

PD-AAN-649
ISSN: 32818

522-0139

HARP

honduras agricultural research project

PDAAN-649

Quarterly Report II

Honduras Agricultural Research Project (HARP)

CID/NMSU-AID Contract No. 522-0139-C-00-2059-00

for the period

1 April 1983 - 30 June 1983

HARP PUBLICATION 83-13

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ACRONYMS USED IN THE TEXT

AED	Academy for Educational Development Academia para el Desarrollo Educativo
CID	Consortium for International Development (USA) Consórcio de Desarrollo Internacionál
CIMMYT	Centro Internacionál de Mejoramiento de Maíz y Trigo- México International Maize and Wheat Improvement Center - Mexico
CCNSUPLANE	Consejo Superior de Planificación Senior Planning Advisory Group (GOH)
CURLA	Centro Universitário Regional del Litoral Atlántico Central Regional University of the Atlantic Coast
DAR	Distrito Agrícola Regional Regional Agricultural District
ESF	Economic Support Fund (USA) Fondo de Apoyo Económico
FSR	Farming Systems Research Investigaciones de Sistemas Agropecuarios
GOH	Government of Honduras Gobierno de Honduras
HARP	Honduras Agricultural Research Project Proyecto Hondureño de Investigaciones Agrícolas
MNR	Ministry of Natural Resources Ministerio de Recursos Naturales
NMSU	New Mexico State University Universidad Estatal de Nuevo México
PL480	Public Law Number 480 (USA) Ley Pública 480 (USA)
PNEA	Programa Nacional de Extensión Agrícola National Program of Agricultural Extension
PNIA	Programa Nacional de Investigación Agrícola National Program of Agricultural Research
POA	Plan Operativo Annual Annual Work Plan
TDY	Temporary Duty Obligación de Corto Plazo
USAID	United States Agency for International Development Agência de Desarrollo Internacionál de los Estados Unidos de América

LIST OF APPENDICES

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I. INTRODUCTION

The Honduras Agricultural Research Project (HARP) was initiated in the first quarter of 1983, and the four CID/NMSU members of the HARP team and two of their families traveled to post at San Pedro Sula, Honduras in January 1983. Permanent rental housing was procured for all four team members by May 6, 1983. Household furniture and project office and research equipment continued to be ordered, received, and inventoried. With the assignment and arrival of the Honduran team members, office space and furniture continued to be critical. Considerable time was devoted to liason activities among the team and MNR, USAID, and NMSU personnel. Trips were made to various regions and meeting were held with MNR personnel, USAID personnel, and other scientists.

A personnel change in the chief administrative position of the MNR-PNIA and the arrival of the HARP Honduran team members resulted in several changes in the proposed direction of the project. As a consequence it was not possible during the second quarter of the project to produce a long-range plan of work that was satisfactory to all parties concerned. Therefore, a short-term, interim plan of work for the "Primera" (first) cropping season was agreed upon and initiated. The writing of this short-term plan of work was begun, but could not be completed, during the quarter. As a result, the HARP Second Quarterly Report will follow the tentative plan of work submitted by the HARP U.S. team members and used in the report of the first quarter activites and accomplishments (HARP PUBLICATION 83-1).

Since the Honduran members of the HARP team were assigned by the beginning of the second quarter, "the team" refers to both the U.S. and the Honduran members in this report. Also, no distinction is made with respect to the regional MNR/PNIA-PNEA counterparts working in the project areas (a

complete listing of current and proposed regional counterparts is contained in Appendix A).

Activities in this quarter included visits to the selected project areas to conduct interviews with MNR personnel and farmers. The objectives of these interviews were to determine production problems and priorities and to assist the regional MNR teams working in these areas to plan and design their on-farm research so that research results could provide more information for the solution of the identified problems. Most of the quarter was devoted to participation in experimental site selection, plot layout, and the actual planting and application of experimental treatments as required.

In addition, considerable time was devoted to defining the areas in which the HARP project would assist CURLA and to the initiation of these activities.

As reflected in this report, HARP was requested to join the on-going, on-farm research programs in the areas to be included in the plan of work. Farming systems research will be integrated into the on-going programs as rapidly as possible.

II. SPECIFIC OBJECTIVES AND ACTIVITIES

A. ACTIVITIES RELATED TO EXPECTED OUTPUTS AS PROPOSED IN THE TENTATIVE PLAN OF WORK:

1. Formulate and test in the Department of Yoro potentially acceptable improved production technologies which reflect a multidisciplinary approach.

Numerous meetings were held with the MNR/PNIA-PNEA personnel assigned to the Yoro Valley Subregion of DAR No. 3 to plan and initiate trials enumerated in their 1983 Annual Operational Plan. This included at least six trips made by HARP team members to Yoro

and numerous meetings held in the HARP and MNR offices in San Pedro Sula. Primary emphasis was given to the specialty areas represented by the HARP team members - weed science, soil fertility, entomology, and agricultural economics. However, assistance was also given with other trials where possible and additional trials were planned, especially in intercropping and minimum till. In addition, assistance is being given in the analysis and interpretation of two sondeos (surveys) that have been conducted in the area.

Normal planting of corn in the primera season usually occurs between May 15 and June 15. Rains were late this season and planting did not begin until May 31, 1983. Therefore, planting of the experimental plots was not completed until late June. A total of 40 experiments were planted. These experiments included: (a) regional variety trials, (b) variety validation (comprobación) trials, (c) fertilizer trails with N rates, N-P-K, varieties, and populations, (d) weed control trials (chemical control and minimum tillage), (e) intercropping (sistemas de cultivos), (f) insect control trials, (g) insect pheromone traps, and (h) farmer validation trials (cf. Appendix B). Only a limited number of farm record sets and no new formal surveys were planned, in part due to the limited number of research and extension personnel assigned to the area. However, it readily became apparent to HARP that additional information is required on the farming systems currently being used, by producers, in the Yoro Valley. As a consequence, consideration will be given to the preparation and implementation of a formal survey in Yoro during the third quarter.

2. Conduct appropriate FSR training sessions for MNR research-extension personnel working in the Department of Yoro.

Informal training was included in the meetings discussed in the previous section, and was continued during the actual planting and application of the appropriate experimental treatments. Some formal training sessions are being planned for the third quarter beginning with a weed control course for both research and extension personnel on July 5-7.

Although some questions have arisen as to the availability of the in-service training funds mentioned in the first quarterly report, another training session on soil conservation is in the planning stages and support from USAID funds is being requested.

The need for this training session arose partially out of the loss of experiments in the Yoro Valley due to extensive erosion. Other formal training sessions will be planned and held as time permits.

3. Conduct appropriate FSR training sessions for MNR personnel at the Guaymas Research Experiment Station.

Although HARP's involvement at the Guaymas Experiment Station has been minimal, informal training sessions, on all aspects of weed science, have resulted from the six experiments being conducted there (cf. Section 5). Researchers and extension agents in the area have been invited to attend the formal weed control session planned for July 5-7.

4. Conduct, upon request, appropriate FSR training sessions for MNR personnel in designated areas outside the Department of Yoro.

Extensive involvement of the HARP team, in the activities in the primary project sites of the northern region, has prevented them

from continuing the activities initiated in other regions during the first quarter. Besides the Yoro Valley, the other major project sites in the northern region are Cuyamel, Guaymas, and Masica.

