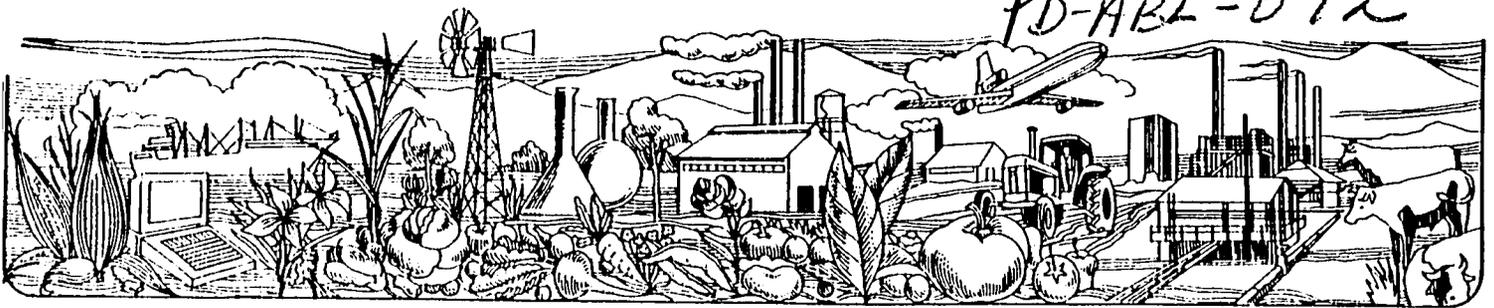


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**FINAL EVALUATION REPORT OF THE  
FUNDACION HONDUREÑA DE  
INVESTIGACION AGRICOLA  
(FHIA)**

Prepared for:

The Agency for International Development  
Tegucigalpa, Honduras

by

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## EXECUTIVE SUMMARY

The purpose of this consultancy was to carry out a final evaluation of the Agricultural Research Foundation (ARF) Project (No. 522-0249) concurrently with an evaluation of the FPX (Federation of Honduran Exporters and Producers) portion of the Export and Development Services (EDS) Project (No. 522-0207). The evaluations took place in Honduras over a period of approximately one month, between March 13 and April 12, 1994.

The evaluation team consisted of seven persons whose required skills and level of effort were specified by the terms of reference for the evaluation. The team was based in San Pedro Sula for most of the consultancy, with members working at FPX's offices there, or at the Honduran Agricultural Research Foundation (FHIA) facility at nearby La Lima. To simplify travel arrangements and logistics for carrying out field visits, two separate groups were formed; one group visited FHIA's research facilities and demonstration sites in central and northern Honduras, and the second group visited FPX's facilities, projects, and subsidiary companies in central and southern Honduras. During the final week of the evaluation the four members of the team who were still in Honduras moved to Tegucigalpa to present the results of the evaluation and prepare final drafts of the reports.

During the evaluation, team members met with GOH Officials, USAID employees, FHIA and FPX employees, directors, associates, members, beneficiaries, and direct users of services provided by the respective organizations. In addition, a large number of USAID documents, and project-related documents were reviewed.

The terms of reference for the evaluation also specified that a special report be written analyzing the possible merger of FPX and FHIA, or suggesting some other means of integrating or coordinating their respective activities. This was later changed to an analysis of different alternatives that USAID might consider to continue the most important work performed by FPX, under the assumption that FPX would no longer exist as a federation. This analysis was included as a section of each evaluation report.

Given the large number of questions to be answered it was necessary for each team member to answer those questions which were most closely related to his individual skills. Each team member wrote individual reports which not only answered the questions, but also evaluated the organization from in terms of his area of expertise. The individual reports were used in great part as the basis for writing the evaluation report. The evaluation report was written after a brief but intensive work schedule, based on the information obtained and on the judgement and personal experience of individual team members. The conclusions are, therefore, generally subjective.

The ARF Project began in September, 1984 with the primary purpose of establishing an independent, private agricultural research foundation in Honduras to assist in addressing the basic problem of low agricultural productivity with the goal of improving basic food production. The project was structured to take advantage of a unique opportunity resulting from the donation by United Brands, Inc., of their banana research facility at La Lima to the people of Honduras. The purpose of the project was to establish FHIA, which would in turn expand and improve the

agricultural research system and enable it to be more responsive to the technological needs of farmers, particularly those producing non-traditional crops for export.

While it was concluded that most of the important project goals were met, the limited availability of relevant macroeconomic information on non-traditional agricultural production, exports, value of local sales, and employment made it impossible to categorically define the impact of the project on national economic indicators. Therefore, many conclusions were drawn from an analysis of macroeconomic data which were indirectly related to project outputs, as well as from internal studies made by FHIA on the impact of their research activity on non-traditional agricultural production.

The major conclusions of the evaluation are the following:

- 1) That FHIA was established and has developed into a mature, viable research organization with an international outlook. In this regard, the purpose of the project has been accomplished.
- 2) Project goals regarding increases in gross domestic product, employment, and farmer incomes have been met or exceeded.
- 3) The present endowment structure will permit FHIA to operate at its present level of activity for the foreseeable future. However, any significant expansion of FHIA's operations, particularly into extension or export marketing activities, will require additional sources of income beyond the current endowment structure.

