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**COMMUNICATION FOR TECHNOLOGY TRANSFER IN AGRICULTURE PROJECT
(AID/S&T 936-5826)**

CTTA

Semiannual Progress Report

April - September 1990

This report summarizes the activities and plans completed during this period. Contributors include:

PRIME CONTRACTOR:

Academy for Educational Development

SUBCONTRACTOR:

Applied Communication Technology, Inc.

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I. CTTA PROJECT ISSUES

A CTTA Project goal is to institutionalize the capacity to plan, implement, and evaluate communication strategies. Institutionalization enables national organizations to carry out the program independently.

CTTA's approach to institutionalization is premised on

- use of local resources -- personnel, facilities and equipment;
- marginally increased costs related to technology transfer because it "valorizes" existing costs of government agencies; and
- the application of highly effective techniques for training researchers and extensionists, facilitating and encouraging farmer participation, and changing behaviors/practices.

This approach, and its successes in communicating with farmers, have encouraged governments to adopt the CTTA process as national extension service policy. The approach gains in sustainability once the CTTA process is refined in a pilot area, staff are trained, and the process is adopted as national policy.

CTTA experiences in each pilot country (Honduras, Peru, Indonesia, Jordan) represent impressive achievements toward institutionalization. These achievements are demonstrated by the dedication of local farmers, extension workers, and researchers to CTTA processes and aspirations; nationally-

supported expansion of CTTA-type interventions to areas beyond the pilot regions, and summative evaluation results. Following are highlights from programs in Honduras and Peru. (The Indonesia and Jordan initiatives closed earlier.)

A. Honduras

In Honduras, the lead pilot country, CTTA is credited for helping to revitalize extension and reorient national policy relative to technology transfer in agriculture. Major accomplishments were:

- national adoption and ongoing implementation of the *Unified Methodology for the Delivery of [Extension] Services*, which is largely based upon CTTA processes;
- implementation of CTTA, through the Unified Methodology, in all extension districts;
- remotivating, through training, extension workers to serve farmers better and more efficiently; and
- helping farmers, through such mechanisms as the Rural Correspondent Network, to participate in and influence extension and research actions relative to farmer needs.

Honduras Pilot Project Institutionalization, by Orlando Hernández Alcerro, credits CTTA with having

... introduced significant changes in extension acti-

vities 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.

As evidence, Hernández offers the following quotes from extensionists:

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.

and,

CTTA has organized us [extensionists]. 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 sort existed before.

B. Peru

In Peru, CTTA-initiated activities in Huaraz, the pilot area, have continued

throughout the project life, albeit adapted to changing political and economic situations. Extension workers have been trained and helped to implement CTTA-type programs at ten extension sites around the nation. And, two national organizations, INIAA (National Institute for Agricultural and Agroindustrial Research), a government-funded organization, and FUNDEAGRO (Foundation for Agricultural Development), a private sector organization, are adopting CTTA processes.

In *Questions and Answers about the CTTA Project*, José Ignacio Mata writes that institutionalization began by developing credibility with the farmers through providing them with the kind of technical assistance they needed. With credibility, farmer demand grew for project-provided information. This demand convinced regional-level technicians that farmers respected and responded to the process, which, in turn, persuaded national-level managers that the methodology worked, was technically manageable with resources (budget, personnel, and facilities) available at the regional level, and might be broadly and successfully implemented.

As a result, the CTTA advisors were asked to train extensionists from ten sites around the nation and to help them implement CTTA-based programs. By project end, developmental investigations had been conducted at each site, technology transfer strategies had been developed and reviewed by CTTA advisors, budgets had been approved for each site, and programs were at various stages of implementation throughout the country.

As an example of CTTA's credibility and utility at the national level, the independently commissioned *Midterm Evaluation of the CTTA Project* quotes INIAA's technical director as saying:

INIAA's experience was that under T&V [Training and Visit] methods, only 5-10 percent of farmers could be reached directly, but with CTTA you can reach 30-50 percent.

