designed and adopted to implement the Unified Methodology in old and new programs and projects that include extension activities, and

- the interest that might be generated in providing additional funding for the operation of DCA when CTTA ends.

1. Enough Awareness of a New Approach?

The Director of DCA said communication should be regarded as a technical discipline by MNR officials and technicians; the idea that DCA is only a media production unit must change. For the director, media are always related to a communication strategy that addresses the needs of the target audience. Audience analysis is necessary to identify the needs and the appropriate mix of media to convey the corresponding messages. Communication strategies need to be evaluated and adjusted over time to maximize impact.

The agency- and regional-level staff members that I interviewed understood this philosophy and were implementing it. They saw CTTA as supporting a new extension approach. As a result, they no longer saw DCA as a MNR division of journalists and draftsmen who write scripts, broadcast radio programs, produce drawings, and help develop institutional images.

These conceptual changes are only just beginning to occur at the national level. Some national officials associate CTTA with the new Unified Methodology. Others argue that many points of the CTTA operating methodology have existed and functioned in Honduras for some time. They said the methodology is not new, but only articulates previous activities differently, and more cohesively.

At the national level, there is little understanding of

- the importance of audience analysis,

- how the technology transfer projects function, and

- how the CTTA methodology depends upon and encourages farmer participation, focused extension activities, the use of learning objectives to guide extension work, and the use of complementary different media to convey messages.

However, CTTA is recognized for the innovative introduction and use of radio to support extension activities. Staff believe that there is an insufficient institutional capacity in radio and that CTTA is helping to fill the gap.

The old definition of communication as media production continues to prevail among national level staff, probably because the Unified Methodology was only recently adopted, and has received only limited exposure. CTTA should make more public presentations to

explain to higher MNR officials the work that has been accomplished in Comayagua. The National Extension Director said,

> *CTTA has been too protected, too closed in. It has been hard to sell the idea to General Directors, to the Department Heads. There must be more dissemination of objectives and results... The discussion at the National Extension Congress was insufficient. What was presented there was too public-relations oriented.*

An argument was made that this position was a result of the short-time that the National Extension Director had been at post when interviewed for this evaluation. However, the Regional Director of Comayagua had a similar opinion. He said,

> *There has not been enough exposure from people outside the region to our accomplishments in Comayagua. Higher authorities do not know what we have been doing here. We must let them know what we have achieved in the Region... This could help us get other funding sources interested in the project.*

2. Applying the Unified Methodology for the Delivery of Services

The official adoption of the Unified Methodology was an important first step, but more should be done to encourage its application. Training is essential to encouraging and assuring the successful application of the methodology. In Comayagua, for example, extensionists have undergone the following training:

- training to implement the diagnostic phase of the methodology, particularly to include farmer participation in the process;
- training to help them analyze the results of the diagnostic phase; and
- training to help them develop the technology transfer projects.

Extensionists from other regions may need training in:

- rapid appraisal techniques which would be used to evaluate the impact of technology transfer projects.
- audience analysis, and
- project design and evaluation.

Comayagua could serve as a training ground for extensionists from around the nation, and well-qualified Comayagua extensionists could also be sent to other regions to train their colleagues. To support these activities, training materials and working manuals would have to be prepared.

Lobbying similar to that which has occurred in Comayagua will be needed at the national level if learning objectives are to be included in annual operating plans and performance

reports. The MNR planning system likely will soon be revised, with the support of USAID/Tegucigalpa. This will provide an appropriate opportunity for incorporating human development issues in the national planning system.

Encouraging the use of the Unified Methodology in ongoing and new MNR initiatives will be an important challenge, particularly for initiatives that are supported by foreign donors. Funding agencies have their own agendas, which often may include the application of an extension methodology which may or may not complement the philosophy that is implicit in the MNR Unified Methodology. If MNR successfully applies the Unified Methodology to accomplishing on-going activities, it will be better able to insist on its application to new initiatives funded by outside donors.