The Cuyamel area is one of the major rice producing zones in the region and was the subject of some on-farm research activities in 1982. The HARP team helped to evaluate the sondeo conducted in 1982 and to make some additional surveys to fill in some of the gaps in information. A total of 26 on-farm research experiments were planned, designed, planted, and had experimental treatments applied by the end of this quarter. As in the Yoro Valley, these experiments included fertilizer trials, regional variety trials, variety validation, chemical weed control, and minimum tillage (cf. Appendix B). Since only one researcher and one extension agent are assigned to the area, considerable time of the HARP team members had to be devoted to the activities in this area. This provided for extensive in-service training opportunities in all aspects of the specialties represented by the team.

The Guaymas area has both corn and rice producers that have derived most of their advanced technology directly from the experiment station. An attempt was made to initiate an on-farm research program this year, but experiments were limited primarily to regional variety trials. The main involvement of HARP in this area has therefore been the initiation of weed control research efforts at the experiment station (cf. Section 5 and Appendix B.)

The Masica area is located between Tela and La Ceiba and is a major rice and corn producing zone. In many respects it is similar to the Cuyamel area. This location is operated out of the Atlantic

coastal regional office in La Ceiba and is well staffed with four researchers, five extension agents, and some farm laborers. The HARP team was therefore primarily involved in the planning phases of the activities for this site. However assistance was required from HARP in the form of vehicle repairs, supplies, and equipment and some assistance was given in the actual field phases of plot layout, planting, and application of experimental treatments. Twenty-four trials had been initiated by the end of the second quarter and followed the usual on-farm approach with experiments including regional variety trials, various fertilizer trials, spot-treatments with herbicides, and minimum tillage (cf. Appendix B). With the more adequate staff, it is anticipated that a number of farm records will be kept in this area to allow validation of the sondeo and economic analysis of farm production costs and returns.

5. Assist researchers at the Guaymas Experiment Station to design, conduct, and analyze research which will meet the needs of FSR programs.

In a meeting with the Guaymas Experiment Station personnel, HARP and MNR administrators, it was decided that HARP would have little involvement in the station this season, with the exception of the weed control program. The HARP team assisted in the preparation of a weed control research program for both rice and corn. This included screening herbicides for control of the "caminadora" (Rottboellia exaltata) and nut-sedge (C. rotundus) and comparisons of heavy tillage versus no-till techniques (cf. Appendix B). Experiments are to be conducted at the experiment station, the Omonita Sub-Station, and on farmers' fields in the area.

Involvement in the experiments has been extensive with assistance being given in planning, design, plot lay-out, and the application of experimental treatments, with in-service training being given at each phase of the work. Plans for future activities include assistance in the collection of experimental data from the plots, data analysis, and preparation of the annual report.

Data from previous years are limited and no assistance has been requested for the analysis of these data.

6. Assist MNR research personnel in designated areas to plan relevant agricultural research.

Involvement in other regions was reported in the first Quarterly Report of the project. Further involvement outside the Northern and Coastal Atlantic regions will be limited to formal training sessions to be initiated next quarter.

7. Assist MNR research personnel in designated areas to evaluate agricultural research results.

Little activity was undertaken to assist MNR personnel in the evaluation of agricultural research results except as described above. In general it has been difficult to obtain copies of previous years' reports, let alone unpublished data requiring analysis. Perhaps these requests will come during the second year as confidence is gained in the project. There was some activity in evaluating previous fertilizer trials in order to help to set the range of fertilizer treatment rates for current on-farm trials.

8. Publish reports on methodology, research results, and recommendations developed by the HARP team for use by MNR research and extension personnel.

The following documents have been prepared during the first two quarters of the project:

- a. Quarterly Report I. Honduras Agricultural Research Project (HARP). CID/NMSU-AID Contract No. 522-0139-C-00-2059-00 for the period 1 January 1983- 31 March 1983. HARP Publication 83-1.
- b. A Bibliography of Central American Agriculture. In Honduras. Charles Gordon Dean. HARP Publication 83-2/1.
- c. TDY Report. Experimental Statistics Melchor Ortiz. January 6-14, 1983. HARP Publication 83-3.
- d. TDY Report. Agricultural Economics Joel A. Diemer. February 8-20, 1983. HARP Publication 83-4.
- e. A Bibliography of Subsistence Farming in Central America. May 1983. Charles Gordon Dean. HARP Publication 83-5.
- f. Rottboellia exalta. A Literature Search. March 25, 1983. Charles Gordon Dean. HARP Publication 83-6.
- g. Medicinal Plants of Central America. A Literature Search. April 1983. Charles Gordon Dean. HARP Publication 83-7.
- h. Paspalum conjugatum. A Literature Search. June 13, 1983. Charles Gordon Dean. HARP Publication 83-8.
- i. Panicum maximum Panicum purpurascens. A Literature Search. June 13, 1983. Charles Gordon Dean. HARP Publication 83-9.
- j. Panicum maximum. A Literature Search. June 13, 1983. Charles Gordon Dean. HARP Publication 83-10.
- k. TDY Report. Computer Science Melchor Ortiz. June 22-July 10, 1983. HARP Publication 83-11.

1. TDY Report. Computer Science Bobby J. Creel.

HARP Publication 83-12.

9. Assist in the publication of research reports derived from existing, but unpublished data from the North Atlantic Coastal Region.

Copies of some unpublished research reports have been received for reference but no request has been made to assist in preparation of publications. However, it has been very difficult in most instances to obtain copies of even the data from the 1982 trials, let alone that of prior years.

10. Participate in the upgrading of CURLA's new soils laboratory.
(See No. 12 below).

11. Provide technical assistance for the establishment of a computer facility for CURLA.

A computer hardware, software, and supplies list was prepared and submitted to Ing. Luis Zelaya, USAID/Honduras. After receiving tentative approval, HARP sent the list to NMSU for the preparation of a formal price quotation. Ing. Zelaya gave verbal approval on June 14 for NMSU to purchase the equipment and to deliver it to CURLA in La Ceiba. Mr. Bobby Creel (Agricultural Economics, NMSU) arrived in Tegucigalpa June 15 to deliver the equipment. Part of the shipment did not arrive with Mr. Creel, but by June 18 all of the first shipment had arrived. Due to size and weight limitations, part of the equipment will be sent by air freight shipment. HARP will complete the installation of the remaining computer equipment when it arrives in Honduras.

Mr. Creel and Dr. Harper arrived at CURLA on June 20 and set up the computers. Instruction was given during the week of June 20-30 on the operation and use of the units. Dr. Harper and Mr. Creel were joined by Dr. Melchor Ortiz on June 22.

The equipment was officially received by CURLA Director Ing. Jorge Soto on June 29. (See Appendix C for a list of the materials delivered.)

Dr. Melchor Ortiz remained at CURLA, June 29-July 1, to provide additional instruction in computer applications and statistical analysis.

The computers have been located in a separate room which will serve as a computer center until the new library is completed. At that time, the computers will be moved to a permanent site in the library. HARP will assist with the relocation and reinstallation of the equipment in the new library.

Although the arrival of the pending shipment of equipment and supplies and the eventual physical relocation of the equipment in the new library will establish the computer facility at CURLA, additional assistance will be required before the facility can be fully operational. This additional assistance includes, but is not limited to, the following:

- a. Regular assistance with minor operation and programming problems. This can be supplied by the HARP in-country staff.
- b. Assistance with the establishment and implementation of data management systems for the library, registration, and general administration. CURLA recognizes this need and

they indicated that requests may be forthcoming for Mr. Creel to return to provide some of this assistance.

- c. Formal instruction in computer programming. Although this assistance has not been formally requested at this time, it would greatly facilitate the expanded utilization of the computers by CURLA faculty and staff. This type of assistance could be provided by a Spanish speaking programmer from the Department of Experimental Statistics at NMSU.