C. Summative Evaluation

CTTA used multi-channel communication strategies to support MNR extension activities. The strategies were designed to transfer technology to farmers who grow two basic grains -- maize and rice -- and who practice soil conservation.

CTTA, through a subcontract with Applied Communication Technology, Inc., carried out a longitudinal investigation in four of the ten extension agencies in the pilot area. Each district was selected to represent different production systems in Comayagua. Basic grain growers were selected randomly from each district. The investigation was conducted from 1987 to 1989 to study the extent to which project support to extension increased farmers' knowledge, improved their practices, and increased yields. It was hypothesized:

- that project activities would increase coverage and intensity of exposure to technological information,

- that increased coverage would increase knowledge,
- that increased knowledge would improve practices, and
- that improved practices would increase yields.

The evaluation studies show that CTTA interventions, which use intense and innovative exposure to agricultural information, have greatest impact at first on knowledge relating to practices that most directly affect yields.

The following sections highlight the results of the evaluation that are available to date.

1. Influence of Channel on Farmer Exposure to Messages

Results of summative evaluation findings in Honduras indicate that, for all farmers investigated, independent of the crop cultivated, CTTA-supported extension activities significantly increased the level of exposure of farmers to new information about farming practices.

In Honduras, extensionists working with CTTA used a multi-channel communication strategy to deliver and reinforce messages to farmers. The evaluation found that the increase in the percentage of farmers exposed to the information varied according to the communication channel used:

Communication Channel	Farmer Exposure to Agricultural Messages (%)	
	1987	1989
Interpersonal contact activities	14	41
Print media	13	29
Radio	10	35

These results demonstrate the increased coverage and effectiveness of the Honduran extension service in providing information on new technologies and practices to Comayagua farmers.

2. Rice Study

Findings of a longitudinal investigation conducted in Comayagua to quantify the impact of CTTA interventions show that rice growers knew six times more about land preparation and fertilization recommendations in 1989 than they did in 1987, when the program began. Overall, exposure tripled, knowledge increased by about two-thirds, and adoption of recommended practices increased 17 percent.

The communication strategy broke down recommendations for growing rice to correspond with key aspects of production: land preparation; seed varieties; planting density; fertilization; insect, disease, and weed control; harvest; and storage. While rice grower knowledge of the recommendations corresponding to all phases of production increased, the most significant increases in knowledge were in land preparation and fertilization.

The evaluation data indicate that the

knowledge increase resulted from increased exposure to extension information and improved and more intense contact with the multiple media channels employed by the project.

3. Maize Study

Findings of the longitudinal study related to the impact of CTTA interventions on maize production indicated that the intensity of exposure to technological information tripled; the level of knowledge quadrupled, adoption of recommended practices increased by about seven percent, and yields increased by almost one fourth.

4. Soil Conservation Study

CTTA works not only in agricultural production, but also in natural resources management. An analysis of the impact of CTTA interventions on farmer practices related to soil conservation indicated that exposure had increased by half, that awareness and knowledge had risen dramatically, and that use of the technologies had increased appreciably. An examination of the relationships among knowledge, attitudes, and practice (KAP) showed that knowledge accounted for 60 percent of the variance in practice, and that knowledge and

exposure were very strongly related -- each independently could predict roughly equal amounts of variance in practice.

D. Next Steps

CTTA began as a pilot effort to develop a cost-effective, institutionally sustainable system that integrates the research and extension systems with farmers in a successful technology transfer system. Through work in the four pilot areas, the project has evolved to the point where, as the summative evaluation documents, the CTTA program can reorient research, revitalize extension, and thus, truly serve farmers. The next steps, therefore, are:

1. to complete institutionalization of the CTTA system in pilot countries. This may include helping national staff who participated in CTTA to train their colleagues in extension offices beyond the pilot area and, if funding is available, producing a study on how to carry out institutionalization.
2. to complete negotiations with A.I.D./Peru for a buy-in from the TTA Project for providing CTTA services to the private sector agricultural chambers (Organización Nacional de Agricultura [ONA]). This represents a new institutionalization base for CTTA -- working directly with private sector groups.
3. to complete negotiations with A.I.D./ROCAP to provide support in environmental information to the Regional Environment and National Resources Management Project (RENARM). This is a new initiative for CTTA, intended to demonstrate the relevance of the CTTA approach to natural resources management.
4. to disseminate to A.I.D./Washington and A.I.D. Missions information about the CTTA approach and process, emphasizing the important, complementary assistance CTTA can provide to ongoing agricultural production projects.
5. to provide short-term technical assistance to interested A.I.D. Missions in the implementation of the CTTA process for improved technology transfer.
6. to disseminate to other donors, such as World Bank and the InterAmerican Development Bank, information about the CTTA approach and process, and to facilitate, through short-term technical assistance and other means, their understanding of and adoption of lessons learned through implementing the process.

II. SUMMARY OF CTTA PROJECT ACTIVITIES

A. Honduras

A.I.D.-funded CTTA Project activities in Honduras concluded on 31 May, although some Academy for Educational Development-financed activities have continued since then. Activities during the reporting period focused on institutionalization, training, ongoing communication and extension programs, and summative evaluation. In addition, Dr. Terry Hardt, A.I.D./S&T/RD and CTTA CTO, visited Honduras to review project accomplishments and discuss with USAID/Honduras a possible extension of funding to support further project-related activities.

B. Indonesia

CTTA Project activities in Indonesia concluded on 15 April 1990. Details of final activities are included in the CTTA Semiannual Report dated October 1989 - March 1990. In addition, a final report of all project activities was completed and submitted to A.I.D./Washington and USAID/Indonesia.

C. Peru

A.I.D.-funded CTTA Project activities in Peru concluded on 30 September 1990. Activities during the reporting period focused on helping INIAA to implement CTTA in selected agricultural experiment stations, documenting the CTTA methodology as it was applied in Peru, evaluating CTTA impact, providing continuing support to FUNDEAGRO; preparing proposals for future CTTA activity in Peru; and transferring CTTA-provided equipment to INIAA and preparing the final report of pilot project accomplishments.

D. Special Activities

Jim Kelly and Gordon Appleby conducted a mid-term evaluation of the A.I.D.-funded Sahel Regional Institutions Project (No. 625-0975). The evaluation focused on donor-Sahelian collaboration and the two secretariats that are responsible for fostering such collaboration. Among many suggestions, the evaluation team made recommendations for improving networking among Sahelian nations and related donor

programs; compiling, managing, and disseminating through Sahelian networks; conducting policy analysis, formulating strategies, and mobilizing resources; and initiating and maintaining a region-wide inventory of research activities.

E. Documentation and Diffusion

Adjusting and Transferring Agricultural Technologies: Three Examples from Perú, José Ignacio Mata.

CTTA: A Practical Experience in Agriculture, Revista del INIAA, Peru, October 1990.

CTTA Indonesia Integrated Final Report, Indonesia, April 1990.

El Cultivo del Maíz, Una Guía Técnica para Extensionistas, Secretaría de Recursos Naturales, Dir. Agropecuaria, May 1990, in Spanish.

End of Tour Report, Honduras, Milton Muñoz, May 1990.

Final Report on CTTA Support to the PRORIEGO Project, Milton Muñoz, May 1990.

Final Report on the Consultancy as Assistant to the Honduras Field Director, Bernardo Peña, September 15, 1989 to May 31, 1990, in Spanish.

Guía para la Elaboración de Publicaciones Agrícolas, Secretaría de Recursos Naturales, 1990, in Spanish.

Increases in Yields and Farmer Income as a Result of CTTA Extension Work in Honduras, Michael Martin, February 1990, Honduras.

Ilustración de Materiales Escritos en el Sector Rural, Milton Muñoz, Héctor R. Fonseca, May 1990, in Spanish.

Manual para la Implementación de una Metodología de Transferencia de Tecnología en Agricultura, CTTA, AED, con el Instituto de Investigación Agraria y Agroindustrial, Perú 1986-1990, José Ignacio Mata, Raul Graham, Martha Cruz de Yanes, June 1990, in Spanish.