3. Commitment of Funds

In Honduras, funds are allocated by the MNR by the Ministries of Planning and Finance. Funding decisions are generally made with little thought as to their impact on activities planned by the implementing ministries and offices. During the last two years, DCA has struggled to obtain the funds necessary to maintain and expand its programs, but the funding situation is growing worse. The 1989 revised budget, for example, represented only about 65% of funding requested for the year. By law, the 1990 budget request may not exceed the approved budget for 1989.

DCA has tried to develop an awareness of its work with CTTA and its positive impact on farmers among the ministry officials who control funding. For example, field visits for ministry staff were organized to extension agencies during which DCA sought to show that funding support for such activities can have quick and tangible results. At the time of this survey, it was difficult to determine the impact that such visits will have had on budget approvals. Many departmental budgets had been cut and competition between programs and projects was so intense that political leverage could become very important in achieving adequate funding.

A.I.D. provided much-needed support to DCA in its quest to obtain budget approvals during 1987-1989. A significant level of funds for its operation were from PL480 local currency funds, which are controlled jointly by the GOH and USAID. The interest that USAID project officers have had in CTTA and the personal contacts DCA staff have made decision-makers in the Ministries of Planning and Finance likely helped in negotiating this financial support. DCA, however, will continue to face funding shortfalls. The department should continue to communicate with and promote its programs with key officials who control its funding levels. Such contact should be with USAID and all international donors.

VI. Conclusions and Interpretation of Findings

A. Overview

Since its initiation, CTTA implementation has progressed through three phases: inception, expansion, and initiation of formative evaluation, during each of which it advanced toward meeting its institutionalization objectives. With project assistance, communication and extension working procedures and methods have begun to be modified and improved both within and outside the pilot region. The organizational structure necessary to implement the CTTA methodology is in place, DCA staff and extension personnel in Comayagua have developed basic skills that have allowed them to implement the CTTA methodology, and policies that support approaches and working procedures introduced by CTTA have been enacted. However, much remains to be done toward consolidating the process, including completion of a full cycle of diagnosis, planning, evaluation, revision at the agency level, and reinforcing the policies enacted in support of the methodology.

In Comayagua, CTTA has been generally successful in introducing an extension methodology based on audience analysis that includes farmer participation, human resource development concepts, multiple media use, testing of instructional materials, and management by objectives. Currently, the emphasis is upon focusing extension activities on given learning objectives, which represents an important change with respect to earlier working systems and procedures. Before CTTA, extension activities were planned vertically, with emphasis on farms and not farmers; addressed physical outputs rather than learning objectives; and were based primarily on personal interaction with farmers.

CTTA has initiated activities that provide feedback to researchers at the agency level, and in some cases this feedback has been employed in developing a research agenda. CTTA has the potential of leading research and extension toward identifying and disseminating technological options that would offer choices of and clearly specify the different cost options available to producers. This approach has good potential for impact, given the type of agriculture that is practiced by the target clientele, and the limited financial resources usually available to them.

Institutionalization accomplishments are most obvious at the agency level. Successes include:

- strong regional support for project activities from September 1986 through December 1988. (However, future support may very well depend on the agenda of the new regional director.);
- CTTA/DCA expansion into new regions;
- adoption of a service delivery methodology for which CTTA is partially responsible, and which includes a CTTA approach to extension, by the government as its service delivery methodology.

However, much work is necessary to ensure that the methodology will be universally and correctly adopted. High, national level MNR officials must be helped to understand the meaning and implications of the new service delivery approach.

Despite the need to continue consolidating the accomplishments to date, the consensus is that CTTA has helped organize and systematize communication/extension activities. However, given Honduras' financial difficulties, it would be unrealistic to expect the GOH to commit its funds to support the current DCA staff levels to continue project activities after external funding ends. It would be even less realistic to expect the GOH to commit funds to increase staffing in support of expanding activities to new extension regions. The GOH will likely continue to rely heavily on external funding to support DCA activities, including PL480 monies or contributions from donor agencies such as the InterAmerican Development Bank.