12. Assist the entomology, weed science, soil fertility, and agricultural economics programs at CURLA to strengthen their respective research programs.

Activities initiated in the first quarter were continued including meetings with the Director of the University, the research and teaching coordinators, and various members of the staff. These meetings resulted in a document being drafted which outlines the areas in which HARP has agreed to attempt to provide technical assistance and is attached in Appendix D.

Progress in each of the programs are discussed in the following:

- a. Entomology.

A new equipment list totalling around \$36,000 was prepared and submitted for funding under the USAID development project. This will allow for the development of a major entomological museum if continued support, in the form of personnel and consummable supplies, is provided. Arrangements have also been made for an insect

taxonomist (Dr. James Zimmerman, NMSU) to visit CURLA in early July to spend a month working on the initial phases of starting the museum; his report will include instructions on organization and maintenance.

A field study has been planned, designed, and the first plots planted by the end of this quarter. The primary objective is to determine the principal parasites of the "cogollero" or fall armyworm (Spodoptera frugiperda) and the "elotero" or corn earworm (Heliothis zea) in corn in the area. Secondary objectives will be to determine the effects of weed populations on parasite numbers and the efficiency of pheromone traps to predict larval populations. A student will be writing his thesis on the results of these studies.

Initial contacts have been made to plan cooperative studies between CURLA and the regional MNR on-farm research and vegetable health personnel. This will include preliminary surveys in the major corn producing areas for other species of parasites of the fall armyworm and corn earworm as well as pheromone trapping studies of regional population levels of these pests.

b. Weed Science.

In cooperation with Ing. Rene Rodriguez Quispe, Head of the Department of Plant Science, technical guidance is being given to a student doing his thesis work on weed control in corn. Continued assistance will be given in evaluation, data analysis, and interpretation of results.

Another experiment has been planned for a preplant incorporated (PPI) study of nutsedge control in corn.

Participation in classroom training was not possible as the optional weed science course failed to fill during the past semester. The possibility of making a basic weed control course compulsory for graduation has been discussed. The basic research outlined in the agreement could not be initiated due to the lack of greenhouse facilities.

c. Soil Fertility.

Assistance has been given in the revision of the list of soils laboratory equipment being ordered through the USAID Project. References on soil analysis procedures are available and assistance will be given in setting up the laboratory when the equipment arrives. Technical advice was given to three soils department staff members regarding their proposed research projects.

d. Agricultural Economics.

As part of HARP's activities with the agricultural economics program at CURLA, an evaluation of the agricultural economics curriculum was conducted during this quarter. Dr. Diemer and Dr. Harper conducted the evaluation during May and by the end of this quarter, a first and second draft had been prepared. The second draft has been returned from Honduras to NMSU for further additions, deletions, and corrections by Dr. Diemer.

This report should be completed and submitted to the Agricultural Economics Department at CURLA during the third quarter. English and Spanish versions of the report will be prepared.

13. Hold regular evaluation meetings with MNR and USAID personnel to facilitate project evaluation.

Several meetings with MNR and USAID personnel have been held for the purpose of discussing HARP progress. However, a bi-weekly meeting schedule has not been established.

14. Prepare monthly reports, six quarterly program reports, an annual report, and a final report describing progress toward project goals and objectives.

Monthly reports for April and May were prepared and submitted by each member of the team. Preparation of the first Quarterly Report was begun in the latter part of March and completed during this quarter.

15. Participate in a CID/MID-Project Evaluation.

Not applicable for the reporting period.

16. Provide information and records necessary for USAID project evaluations.

A plan of work and the first Quarterly Report have been submitted as well as other project publications and reports. (cf. Section II. A. 8.)

17. Project needs for future possible activities in the regions and experiment stations.

Some projections were made in the first Quarterly Report. Several discussions and memos have made suggestions along these

lines. Needs have been expressed in the areas of Experiment Station Management, Soil Conservation, and Germ Plasm Conservation. Plans have been made to bring TDY consultants in two or all of these specialties during the next quarter.

B. OTHER ACTIVITIES.

1. Housing.

All CID/NMSU team members were in permanent quarters by the middle of the second quarter. Most of the furnishings have been received and the remaining major items had been shipped from the US by the end of the quarter.

2. Air and Surface Shipments.

Most of the problems encountered in the first quarter have been solved. Due to the excellent cooperation of the Regional MNR administration and staff, even small air shipments through San Pedro Sula have cleared customs with only minor delays.

3. In-Country Staff Selection.

The normal selection and hiring process used by NMSU was utilized to hire a second bilingual secretary for the last three weeks of this quarter and one week of the third quarter. The MNR-PNIA has agreed to hire this secretary utilizing PL-480 funds to help with the additional secretarial requirements due to the arrival of the Honduran team members.

4. Preparation of Plan of Work.

The problems encountered in the first quarter continue to hamper the preparation of a Plan of Work that is satisfactory to all parties concerned. However, as evident from this report, the

original Plan of Work submitted in March covers the activities that we have been requested to perform. A short-term plan of work is in preparation but pressing needs of the field phases of the project had prevented its completion by the end of this quarter.

5. Other Meetings.

The CIMMYT On-Farm Research Workshop held in San Pedro Sula April 11-16 was attended at various times by all team members.

Dr. Charles R. Ward and Palamon Martinez, NMSU Extension Program, attended an AID/MNR/AED sponsored conference on agricultural communications.

Several team members met with Manager Tito L. Howard and other personnel of EXTAHO, S.A. de R.L. (Export Tobacco Co. of Honduras) to discuss possible cooperative efforts. There appeared to be several opportunities, especially with corn production in relation to rotations with tobacco production, and primarily in the Morazan area near Yoro.

The team met with Mrs. Martha J. Abarca "Fundación Horizontes de Amistad" (Horizons of Friendship Foundation) at the request of USAID. The visit to her group's Centro de Capacitación (training center) "Alegría" revealed several possibilities of cooperative efforts. Time availability of the HARP team appeared to be the only limiting factor.

Several team members met with CONSUPLANE personnel working in the Swiss Mission Area Development Project in Yoro, this was an attempt to continue dialogue initiated in the first quarter to avoid duplication of effort and determine areas where cooperative studies

are possible. Publications nearing the release stage are to be provided when available.

Most team members participated in the Annual Meeting of the Honduras National Ingeniero Agronomo Society held in Tegucigalpa on May 10-14, 1983.

The team attended on-farm methodology presentation given by Ing. Adán Bonilla, Head, MNR-PNIA, and Ing. Nuñez, On-Farm Research leader from Olancho. The first meeting was held on May 31 at which regional administrators and HARP personnel attended. The second meeting was held on June 23 and was attended by all HARP members and most regional research and extension personnel.

The HARP entomologists attended various sessions of the International Conference on the African Bee held in San Pedro Sula on June 23-25.

The HARP and CURLA entomologists met on June 30 with the widow of the late Dr. Jerome Mankins in Siguatepeque to discuss the possible purchase of his insect collection for the Museum at CURLA.

The MNR insect collection at Comayagua was also visited to determine its condition and evaluate the possibilities of its future use as a source of identified insects.

III. ACTIVITIES PLANNED FOR THE FOLLOWING QUARTER.

- A. IMPROVE COMMUNICATIONS WITH USAID AND MNR PERSONNEL.
- B. COMPLETE THE SHORT-TERM OR "PRIMERA" PLANTING SEASON PLAN OF WORK.
- C. CONTINUE TO ASSIST WITH THE PLANTING, APPLICATION OF EXPERIMENTAL TREATMENTS, AND EVALUATION AND HARVEST OF THE STUDIES BEING CONDUCTED IN YORO, CUYAMEL, GUAYMAS AND MASICA.