Marginal and Women Farmers and Extension Services in the Comayagua Region of Honduras, Amalia M. Alberti, March 26, 1990, Honduras.

Mid-Term Evaluation, Sahel Regional Institutions

Project, Jim Kelly and Gordon Appleby, June 1990, in English and French.
Relationship between Extension and Communication, lecture at the PanAmerican Agricultural School, Milton Muñoz, June 1990.
Private Agricultural Producers Organization Project (Project Number 511-0589) USAID/Bolivia Evaluation, Gordon Appleby, J. Philip Eason, April 1990.
Secretaría de Recursos Naturales Departamento de Investigación Agrícola, Prevenga sus Maízales contra el Matz Muerto, M. Muñoz, 1990, in Spanish.

Secretaría de Recursos Naturales Departamento de Comunicación Agropecuaria, Proyecto CTTA, Selección y Utilización de Ayudas Educativas, M. Muñoz, B. Peña, April 1990, in Spanish.
Secretaría de Recursos Naturales Departamento de Comunicación Agropecuaria, Proyecto CTTA, Técnicas de Muestreo, Milton Muñoz, May 1990, in Spanish.
Siembre Semilla Mejorada de Matz, Secretaría de Recursos Naturales, May 1990, in Spanish.
Una Experiencia de Investigación Participative de la Secretaria de Recursos Naturales, Milton Muñoz, May 1990.

F. International Travel

Name	Destination	Dates
Gordon Appleby	Burkina Faso, Mali, Niger, France	15 April - 6 May
Jim Kelly	Burkina Faso, Mali, France, Belgium, Switzerland, West Germany	10 March - 7 April
Orlando Hernández	Honduras	3-10 April
Barbara Roszel	Indonesia	7-15 April
Klaus Altemeier	Repatriation from Indonesia	April
Brian Hilton	Repatriation from Indonesia	April
Edmund McKinnon	Repatriation from Indonesia	April
Dennis Foote	Honduras	20-26 May
Orlando Hernández	Honduras	20-26 May
Bernardo Peña	Repatriation from Honduras	May
Orlando Hernández	Menlo Park, CA	6-15 July
Milton Muñoz	Washington, D.C.	11-16 July
Gordon Appleby	Peru	6-9 August
Barbara Roszel	Honduras	19-23 August
Orlando Hernández	Menlo Park, CA	24 September - 1 October

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1. Institutionalization

Efforts continued to expand CTTA-based programming throughout Honduras and to strengthen the abilities of extension and agricultural communication staff to apply and extend the CTTA process. Activities included:

- assisting the MNR committee charged with developing the Instituto Nacional de Tecnologia Agropecuaria (INTAGRO), which will generate for and transfer agricultural technology to medium- and small-scale farmers (INTAGRO will function with the CTTA-based Unified Methodology for the Transfer of Technologies.);
- assisting the Technology Technical Committee that is charged with defining new Government of Honduras policies for agricultural research and technology transfer; and
- helping extend the CTTA process and the Unified Methodology to the extension regions of Santa Barbara, Choluteca, San Pedro, and Litoral Atlantico.

2. Training

One major and several small training workshops were organized during the reporting period.

- **Communication Training for Trainers on Visual Aids** stressed importance, classification, design, use, and evaluation of visual aids in extension communication and incorporated a segment on visual communication equipment, management, and maintenance.
- **Computer Training** focused on basic principles of computing and the SPSS data entry SPSS/PC programs.
- **Print Shop Training** highlighted color separation techniques and maintaining and repairing new printing equipment.
- **Oral Speech and Group Dynamics** focused on individual and group presentations and interactions.
- **Design and Use of Technology Transfer Projects** introduced the CTTA/Unified Methodology approach to technology transfer to 25 extension workers associated with the Directorate of Livestock.

The major workshop focused on project evaluation. At the request of the MNR, CTTA Project evaluators Orlando Hernández and Dennis Foote gave a week-long, training-of-trainers workshop for Agricultural Communication Department (DCA) employees in practical applications of evaluation principles.