B. Explanations for the Observed Accomplishments

Several factors help explain why CTTA has done so much in such a short time. Extension and MNR staff identified the following reasons for CTTA success:

1. Agricultural services to farmers need to be improved. In Honduras, it would have been hard to implement a purely experimental extension project. Effective, immediate action is needed that will lead rapidly to achieving tangible results. CTTA was able to respond to those priorities.

2. The Comayagua extension region was well chosen for the CTTA pilot project. The commitment of the Regional Director to CTTA enhanced its effectiveness, there was regional interest in increasing coverage and contact with farmer clientele, and there was interest in improving the MNR institutional image.

3. The Regional Director adopted a democratic management style which allowed different political interests to be expressed, but also avoided conflict and confrontation. Differences of opinion were generally productively resolved.

4. CTTA was presented as a project that would support extension, not as an activity that would eliminate existing priorities. CTTA's goal was to help extensionists serve their priorities.

5. The Comayagua region included several newly organized agencies, which helped CTTA have immediate, high level influence in their approach to serving farmers. Collective farming was common in one agency, which reinforced the coverage of farmers and spread of technologies. Rice was one of the chosen focus crops, which put DCA/CTTA staff in immediate contact with farmers who were not as technologically advanced as their neighbors, but who had significant problems with easily identifiable and adoptable solutions that could be addressed through extension. Therefore, CTTA would immediately apply its methodology, with good results, and therefore develop the confidence of MNR staff in the CTTA approach.

6. Many extensionists in the region were recent graduates and were interested in introducing innovations and in developing professional reputations.

7. The CTTA approach was introduced gradually. Implementation followed an additive model. First it dealt with an important need at the most basic element of the service structure -- it helped extensionists improve their individual planning. While that need was being satisfied, extensionists were introduced to the concept of audience analysis and of planning based on those results. What were originally extensionist-focused interventions become regionally-focused interventions. The technology transfer project methodology was introduced, and then followed by the Unified Methodology for the Delivery of Services.

8. As CTTA moved from extensionist-focused to regionally-focused interventions, it involved all the important MNR officials in the region. For example, the Regional Extension Director helped design the Unified Methodology.

9. CTTA showed signs of adaptiveness. Regional officials expressed concern that the somewhat exhaustive developmental investigation that was carried out in the first three extension agencies diverted too much time from extension responsibilities. The Unified Methodology proposed a simplified way of collecting data for the audience analysis, which was used in other agencies and in regions other than Comayagua.

10. The first changes were made to field-level extension practices, and then grew to include policies supported by the regional and national levels. A bottom-up, rather than a top-down, approach to change was adopted.

11. Rather than following a narrow and rigid path, CTTA examined all possible targets of opportunity within the existing setting. It identified areas of potential success and designed its activities to serve them.

12. The expatriate advisor provided strong leadership, and was willing to commit his own personal time to implementing the project. This generated confidence in him, and also provided significant visibility to the CTTA Project.

13. There was mutual professional identification between the long-term expatriate advisor in communication and DCA staff. In fact, the advisor played an executive as well as an advisory role. He became an additional member of the national team rather than remaining as an expatriate expert.

C. Actions to Consolidate What Has Been Done

Several actions are necessary to consolidate what has been accomplished to date, including the following:

1. CTTA needs more national-level exposure. MNR staff should travel to Comayagua from national offices and other regions to observe what has been accomplished in Comayagua. CTTA should lead in explaining the Unified Methodology to potential

stakeholders outside of Comayagua, not only to MNR officials, but also to GOH staff who focus on planning and human resource development.

2. CTTA should take advantage of the future reorganization of the MNR planning system to include its methodology and approaches.

3. CTTA should train extensionists from other regions in the technology transfer project approach. Given the high turnover of MNR extension personnel, the Human Resources Division should develop central capacity for providing such training, especially after external funding ends.