- D. MEET WITH CURLA TEACHING AND RESEARCH STAFF TO ASSIST IN THE DEVELOPMENT OF RESEARCH AND TEACHING PROGRAMS IN ENTOMOLOGY WEED SCIENCE, SOIL FERTILITY, AND AGRICULTURAL ECONOMICS.
- E. TRAVEL TO CURLA TO CONTINUE TO PROVIDE TECHNICAL ASSISTANCE FOR THE ESTABLISHMENT OF A NEW COMPUTER FACILITY ON CAMPUS.
- F. INITIATE PLANNING AND EXECUTION OF A SHORT-TERM PLAN OF WORK IN COOPERATION WITH REGIONAL MNR PERSONNEL FOR THE "POSTRERA" PLANTING SEASON IN YORO, CUYAMEL, GUAYMAS, AND MASICA.
- G. CONTINUE TO COORDINATE ACTIVITIES OF HARP TDY AND NMSU/BIFAD INVOLVEMENT IN THE AREAS OF PLANT PATHOLOGY, NEMATOLOGY, INSECT TAXONOMY (AT CURLA), FISHERIES (LAKE YOJOA), EXPERIMENT STATION MANAGEMENT, AND SOIL AND GERM PLASM CONSERVATION.

IV. PROGRESS AND CONSTRAINTS TO PROGRESS TOWARD ACCOMPLISHMENT OF GOALS AND OBJECTIVES.

A. PROGRESS.

The CID/NMSU/HARP has established the following goals: (1) to assist MNR in the development of FSR and technical methodologies that may be used to increase the economic welfare of small farmers and medium-sized farmers in Honduras through increased production of rice, corn, and beans in the target areas of the project and (2) to assist MNR in strengthening of institutional and personnel capabilities to conceptualize and carry out research activities to support FSR activities in Honduras. The objectives of HARP, to accomplish the above goals and progress to date are listed as follows:

1. Assist the multi-disciplinary on-farm research teams in the Department of Yoro to expand their on-farm research programs.
 - a. Became more familiar with certain farming areas and crop production methods in the Yoro Valley.
 - b. Held discussions with some farmers in the presence of extension personnel.
 - c. Participated with MNR personnel in helping to determine factors limiting production and alternatives in four distinct areas of the Yoro Valley.
 - d. Participated with MNR personnel in planning, site selection, planting, and application of experimental treatments of 40 on-farm trials to help provide answers to the factors limiting production of corn in the area.
 - e. Helped design intercropping experiments and helped in site selection, planting, and making observations on the trials.
 - f. Established pheremone traps to monitor populations of the cogollero and elotero, the two major pests of corn in this region.
2. Identify training needs and implement training programs that meet the needs of the FSR teams in Yoro:
 - a. Training needs were generally apparent and identifiable for MNR personnel working in Yoro.
 - b. A weed control training program has been scheduled for early July.
 - c. A soil conservation workshop is being planned for the next quarter.

- d. A formal farmer survey has been scheduled for next quarter and will include formal training on survey methodology.
3. Strengthen, where appropriate, Guaymas Agricultural Experiment Station efforts to support on-farm, FSR research:
 - a. It is obvious that considerable farming and research equipment will be needed before this experiment station can be expected to increase its research output.
 - b. A decision was made that HARP would have minimal input at the experiment station this year due to severe limitations in personnel, equipment, supplies, and transportation.
 - c. Helped plan, design, select sites, plant, and apply experimental weed control treatment to trials in corn and rice.
4. Offer technical assistance to MNR research and extension groups in other areas of Honduras:
 - a. Trips made to Danli, and the Departments of Choluteca and Olancho during the first quarter did not result in requests for technical assistance.
 - b. The MNR administration has decided to limit HARP participation, except for formal training sessions, to the Northern and the Atlantic coastal regions.
 - c. Helped plan, design, select sites, plant, and apply experimental treatments to more than 50 on-farm trials in Cuyamel, Guaymas, and Masica.
 - d. Encouraged cooperative research efforts between CURLA and MNR personnel in the La Ceiba region.
5. Deliver program results to the extension service:
 - a. Not applicable at this time.

6. Increase MNR capabilities in the Northern and Atlantic Coastal Regions to analyze and synthesize existing unpublished research data:

- a. Some existing data was perused, but no new analyses were initiated.
- b. Considerable difficulty was encountered in obtaining copies of data for analysis.
- c. The establishment of the computer facilities at CURLA may encourage cooperative efforts with MNR personnel in this area.

7. Assist CURLA to establish their soils laboratory, establish computer facilities, and strengthen research and teaching procedures in entomology, weed science, soil fertility, and agricultural economics:

- a. Met with CURLA Director, Research Coordinator, Academic Dean, and other staff and discussed all items in Objective No. 7. Their needs and desires for assistance were established, and a schedule for future visits was arranged.
- b. Short meetings continued to be held by individual team members within their respective departmental disciplines. This initiated the strengthening of research procedures; possible research projects were outlined, and dates for future discussions were set.
- c. Experiments in weed control, entomology, and soil fertility were planned, designed, and planted.

- d. The entomology equipment list being ordered through USAID was expanded to include over \$36,000.00 of specialized equipment primarily for the museum.
 - e. The computer equipment list was developed, approved, and the equipment was ordered. Partial delivery of the equipment was made (cf. Appendix C). The equipment was installed and instruction given on maintenance, operation, and statistical analysis. The remaining equipment will be delivered and installed upon receipt from the U.S.
 - f. An evaluation of the agricultural economics curriculum and course content was conducted. English and Spanish versions of the report will be delivered during the third quarter.
8. Assist the MNR in developing long-range plans for FSR programs:
- a. Failure to establish regular meeting with HARP, MNR, and USAID personnel has made this difficult.
 - b. An agricultural research position paper has been started to accomplish this goal, at least in part.
9. Evaluate program progress and impact:
- a. HARP progress was discussed in several meetings with USAID and MNR personnel.
 - b. The delay of an adequate survey to develop baseline data will hinder the measurement of the impact.
 - c. The requirement of joining on-going, on-farm research programs may slow progress.

B. CONSTRAINTS

1. Administrative

a. USAID

Many of the problems encountered during the first quarter have been resolved. Clearing shipments through customs at Puerto Cortes continued to be erratic but appeared to be related to documentation problems.

However, one of the vehicles is still without license plates and other documentation. All except one of the project staff do not have identification cards and the paperwork has not been initiated to obtain identification cards for their family members. This has become much more critical because of the many military road blocks established in July.

Communication with the USAID office has been improved through periodic telephone conversations, but attempt to establish a bi-weekly meeting schedule for in-depth discussion have not been successful. This has made it difficult to resolve issues pertaining to the plan of work and personnel issues.

Delays in the release of PL-480 and/or ESF funds has made it difficult and at times impossible for the regional and Honduran HARP team members to obtain the necessary equipment supplies, and logistical support. Estimates of MNR personnel indicate that these funds may not be available until the fourth quarter.

Lack of these funds, which were anticipated in late May or early June, resulted in a severe over-extension of

the HARP team in establishing additional plots to optimize the efforts of the anticipated additional assistance.

b. MNR

The integration of HARP into the administrative structure of the MNR in the Northern region has continued to be slower than anticipated. Regional counterparts were never formally assigned to work with the HARP team. This has been circumvented by the team by working with all research and extension personnel in the areas where we were requested to work. The last of the four Honduran team members was not assigned until the first month of this quarter. None of them had signed contracts by the end of the quarter and none had been paid their salaries or per diem.