Workshop participants examined actual technology transfer projects from the CTTA pilot region from the points of view of evaluation design, sampling techniques, stakeholders' roles, timing, and priority setting. In addition, they discussed when and why to use quantitative and qualitative evaluation techniques.

During the workshop, the participants identified the following areas about which they need additional training/information:

- how to evaluate the cost effectiveness of an intervention,

- how data collected during broad-scale developmental investigation can be linked to individual technology transfer projects, and
- how to interpret, draw conclusions from, and make recommendations for future interventions based on evaluation data.

The participants suggested that a manual for evaluating technology transfer projects should be prepared to address these and other issues.

3. Ongoing Communication Activities

Communication activities during the reporting period included:

- developing and beginning broadcast of a new radio program, *Desarrollo Agropecuario*, for Radio Nacional de Honduras (The half-hour program is in a magazine format, is repeated twice weekly, focuses broadly on agricultural issues, and seeks to keep farmers informed of national issues related to agricultural production and marketing.);
- printing and distributing technical guides and graphic materials on maize disease, natural resources protection, white fly control;
- producing and airing programs and radio spots for *La Milpa*;
- producing radio programs and printed materials to support the national basic grains campaign; and
- continuing to develop and support the rural correspondents network.

B. Indonesia

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1. Implementing CTTA in INIAA Experiment Stations

Experiment station staff were trained in the theory and application of the CTTA communication process and conducted developmental investigation surveys in their home areas. Experiment station and CTTA staff then met to review results and to design strategies and action plans and draft program budgets for the remainder of 1990.

Most CTTA-based experiment station activities began in April. Based upon current projections, these programs will serve about 18,000 farmers and provide information to help them grow such diverse crops as potatoes (Cuzco, Puno, Huaraz, Cajamarca, and Huancayo), maize (Tacna, Piura, Lambayeque, Trujillo, and Huaraz), livestock (Arequipa, Puno, and Cajamarca), sorghum and legumes (Lambayeque and Trujillo), wheat (Huaraz), and avocado and vegetables (Moquegua).

From April to September, CTTA-based programs produced and distributed 44 different flyers, broadcast 478 30-minute radio programs on 8 stations, conducted 8 training sessions for farmers, and managed several demonstration plots. In Huaraz, the original CTTA pilot site, extension staff continued to air daily radio programs and to support other information programs for farmers who grow potatoes, maize, and wheat. The size of the radio audience and audience demands for new information continue to grow.

Despite increasing national security and economic problems, the CTTA field advisors maintained constant contact with all the participating research stations through a continuing series of meetings, held in Lima and elsewhere. The advisors also met regularly with the INIAA Dirección de Proyección de la Investigación and with representatives of the A.I.D.-funded Technology Transformation in Agriculture (TTA) Project.

2. Documenting the CTTA Methodology

In preparation for the closing of CTTA activities in Peru, the CTTA advisors prepared several major publications, including:

- *Manual for Implementing a Communication Methodology for Technology Transfer, CTTA*, which presents the CTTA methodology and demonstrates strategies for program implementation;
- *Questions and Answers about CTTA*, which describes the activities, main decisions, and some of the lessons learned by CTTA in Peru;
- *Results of Developmental Investigations in Langayque: A Technical Report*, which describes crop management and related topics in the Mochumi Valley; and
- *Evaluation of CTTA in Huaraz*, which quantifies the impact of project activities in the pilot project area.

3. Project Evaluation

CTTA advisors conducted three major studies during the reporting period: an impact evaluation of project activities in Huaraz, a qualitative study of three farm communities in Huaraz, and a study to measure the institutional impact and the changes in knowledge, attitudes, and practices about technical assistance and technology transfer among researchers, extensionists, and other professionals who have been involved with CTTA.