4. CTTA should train extensionists in Comayagua and elsewhere in quick appraisal techniques with which to evaluate the impact of the technology transfer projects.

5. CTTA should continue to help DCA staff develop their research skills, and also to introduce the concept of pre-coded questionnaires for use in future surveys.

Annex I
Scope of Work
Evaluation of the Institutionalization Activities of the CTTA Project

1. Introduction

The CTTA Project proposes the use of an innovative approach to support technology transfer to farmers. This approach, which is based on social marketing techniques, is characterized by:

1. the analysis of farmer needs and the identification of communication channels used by farmers to become informed of available agricultural technologies;

2. the use of multiple media to transfer technologies to farmers, and

3. the permanent monitoring and frequent evaluation of activities to determine the efficiency of the media utilized.

The intent of the CTTA Project is twofold. 1) to determine the efficiency and cost-effectiveness of such an approach, and 2) to institutionalize it. Only through institutionalization would it be possible to ensure that activities initiated by the project can be sustained and outlive the project's funding period. The institutionalization should take place within, but not be limited to, the project's pilot region.

2. Objective

The purpose of this evaluation is to assess the progress that has been made with respect to the institutionalization of the approach proposed by the CTTA Project. Through this evaluation, the factors that have contributed to observed accomplishments must be identified. By the same token, the factors that have hindered progress toward the overall institutionalization objectives must also de detected.

The results of this evaluation will be used in planning the initiation of institutionalization activities in other countries where the CTTA Project can be implemented.

3. Specific Aspects of Interest

a. What aspects of the CTTA approach have received attention in the institutionalization process?

b. How has motivation for acceptance and commitment to change have been generated and/or raised in order to allow for project inception to take place?

c. What has been the political will and absorptive capacity, both technically and

financially, within and outside DCA to accept and implement the CTTA approach?

d. What has been the attitude within the concerned agencies, the pilot region and the national level toward the extension approach proposed by CTTA? To what extent is this approach satisfying MNR's (extension) philosophy, needs and concerns? What has been CTTA's contribution to the definition of MNR's Unified Extension Methodology?

e. To what extent has CTTA had access to agricultural technologies proven to be economically feasible for farmers?

f. What aspects of the existing extension system have been supported or modified as a result of the effort to institutionalize the CTTA approach? What evidence is there of lasting change?

g. What awareness and interest has been developed within concerned implementing agencies about the potential of mass media such as the radio and printed materials to support traditional extension activities?

h. What training has been given to DCA staff at the national and regional level to implement CTTA approaches? How effective has this training been in laying the ground work for CTTA activities within and outside the pilot region? How has this training been followed up?

i. What capacity has been developed within DCA to (better) manage an extension approach based on the use of multiple media? What technical expertise has been developed to produce more and better quality media?

j. What training has been given to staff outside DCA to implement the CTTA approach? How effective has this training been in laying the basis for CTTA activities at the agency level? How has this training been followed up?

k. To what extent have working procedures at the agency, regional and national level begun to be modified to incorporate changes proposed by the CTTA Project activities and approaches? What do those changes consist of and how does the new situation differ from the previous one?

l. What incentive system for change and the adoption of CTTA proposed changes at the agency, regional, and national levels exists within the MNR structure? To what extent has any incentive system been used to encourage adoption of the CTTA approach?

m. What projects and programs at the regional and national levels have showed interest and how responsive has CTTA staff been in satisfying those interests?

n. Within current budgetary GOH constraints, what financial support for CTTA-

related activities can be expected and has this support been in fact given?

o. What linkages between extension and research has CTTA strengthened at the agency, regional, and national levels? To what extent has the farmer involvement in farm research proposed by CTTA been adopted?

4. Methodology

The evaluation calls for an analysis of the situation at the agency, regional, and national levels. It also calls for an analysis that would take into account two institutional contexts: within and outside the major implanting unit, DCA.