With the arrival of the Honduran team members, office space and furniture again become a critical issue and was not resolved until the middle of the quarter. Several items of office furniture are desperately needed, especially a photocopier and bookcases. However, we have been informed that these items can not be purchased until the PL480 or ESF funds are released for use by the MNR.

Two vehicles were made available to the HARP Honduran team members. One of these vehicles needed major repairs and is still inoperable for the lack of tires and funds.

According to reports from USAID and the MNR, these delays are the result of the inability of the MNR to obtain approvals from other branches of the government,

especially Ministerio de Hacienda, the financial arm of the GOH. These problems have been further complicated by the rumors that the budget for the MNR may be drastically reduced for the third quarter and all budget items except salaries frozen in the fourth quarter. If these and other outside funds are not released for use by the MNR, HARP Honduran team members and the regional on-farm research and extension teams will be unable to travel. If this happens, the HARP Project will be severely limited in its ability to work in all areas.

c. CID/NMSU

Some communications problems still exist but have largely been solved by utilizing the home telephone of the Chief of Party as an office phone. This has resulted in the disruption of work plans as schedules need to be flexible to accommodate emergency travel requirement. This also requires that extra trips be made to utilize the telephone and cuts down on efficiency.

2. Personnel

Personnel problems have arisen in two areas:

- a. The failure of USAID and MNR to resolve the counterpart contracts problem in a timely manner has resulted in a constant source of problems. Frequent lack of personal funds resulted in their reluctance to travel to project sites and considerable uncertainty as to their status. All team members are living and travelling on borrowed money which is difficult and expensive to obtain.

- b. Only two regional MNR people are assigned to work in the Cuyamel area and the extension agent has had limited time for participation in the on-farm research program. An additional researcher was assigned to the area, but quit after working part of one day. Since no other assignment was made, several experiments have been lost after establishment due to inability of one person to oversee the twenty-six experiments that are scattered over a large area. If this lack of personnel is not corrected, the program should be greatly reduced in scope as the HARP team can only spend a portion of their time in each of the five locations where they are working.
- c. At least one and preferably two additional researchers are needed in the Yoro Valley program.
- d. Part of the personnel shortages could be resolved if the PL-480 or ESF funds could be released to hire the students to do their theses or "Servicio Sociales" (Social Services) in the project areas. These students could be utilized to do specialized work on the specialty experiments to better insure the collection of timely and more adequate data. With the large number of trials initiated it is becoming increasingly difficult to assure timely and adequate data collection without such assistance.

3. Physical Facilities

- a. Adequate office space has been provided but office furniture and reproduction services are still inadequate.

- b. No progress has been made in obtaining a separate telephone line and difficulties in communications continue .
- c. The lack of photocopy/reproduction services has contributed to the extensive use of the project microcomputer in HARP project for reports and correspondence. It is becoming evident that this single unit will not satisfy all of the project needs let alone those of other MNR offices. Serious consideration should be given to the purchase of another unit primarily for statistical and data management use.

4. Transportation

- a. Transportation for the Honduran team members needs to be resolved, especially if the team is to continue to be requested to provide regional counterparts with transport.
- b. Transportation at the Guaymas Experiment Station is critical even for transport between the main station and the sub-station at Omonita. This has greatly limited their ability to conduct off-station research.
- c. Frequent lack of fuel in Yoro has greatly hampered the timely and adequate supervision of experimental plots.
- d. Spare tires and jacks are missing from non-HARP project vehicles in most locations.

5. Materials and Supplies.

- a. Most locations in which we are working have been plagued by shortages of most research materials and supplies.

- b. The on-farm research units in both Yoro and Cuyamel need herbicide and insecticide (separate units) sprayers.
- c. The Guaymas Experiment Station Weed Control Specialist needs a sprayer and other research equipment.
- d. Communications linkages with the other locations, especially Yoro and Cuyamel, need to be improved or established to allow better coordination of the program.

V. RECOMMENDATIONS

A. TRAINING

An agreement must be made between MNR and USAID on the amount of funds available to support the training programs proposed to be part of this project. Much better use of the team's time can be made if the trainees are brought to a central location, preferably San Pedro Sula since the northern zones are receiving primary emphasis.

B. ADDITIONAL TECHNICAL ASSISTANCE

USAID has agreed to keep the short-term consultant positions open as to the specialities involved. This will allow the team to obtain assistance in whatever specialities are required. However, it is apparent to the team that the areas included in the plan of work will require more than the current four members if the stated objectives are to be met.

It has been difficult to adequately serve even in an advisory capacity, let alone actually be involved, in the day-to-day activities of a farming systems research project in any one area.

C. IMPROVED MANAGEMENT PROCEDURES

1. One of the most serious problems the MNR faces is rapid turnover and shortages of personnel and ways around this problem should be found. The inability of the MNR to hire the students to do their "Servicio Sociales" in conjunction with the project has resulted in personnel shortages and loss of experimental data.

2. A related problem is the storage and retrieval of past research results. It appears that much of the past year's research results were lost when the employees changed location or left MNR.

3. Resolve the HARP Honduran team member's contract issue and pay them their back salaries and per diem. They will be unable to travel unless they are paid.

4. During the next quarter, bi-weekly meetings are needed between HARP, MNR (both national and regional), and USAID administrators. The resulting dialogue could help in resolving the goals, objectives, and activities and constraints of the project.

5. Devise a mechanism whereby project office, communications, equipment, and supply problems can be resolved. The extensive delay in the release of PL-480 and ESF budgets have resulted in considerable constraints on project performance.

6. It appears that the difficulty the MNR is having in agreeing on the HARP plan of work stems largely from a great need for technical assistance in many disciplines and several geographic areas. Therefore, long range planning should be initiated to either plan for an extension of this project and/or create other projects to help satisfy the agricultural research needs of the country.

APPENDIX A
PERSONNEL

I. National Program Leaders

- A. Ing. Miguel Bonilla, Minister Natural Resources
- B. Ing. Adán Bonilla, Head MNR/PNIA
- C. Ing. Guillermo Diaz, Head MNR/PNEA
- D. Ing. Ricardo Romero Trochez, Head Sanidad Vegetal
- E. Dr. Jose Santos Reyes, Head Sanidad Animal
- F. Crop Leaders and location
 - 1. Maize - Ing. Roduel Rodriguez (Comayagua)
 - 2. Rice - Ing. Rolando Rubi (San Pedro Sula) Jan.- May
Ing. Alfredo Escoto (San Pedro Sula)
 - 3. Beans - Ing. Federico Rodriguez (Danli)
 - 4. Sorghum - Ing. Rigoberto Nolasco (Choluteca)

II. HARP Team

- A. Administration
 - 1. Dr. Ellis W. Huddleston, Project Director, CID/NMSU
 - 2. Ing. Adán Bonilla, Project Director, MNR
 - 3. Dr. Charles R. Ward, Chief of Party CID/NMSU/MNR
 - 4. Ing. Antônio Silva, Assistant Chief of Party MNR
 - 5. Dr. Wilmer M. Harper, Assistant Chief of Party CID/NMSU
 - 6. Charles Gordon Dean, Technical Support CID/NMSU
 - 7. Lynn Johnson-Dean, Administrative Assistant, CID/NMSU
 - 8. Jorge Salgado, Administrative Assistant
- B. Specialties (Long term)
 - 1. Entomologists:
 - a. Dr. Charles R. Ward
 - b. Ing. Norbeto Urbina
 - 2. Agricultural Economists:
 - a. Dr. Wilmer M. Harper
 - b. Ing. Antônio Silva
 - 3. Weed Scientists:
 - a. Dr. Dinesh Sharma
 - b. Ing. Mario Bustamante
 - 4. Soil Fertility Specialists:
 - a. Mr. James G. Walker
 - b. Ing. Ligia de Ramos
- C. Short-term Specialists:
 - 1. Dr. Melchor Ortiz, Statistics
 - 2. Three others as yet not selected
- D. Secretaries
 - 1. Mirna Maria Zelaya Ramos
 - 2. Olga Marina Pineda de Hernández