The first study, reported as *Evaluation of CTTA*

in Huaraz, measured the impact on farmers' knowledge and adoption of CTTA-promoted technologies in the pilot region. The study focused on the knowledge, adoption, and correct application of 17 technologies that were promoted for potatoes, maize, and wheat. On average, 64 percent of farmers knew about the recommended technologies, of which 77 percent used them correctly.

Developmental investigation surveys conducted two crop cycles earlier showed that only 1.8 percent of farmers used proper NPK fertilization techniques for maize. Current results indicate that 50.4 percent of farmers applied fertilizer correctly. Similarly, developmental investigation showed that only 2.4 of farmers made the recommended two applications of fertilizer. After two cycles of project interventions, 63.7 percent of farmers followed the recommendation.

The second evaluation consisted of case studies of 45 families from 3 Huaraz communities. Results are presently being analyzed.

The third evaluation sought to measure the institutional impact and changes in knowledge, attitudes, and practices about technical assistance and technology transfer among researchers, extensionists, and other professionals who were involved in CTTA or who had some contact with its' methodology. Results are presently being analyzed.

4. Activities with FUNDEAGRO

CTTA continued to support FUNDEAGRO, a private-sector agricultural organization, in its activities related to technology transfer and the promotion of seeds of improved varieties. Assistance has included advice on the design of marketing studies for five sites where private enterprises might be created for providing technical assistance and on designing strategies for promoting the services of two such enterprises.

CTTA advisors also helped FUNDEAGRO promote improved seeds of improved varieties in four agricultural regions. Staff members assisted in analyzing the barriers to farmer adoption of the improved seeds and recommended media and

messages for disseminating information. CTTA also helped design research instruments for a national study of the use of improved seeds.

5. Proposals for Future CTTA Activity in Peru

CTTA advisors devoted considerable effort to disseminating information about CTTA and its accomplishments to organizations that are involved in agricultural development, with the intention of extending project findings and processes beyond the end of A.I.D. funding. Discussions were held with such organizations as

- the Agrarian University of La Molina, which is developing a curriculum for a Masters Degree in Extension, supported by Kellogg Foundation;
- the National Agrarian Organization (ONA), which has shown significant interest in the project and its communication process;
- INIAA and FUNDEAGRO, which may receive funding through the A.I.D. TTA Project to continue CTTA advances; and
- the National Institute for Nutrition Research, which is interested in applying CTTA-based developmental investigation to efforts to refocus its development strategies.

D. Special Activities

1. Sahel Regional Institutions Project Evaluation

Jim Kelly and Gordon Appleby conducted a mid-term evaluation of the A.I.D.-funded Sahel Regional Institutions Project (No. 625-0975). The evaluation focused on donor-Sahelian collaboration and the two secretariats responsible for fostering such collaboration. The evaluation team made the following key recommendations toward the continuation of the project:

- Better information and data are key to

helping Sahelian peoples discover and capitalize on their options. With its experience in information brokering, CILSS/Club is in an excellent position to undergird the nurturing process with a Sahel Development Networking System (SDNS).

- SDNS does not call for new institutions, large staff build-ups, or significant new budget outlays. The SDNS is largely a matter of actualizing unused potential within the CILSS/Club system, breathing life into relationships and linkages that exist only on paper, and bringing more discipline to the nurturing process.
- The CILSS/Club Secretariats should concentrate on compiling investment information, serving as a clearinghouse for development insights, and functioning as regional development interlocutors.
- As compiler of investment information, CILSS/Club should rely more on the Institute of the Sahel (INSAH) for applied research coordination, and eventually regard INSAH as the central data base source for elaborating and revising all Secretariat strategies and initiatives.
- There should be a clearer division of labor between the CILSS Secretariat and INSAH. CILSS should assume responsibility for policy analysis, strategy formulation, and resource mobilization. INSAH should have responsibility for collating, synthesizing, and disseminating project results and research information through Sahelian networks.
- The CILSS/Club/INSAH should initiate and maintain a region-wide inventory on research activities currently being carried out in the Sahel in the two CILSS/Club mandate areas. The Donor Advisory Group should then work with the Secretariats to identify gaps in the research effort and establish priorities for future donor collaboration on research.