The data will be collected mainly through interviews with concerned parties at each one of the levels and institutional contexts indicated.

A sample of agencies within the pilot region will be selected. The selection will be based on one criterion: degree of progress of institutionalization activities. Two types of agencies should be visited; agencies where higher progress has been achieved, and agencies where the opposite situation has occurred. The same approach will be used for regions other than Comayagua.

Annex II
Persons Interviewed

National Level

Justo Torres, National Director, Agricultural Extension
Misael Bueso, Director, MNR Agricultural Communication Department

Regional Level

Miguel Angel Soler, former Director, MNR Central-Western Region
Carlos Guevara, Sub-Director, MNR Central-Western Region
Ildefonso Garcia, Regional Coordinator, *La Milpa*
Dennis Gomez, Media Production, Central-Western Region
Bernardino Padilla, Extension Sub-Director, MNR Central-Western Region
Luis Felipe Suazo, Director of Research, MNR Central-Western Region

Agency Level

Enrique Mejia, Research Head, Ajuterique Extension Agency
German Alvarado, Extensionist, Extension Agency Ajuterique
Jorge Felix Lopez, Head, San Luis Extension Agency
Carlos Amaya, Research Head, San Luis Extension Agency
Luis Argueta, Extension Head, San Luis Extension Agency

Sergio Isaula, Extensionist, Las Lajas Extension Agency
Rodimiro Zelaya, Extension Head, Taulabe Extension Agency
Julio Cesar Lopez, Extensionist, Taulabe Extension Agency
Marlene Walterina Diaz, Promoter, Taulabe Extension Agency
Guadalupe Meza, Extensionist, La Paz Extension Agency

Annex III
Interview Guidelines

I. **Preguntas Guia Para Personal de la Region de Comayagua**

1. Cuanto tiempo tiene usted de desempenarse en el cargo?

2. Cuales han sido los aspectos mas sobresalientes del servicio de extension en Camayagua desde que ud. esta en este cargo?

3. Cuales han sido los aspectos mas debiles?

4. Que objetivos basicos han guido la labor que usted ha estado realizando desde que asumio el puesto?

5. Fue usted consultado acerca de la insercion del CTTA en la Regional? Si lo fue, cual fue su opinion inicial acerca de la necesidad del proyecto?

6. En que medida el CTTA ha propuesto un sistema de trabajo que apoye los objetivos que ustedes persiguen en el area de extension?

7. Que aspectos del sistema de extension de la Regional son los que han recibido mayor apoyo?

8. Son esos los aspectos donde mas apoyo se necesitaba? Porque?

9. En que distingue el sistema de planificacion de actividades propuesto por el CTTA a los sistemas de planificacion que han operado en la Regional? Por ejemplo, los planes a corto y mediano plazo, los POAs? Cual sistema prefiere? Porque?

10. Que piensa de los proyectos de transferencia? Que desventajas y ventajas tiene su elbaoracion y ejecucion?

11. En que medida la metologia unificado de extension introduce cambios en el sistema de trabajo de la regional? En que consisten esos cambios?

12. Que papel jugar la comunicacion en las actividades de (extension) de la regional?

13. Cual es su opinion acerca del Programa La Milpa? Cuales son sus aspectos positivos y sus aspectos negativos?

14. Cual es su opinion acerca de los materiales impresos que se han producido en conexion con el CTTA?

15. Deberia la regional asumir los costos de la Milpa y de la reproduccion de los materiales graficos/impresos? Porque?

II. Guia de Entrevista para el Personal de las Agencias

1. Como esta constituir esta agencia?

2. Cuanto tiempo tiene el personal de trabajar en esta agencia?

3. Conoce el Proyecto CTTA?

4. Como lo sobra, ese proyecto ....cio en la primavera de 1987. Desde entonces, es que ese proyecto ha contribuido a la realizacion de las actividades que ejecuta la agencia? En que ha consistido a su ... esa contribucion?