III. Regional Teams

- A. Northern (DAR #3), San Pedro Sula
 - 1. Administrative
 - a. Ing. Roberto Larios Mejia, Regional Director
 - b. Ing. Juan Salgado, Assistant Regional Director

- c. Ing. Marco Tulio Palao, Regional Research Coordinator
 - d. Ing. Hector R. Muñoz, Regional Extension Coordinator
 - e. Ing. Francisca de Escoto, Regional Planning
 - f. Ing. Armando R. Milla Viada, Regional Sanidad Vegetal Coordinator
 - g. Dr. Luis Gustavo Garay Games, Regional Coordinator of Sanidad Animal
2. Cuyamel Rice Area On-Farm Research Team
 - a. Ing. Leopoldo Criveli - On-Farm Research Coordinator
 - b. Agron. Amberto Dominguez - Extension
 - c. Only one farm laborer has been assigned.
 - d. Need at least one other farm laborer to be assigned.
 - e. Student to be assigned to do his "Servicio Social"
 3. Guaymas Rice Area On-Farm Research Team
 - a. Researcher to be assigned
 - b. Extension agent
 - c. Farm laborers needed for program
 - d. Student to be assigned to do his "Servicio Social"
 4. Yoro Corn/Bean Area On-Farm Research Team
 - a. Ing. Oswaldo Paz - Subregional Research and Extension Coordinator
 - b. Ing. Ramon Medina - Subregional On-Farm Research Coordinator
 - c. Ing. Hector Deras - Subregional Extension Director
 - d. Ing. Mainor Castillo - On-Farm Research
 - e. Another researcher needs to be assigned
 - f. Ing. Luis Cruz - Yoro Extension Agent
 - g. Ing. Lionel Sanchez - Yoro Extension Agent
 - h. Ing. Alberto Lujan - Yorito Extension Agent
 - i. Another Extension Agent needs to be assigned.
 - j. Farm laborers need to be assigned.
 - k. Two students to be assigned to do their "Servicio Social".
 5. Guaymas Experiment Station
 - a. Administrative - Ing. Armando Badia - Director
 - b. Crop Research Program Leaders
 1. Ing. Alfredo Escoto - Rice
 2. Ing. Julio Romero - Corn
Ing. Victor Mendez - Corn (Assistant)
 3. Ing. Armando Borjas - Weed Control
 4. Ing. Sergio Castro - Soya
 5. Ing. Marco A Nuñez - Yuca (La Ceiba)
- B. Atlantic Coast (DAR #4), La Ceiba
1. Administrative
 - a. Ing. Enrique Azurdia - Regional Director
 - b. Ing. Evette Ponce - Assistant Regional Director
 - c. Ing. Renán Zuniga - Regional Research Coordinator
 - d. Ing. Orlando Castellon V. - Regional Extension Coordinator
 - e. Regional Vegetable Health Coordinator
 - f. Ing. Luis Alonso Bustamante - Regional Planning Coordinator
 2. Masica On-Farm Research Team
 - a. Ing. Cecilio Lozano - Subregion Research Coordinator
 - b. Ing. Alma Salinas, On-Farm Research
 - c. Ing. Roberto Gutierrez - On-Farm Research

- d. Ing. Eusevio Casco - On-Farm Research
- e. Ing. Rafael Sosa - On-Farm Research/CURLA liason
- f. Ing. Cecilio Lozano Puerto - Subregional Extension Coordinator
- g. Ing. Rafael Garcia - Extension Agent
- h. Ing. Francisco Medina - Extension Agent
- i. Ing. Pedro Banegas - Extension Agent
- j. Ing. Enna Rudith de Diego de Morazán, Extension Agent
- k. Ing. Carlos Mayorga Pinto - Extension Agent
- l. Ing. Maria Teresa Lopez - Promoter
- m. Ing. Rosa Maria Sandoval - Promotor
- n. Need farm laborers to be assigned
- o. Suggest HARP farm laborer position be assigned here for planting season.

IV. CURLA - Centro Universitario Regional del Litoral Atlántico

A. Administrative - CURLA

- 1. Ing. Jorge Soto - Director
- 2. Ing. Orestes Vásquez - Assistant Director
- 3. Ing. Joel Yangali - Research Coordinator
- 4. Ing. Freddy Startman - Regional Teaching Coordinator

B. Administrative MNR/USAID

- 1. MNR/PNIA - Rafael Carias, Counterpart PNIA/CURLA
- 2. USAID - Dr. Rafael Pietri, Coordinator at CURLA
 - a. Mr. John Moran, Tegucigalpa & CURLA, Library
 - b. Mr. Ken Martin, Tegucigalpa, Project Officer
 - c. Mr. Louis Zelaya, Tegucigalpa, Procurement and Backup

C. Faculty Contacts

- 1. Entomology
 - a. Ing. Elias Prudot, Plant Sciences
 - b. Ing. Patricio Santa Cruz, Forestry
- 2. Weed Science
 - a. Ing. Rene Rodriguez (Head, Dept. of Fitotecnía)
- 3. Soils
 - a. Ing. Estela de Lanza, Acting Head
 - b. Ing. Juan Rojas D.
 - c. Ing. Juan Trelles
 - d. Ing. Luis Alvarez W.
 - e. Ing. Rolando Garcia Ruiz
 - f. Ing. Manuel Lopez, in charge of Soils Laboratory
- 4. Agricultural Economics
 - a. Ing. Edison Cardenas, (Head-on Leave)
 - b. Ing. Hernán Madrid (Acting Head of Dept.)
 - c. Ing. Roberto Rivera
 - d. Leticia Kawas de Acosta, M.S.

V. Special Programs

A. Entomology

- 1. Ing. Federico Rodriguez - Danli
- 2. Dr. Keith L. Andrews - Escuela Agrícola Panamericana, Zamorano
- 3. To be assigned - Escuela Nacional de Agricultura (ENA), Catacamas
- 4. Dr. Everett Mitchell - USDA Insect Behavior Lab. Gainesville, Fla.