5. Conoce usted la metodologia unificada de entrega de servicios?

6. En que medida a traves de esa metodologia se reproduce o modifica la manera en que se ha venido trabajando en la agencia?

7. Los mecanismos de diagnostico para la identificacion y ...de sistemas de produccion en que se asemejan o venian a los sistemas de diagnostico usados en anos anteriores? Sobretodo, antes del CTTA? Que sistema de diagnostico prefiere? Porque lo prefiere?

8. Conoce usted los proyectos de transferencia de tecnologia?

9. Se han prepardo proyectos de transferencia de tecnologia en esta agencia? Con relacion a que cultivos? Con relacion a que aspectos de esos cultivos?

10. En que se ... varian esos proyectos de la manera en que ...se realizaban anteriormente las actividades de extension de la agencia?

11. Estan los proyectos de transferencia planificados siendo ejecutados? Si lo estan, que apoyo han recibido del CTTA y de la Regional para realizarlos? Se no lo estan, a que se debe que no se ejecuten?

12. Se usan en las actividades de transferencia con los agricultores materiales impresos? De que materiales empresos se trata? Como hacen para reproducirlos? Como hacen para distribuirlos? Que uso y aceptacion tienen? Que apoyo han recibido del CTTA en la concepcion, reproduccion, distribucion de esos materiales?

13. En que medida el programa radial La Milpa se escucha en la zona?

14. En que medida les ayuda el programa a realizar la tarea de extension que se les ha encomendado?

15. Que cambios observado en las actividades de investigacion desde que se recibe la colaboracion del CTTA?

16. En que aspectos les gustaria recibir apoyo del Proyecto CTTA?

17. Si el Proyecto CTTA .....pronto, en que aspectos del Proyecto se deberia hacer en fino? Cuales son las areas de trabajo .....por el proyecto que requieran apoyo adicional?

Annex IV
List of Technology Transfer Projects Prepared in 1988 by Extension Agencies Visited During Institutionalization Study

1. **Ajuterique**

   Uso y Manejo de Agro-Quimicos
   Uso y Manejo del Agua en Tomate
   Bajos Rendimientos de Maiz
   Mejoramiento de la Vivienda
   Mejoramiento de la Dieta Alimenticia

2. **Lajas**

   Frijoles
   Alimentacion y Nutricion
   Mejoramiento de Vivienda

3. **La Paz**

   Lotes Demostrativos de Maiz, Variedades HB-104, HA-502
   Lotes Demostrativos de Maiz, Variedad Guayape B-102
   Mejoramiento de la Dieta Alimenticia

4. **San Luis**

   Cultivo de Arroz
   Conservacion de Suelos
   Nutricion

5. **Taulabe**

   Cultivo de Maiz
   Tecnologia Apropiada para el Cultivo del Frijol
   Post-Cosecha
   Conservacion de Suelos y Aguas

Annex V
Unified Methodology for the Delivery of Services

Metodología para la Entrega de Servicios de la S.R.N.			
Diagnóstico	**Programación**	**Ejecución**	**Evaluación**
■ Recopilar y analizar información de fuentes secundarias ■ Identificar y priorizar áreas especificas de trabajo ■ Identificar y priorizar sistemas de producción y problemas económicos ■ Situación a nivel de productores por sistema priorizado ■ Determinar oferta tecnológica disponible ■ Contraste de oferta tecnológica disponible con problemas priorizados	■ Elaboración de proyectos transferencia: - Agrícola - Pecuaria - Social ■ Investigación: - En fincas de productores - En centros experimentales ■ Aprobación de proyectos ■ Consolidación de proyectos	■ Participación de los productores ■ Proyectos de transferencia agrícola, pecuaria y social ■ Ensayos en fincas de agricultores ■ Experimentos en estaciones experimentales	■ Formativa ■ Sumativa
Supervisión y Capacitación			