B. Soil Fertility

- 1. Mr. Beto Sattell - Peace Corps Volunteer, ENA
- 2. Ing. Feliciano Paz - Director National Soils Laboratory

APPENDIX B.
LIST OF EXPERIMENTS BEING CONDUCTED BY AREA IN
THE FIRST (PRIMERA) PLANTING SEASON

- I. Yoro Valley (See Section II.A.1)
- A. Regional Variety Trials (7) ¹ comparison of 12 new corn varieties with the locally grown or criollo variety. Includes three trials with early maturing varieties, three with tropical varieties, and one with yellow varieties.
 - B. Demonstration (Comprobación) Trials (8) - comparison of five varieties in two replications.
 - C. Fertilizer Trials on Corn (10)
 - 1. Plant populations (densities) x varieties x nitrogen rates in a split-split plot, resulting in a total of 12 treatments with three replications in each of two locations.
 - 2. Varieties x nitrogen in a split plot, resulting in a total of six treatments with four replications in each of four locations.
 - 3. Nitrogen x phosphorus x potassium in a complete factorial, resulting in 12 treatments with three replications in each of four locations.
 - D. Weed Control Trials on Corn (10)
 - 1. Chemical weed control vs. farmer's practice in comparison with 4 treatments and 4 replications at 3 locations.
 - 2. Weed control in minimum till with 5 treatments and 3 to 4 replications in three locations.
 - 3. Inter-cropping with 10 treatments and three replications at four locations.
 - E. Insect Control Studies in Corn (3) All with 8 Treatments and 3 Replications.
 - 1. Chemical control of the corn rootworm.
 - 2. Chemical control of wireworms.
 - 3. Chemical control of white grubs.
 - F. Insect and Babosa Control Study in Beans (1) with 2 Unreplicated Treatments to Observe Effects on Plant Stands.
 - G. Pheromone Traps (1) to Monitor Adult Populations of the Fall Armyworm (Spodoptera frugiperda) or cogollero) and the Corn Earworm (Heliothis zea or elotero).
 - H. Farmer Validation Trials (19) with an Improved Variety with Fertilizer Treatment (Unreplicated) Compared to the Farmer's Variety without Fertilizer.
 - I. Farm Records are Being Maintained on 19 Farms.

¹ The number in parenthesis indicates the total number of trials planted of this type in various locations.

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- II. Cuyamel (See Section II. A. 4.)
 - A. Regional Variety Trials (3) - comparison of 13 rice varieties in 4 replications.
 - B. Demonstration (Comprobación) Trials (8) - comparison of three rice varieties in 2 replications to the farmer's current variety.
 - C. Fertilizer Trials on Rice (8)
 - 1. Varieties x nitrogen rates in a split plot, 12 treatments and 3 replications in 5 locations.
 - 2. Nitrogen x phosphorus x potassium in a complete factorial, 12 treatments and 3 replications in three locations.
 - D. Weed Control Trials on Rice (14)
 - 1. 7 gramoxone rates in no till with 4 replications at 2 locations.
 - 2. Roundup rates vs. gramoxone in no till with 7 treatments and 1 replication at 2 locations.
 - 3. Propanil rates with 7 treatments and 4 replications at 7 locations.
 - 4. Evaluation of new products with 10 treatments and 4 replications at 3 locations.
 - E. Pheromone Traps to Monitor Adult Population Levels of the Fall Armyworm and the Corn Earworm.
 - F. Farm Records are Being Maintained on 10 Farms.

- III. Guaymas and Omonita (see Section II. A. 4. and 5.).
 - A. Guaymas
 - 1. Rice
 - a. Weed Control Trials (2)
 - (1). Evaluation of new herbicides with 10 treatments and 4 replications (2 locations).
 - (2). Evaluation of relative effectiveness of no till vs. farmer's cultivation practice on weed control, incidence of diseases and other pests, and rice yield with two treatments and 6 replications (1 location).
 - b. Rice fertilizer trials (3) with 7 treatments and 3 replications (2 are on-farm trials).
 - c. Farmer validation trials (3) with 2 unreplicated treatments (2 are on-farm trials).
 - 2. Corn (Guaymas and Omonita)
 - a. Regional variety trials (5) with 12 treatments and 4 replications (4 are on-farm trials).
 - b. Variety demonstration (comprobación) trials (9) with 6 treatments and 2 replications (8 of them are on-farm trials).
 - B. Omonita - Corn Weed Control Trials (4)
 - 1. Screening of herbicides and their combinations for itchgrass control with 11 treatments and 4 replications (1 location).
 - 2. Control of nutgrass and itchgrass with preplant incorporated (PPI) herbicides with eight treatments and 4 replications (1 location).
 - 3. Comparison of minimum till vs. regular cultivation practices on effectiveness of weed control, disease and insect incidence, yield and other agronomic characteristics with 4 treatments and 4 replications (1 location).

4. No till observation plot with 2 treatments and 1 replication (1 location).
- IV. Masica (See Section II. A. 4.) Rice only
- A. Regional Variety Trials (3) with 12 Varieties and 3 Replications.
 - B. Exploratory Trials (2)
 1. Plant density with 8 treatments and 3 replications.
 2. Varieties with 235 lines and unreplicated.
 - C. Weed Control Trials (10)
 1. Propanil rates with 7 treatments and 4 replications at 5 locations.
 2. Evaluation of new products and their combination with 9 treatments and 4 replications at 5 locations.
 - D. Fertilizer and Weed Control Trials on Rice (3)
 1. Varieties x nitrogen x weed control methods in a complete factorial, 8 treatments with 3 replications in 2 locations.
 2. Timing of application of Nitrogen (1) with 7 treatments and 4 replications.
 - E. Pheromone Traps to Monitor Adult Populations of the Fall Armyworm and Corn Earworm.
 - F. Farm Records are Being Maintained on 15 Farms.
- V. CURLA (See Section II. A. 11 and 12.)
- A. Identification of Parasites of Spodoptera frugiperda (fall armyworm or cogollero) and Heliothis zea (corn earworm or elotero) at CURLA (with a comparison of populations in weeded and non-weeded corn plots) and Pheromone Traps to Monitor Adult Populations of These Two Major Pests of Corn.
 - B. Weed Control Trials (2)
 1. Corn trial with 9 treatments and 3 replications.
 2. Corn trial with 8 treatments and 3 replications.
 - C. Helped Plan Fertility Trials with 3 of the Staff.

APPENDIX C
LIST OF COMPUTER COMPONENTS RECEIVED BY CURLA

The following is a list of the computer hardware, software, and supplies received by CURLA on 27 June 1983.

<u>ITEM</u>	SERIAL NUMBER
1. IBM PC-XT System with 128KB RAM, keyboard, 360 KB DS DD Disk Drive, and 10 MEG Byte fixed Disk Drive.	0022527
2. 18-8KB RAM chips (installed in IBM PC-XT)	
3. Monochrome/Parallel Adapter Interface Board (installed in IBM PC-XT)	
4. Monochrome Display	0649772
5. Epson MX-100 Matrix Printer	397439
6. Two Parallel Printer Cable	
7. IBM PC-XT Guide to Operations	6936810
8. IBM BASIC (2 Copies)	6025010
9. IBM DOS version 2.0	6024061
10. IBM Hardware Maintenance & Service	6025072
11. IBM Technical Reference Manual	6025005
12. IBM VISICALC version 1.1 (2 copies)	6024004
13. IBM Asynchronous Communications Support version 2.0	6024032
14. Micropro Wordstar (2 copies)	
15. Lemon AC Surge protector	
16. IBM Inventory Control by Peachtree	6024015
17. IBM General Ledger by Peachtree version 1.1	6024058
18. EPSON MX Printer Manual with Graftrax (2 copies)	
19. IBM PC System 64 with 64 KB RAM, keyboard, and 320 KB DS DD Disk Drive	0319756
20. Monochrome Display	0548614

- | | | |
|-----|---|----------|
| 21. | 27-8K RAM Chips (installed in IBM PC System 64) | |
| 22. | Monochrome/Parallel Adapter Interface Board
(installed in IBM PC System 64) | |
| 23. | Tandom 100-2 320KB DS DD Disk Drive (installed in
IBM PC System 64) | S3319360 |
| 24. | AST MEGAPLUS Memory Expansion Board with
256KB RAM (installed in IBM PC System 64) | 8256 |
| 25. | EPSON MX-100 Matrix Printer | 399677 |
| 26. | IBM PC Guide to Operations | 6025000 |
| 27. | IBM DOS version 1.1 | 6024001 |
| 28. | Lime AC Surge Protector | |
| 29. | 8 MX-100 Printer Ribbons | |
| 30. | 20 Boxes of 5¼" Diskettes (10 Diskettes per box) | |
| 31. | STSC APL*PLUS Language: | 011125 |
| | a. Character set ROM Chip | |
| | b. STSC APL*PLUS/PC "Programmers Manual" | |
| | c. STSC "APL is Easy" | |
| | d. "APL An Interactive Approach" | |
| 32. | IBM Fortran Compiler | 6024012 |
| 33. | Printer paper continuous fanfold: | |
| | a. 1 box 11" x 9½", 15#, 1 ply | |
| | b. 1 box 14-7/8" x 11", 15#, 1 ply | |

APPENDIX D
TECHNICAL ASSISTENCE WITH CURLA

I. Introducción

Según lo estipulado en el convenio operacional de investigación agrícola entre el PNIA y CURLA, sobre la asistencia técnica por medio de proyectos específicos en esta oportunidad se cuenta con un grupo asesor del Consorcio de Desarrollo Internacional, convenio MRN-AID/NMSU/HARP. El tiempo estipulado para esta labor de asesoramiento se ha estimado aproximadamente en un 20% para la zona del Litoral Atlántico que incluye La Masica y el CURLA, de acuerdo a la disponibilidad de tiempo del grupo asesor.

Con el objeto de fijar un primer planteamiento de labor conjunta se realizó una reunión los días 7 y 8 de abril del presente año, con la participación del grupo asesor de la Universidad Estatal de Nuevo México y profesionales de las diferentes áreas de especialidad afines a los del grupo asesor tanto del Ministerio de Recursos Naturales (MNR) como del CURLA. Las áreas específicas son Entomología, Control de Malezas, Fertilidad de Suelos y Economía Agrícola.

Se formaron los grupos de trabajo por especialidad, a fin de establecer en primera instancia un diagnóstico; y en base a la disponibilidad de recursos fijar los lineamientos y planteamientos específicos de acción inmediata y mediata.

II. Objetivos

Entre los objetivos se plantean los siguientes:

- A. Asistencia técnica al CURLA, en materia de investigación de parte del grupo asesor de la Universidad Estatal de Nuevo Mexico, en las especialidades de Entomología, Control de Malezas, Fertilidad de Suelos y Economía Agrícola.
- B. Proporcionar la participación de egresados del CURLA (cuatro) en trabajos de investigación con fines de tesis de grado a través de los fondos PL-480.
- C. Fortalecer la actividad docente con charlas y/o conferencias, sobre tópicos específicos y afines a las especialidades del grupo asesor.
- D. Organización e implementación de los procedimientos de análisis químicos en el laboratorio de suelos.
- E. Organización e implementación del museo y laboratorio de entomología con participación de especialistas en taxonomía de insectos.
- F. Establecer en el Departamento de Fitotécnia un herbario de malezas para fines didácticos.
- G. Capacitación en programación y uso de computadoras, con participación de técnicos especialistas.
- H. Cooperación para conseguir financiamiento para material básico de investigación y laboratorios a través de los fondos PL-480.

III. Acuerdos Tomados

Según el análisis y planificación de los grupos de trabajo por especialidad se han llegado a las siguientes consideraciones:

- A. Aspectos Generales
 1. Existe deficiente número de personal técnico en las diferentes

- especialidades a excepción de suelos.
2. Escases de materiales y equipo de laboratorio.
 3. Falta de asesoramiento en otras áreas de especialidad.
- B. Aspectos Específicos por Especialidades
1. Entomología
 - a. Formación del museo entomológico con participación de 1 ó 2 especialistas en taxonomía de insectos.
 - b. Investigación en: "Identificación de los principales parásitos de Spodoptera frugiperda y Heliothis zea, en el cultivo de maíz en el CURLA" cuyo proyecto será oportunamente presentado.
 - c. En un futuro se planificarán proyectos de investigación conjunta con el MRN.
 - d. Se establecerá un convenio entre la sección de Entomología del CURLA y la de Sanidad Vegetal del MRN.
 2. Control de Malezas
 - a. Establecimiento de un herbario de malezas para fines didácticos.
 - b. Cooperar en los ensayos básicos de principales malezas a nivel de macetas.
 - c. Evaluar el control de malezas con tipos y dosis de herbicidas.
 - d. Ensayos con cero labranza y frijol de abono.
 - e. Experimentos conjuntos con MRN a nivel de fincas.
 - f. En docencia: demostraciones de trabajos y conferencias para estudiantes.
 3. Fertilidad de Suelos
 - a. Contacto a nivel internaciónl para el proyecto de investigación en leguminosas forrajeras adaptados al trópico.
 - b. Continuación con trabajos de calibración de métodos de análisis de suelos.
 - c. Evaluación de sistema de cultivos asociados a nivel de finca.
 - d. Proyecto sobre niveles de fertilización con N.P.K. a nivel de estación experimental.
 - e. Implementación de metodología de análisis químicos de suelos y plantas.
 - f. Identificación y clasificación de rocas.
 - g. Trabajos conjuntos con el equipo de investigación en finca en La Masica.
 4. Economía
 - a. Montaje del centro de cómputo al llegar el equipo de computación.
 - b. Capacitación en programación y uso de microcomputadoras para análisis estadísticos y financieros, para el personal que estará a cargo de ella.
 - c. Seminarios y charlas para estudiantes.
 - d. Revisión de programa y plan de estudio con participación de un asesor técnico.
 - e. Elaboración de programas analíticos sobre practicas de materias.
 - f. Organización para la formación del Departamento de Estadísticas y cómputo.

- g. Participación en análisis de costos, diagnósticos y predicciones de estudios económicos e investigación.

IV. Recomendaciones

- A. En todo trabajo de investigación de tipo agrícola se debe tomar en consideración los siguientes análisis:
 - 1. Agronómico
 - 2. Estadístico
 - 3. Económico
- B. En lo posible los trabajos de investigación deberán ser multi-interdisciplinarios.
- C. Crear un banco de información científica con resultados de investigación.
- D. Publicación de resultados.
- E. Fortalecer la labor de investigación conjunta, del convenio CURLA-PNIA tanto a nivel de estación experimental como a nivel de finca.

UNIVERSIDAD NACIONAL AUTÓNOMA DE HONDURAS
CENTRO REGIONAL DEL LITORAL ATLÁNTICO

"AÑO DE LA INVESTIGACIÓN CIENTÍFICA"

La Ceiba, 28 de Abril de 1983

Dr. Charles R. Ward,
Jefe Proyecto HAMP
Su Oficina

Estimado Doctor:

Adjunto a la presente estoy enviando a Ud., el documento que servirá de base a la labor de asistencia técnica, que el grupo asesor del Proyecto M.R.N.-AID/NMSU/HAMP, ofrecerá al CURLA, en investigación, capacitación y otros, de acuerdo a la disponibilidad de tiempo estipulado para la zona del Litoral Atlántico, que comprende La Masica y el CURLA.

Seguro de su amplia cooperación, para el logro de los objetivos y metas propuestas, me suscribo de Ud.

Su Atto. y S.S.


JOEL YANGALI A.
Coordinador de Investigación
CURLA
Coordinación Regional
de Investigación

:mel

cc: Director-CURLA
Director Investigación Científica UNAH
Asesores Proyecto HAMP
Personal técnico M.R.N.
Personal técnico CURLA
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