The terms of reference for the evaluation required that the team look at possible future project activity to continue the work of FHIA and FPX. This evolved into an analysis of different alternatives that USAID might consider to continue the most important work performed by FPX, under the assumption that FPX would no longer exist as a federation.

The analysis shows that FPX provides three types of services to their members, which could be assumed by other organizations. These are: a) market and product information, b) product development, and c) export marketing services.

Several alternatives were reviewed, and the following recommendations were made:

- 1) To provide for continuity of market information, transfer the entire CENDOC facility to FHIA's Communications Center.
- 2) Future activity in NTAE product development should continue to use the commodity systems approach, which incorporates all activities required to develop a new product and ship it to market. Product development should focus on a limited number of new products. For example, only five or six products should be selected which have excellent market potential; which have the potential to make a substantial impact on the Honduran economy, and which can also be grown competitively in Honduras.

FHIA is the recommended alternative to FPX for future product development, primarily because the foundation has the ability to carry out this activity with only a slight increase in permanent staff, which could be supplemented by STTA. However, changes would be required in the direction of FHIA's research, and changes in FHIA's research philosophy. Another advantage is that FHIA's involvement with international markets as a result of this work will be of tremendous benefit to the foundation, and should help guide future research activity.

3) Three alternatives are presented for the provision of export marketing services:

- a) Do nothing - for awhile: Under this alternative, USAID would wait and see if an exporters' association or other similar organization might evolve as a strong, grass roots representative of Honduran exporters in the aftermath of FFX. This would be a long-term solution which, in the end, could prove to be highly effective. Under this alternative, limited support could be provided to the Miami office on a phase-out basis as it achieves self-sufficiency. This alternative would require the smallest amount of funds over the near term.
- b) Create an export marketing Division at FHIA: This could be a cost-effective means of providing this category of services, since FHIA is a local, established organization. This alternative would also be a logical follow-on to relocating CENDOC to the FHIA Information Center and arranging for FHIA to carry out NTAE product development activity. Further exposure to international markets arising from this activity would also be beneficial to FHIA.

Under this alternative the project design would need to respond to concerns about FHIA's ability to continue as a premier research organization while providing a range of services not related to its primary purpose, and to what extent export marketing activity would be a distraction to FHIA management.

- c) Contract a private company to carry out export marketing services on behalf of Honduras exporters. This alternative would be more costly on a "stand alone" basis, but it would most likely be a highly effective way to deliver these services since some of the staff would be expatriate professionals in the field. The project team could work at FHIA's complex in La Lima. This would bring about some reduction in operating costs, and would ensuring close coordination with FHIA's information and product development activity. Under this alternative, the risk of "distracting" FHIA from its intended purpose of providing quality research would be minimized.

Budgetary constraints on future project activity will determine which of the alternatives can be selected.

## **I. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS**

### **A. Conclusions**

1. FHIA has developed into a maturing, viable research organization with an international outlook. In this regard the project purpose has been accomplished, but some areas still need attention: FHIA lacks (or, at least has not communicated) a central concept statement and a clearly-defined organizational philosophy, and has not developed a set of far-reaching goals to guide the institute. This makes the process of project selection inconsistent, and makes the process of directing and coordinating research functions more difficult than it otherwise would be.
2. FHIA could be a more effective organization if communications were improved between operating Divisions; and within the Research Division, between research programs. For example, there is not a systematic, in-depth review of research plans and results. Furthermore, communications between FHIA and the general public about FHIA programs and accomplishments should also be improved.
3. The present endowment structure will enable FHIA to maintain its current level of core services for the foreseeable future. However, further assistance will be required if FHIA expands its research program into areas of social concern, where the recovery of operating costs is unlikely (eg. small farmer research support). FHIA merits continued financial support, which should be tied to specific objectives.
4. Of concern is that the GOH has expressed on several occasions its desire that government-sponsored research be incorporated into FHIA's research program, because government funds for this purpose are severely limited. Should FHIA succumb to pressure from GOH to assume this responsibility without adequate funding, the outcome will be detrimental to the Institute.
5. FHIA's service/contract fees consistently cover the organization's direct, out-of-pocket costs for providing services. However, in some cases the fees collected do not fully recover indirect operating costs, nor do they contribute toward a reserve for future expansion.
6. Project goals were met in terms of GDP increase, job creation in the agricultural sector, and farmer's income.

### **B. Recommendations**

1. FHIA should develop its central concept and a clear statement of its institutional philosophy, goals, and objectives, and prepare a five-year plan which lays out a strategy for their accomplishment. FHIA's five-year plan for its research programs should be aligned with the organization's strategic plan.

2. FHIA should re-examine their fee structure for contract services in light of recovering fully-loaded operating costs and establishing a modest operating reserve.
3. In selecting crops on which to do research, greater consideration should be given to the potential economic return, and on the size and availability of potential markets for the end product. FHIA should not assume responsibility for carrying out research programs requested by GOH unless adequate funds are available to offset the cost.
4. USAID (and other donors) should be encouraged to consider FHIA a resource available to Honduras and to Central America for contract services, and as a recipient of small grants.
5. FHIA should develop in-house expertise on how to access funds from USAID and other donors (eg. unsolicited proposals), and should aggressively seek these out.

## **II. LESSONS LEARNED**

1. An independent private research foundation can be an effective vehicle to improve agricultural productivity and diversity, and to assist in achieving economic growth.
2. For a research and service-oriented institution to become financially self-sustainable, an endowment fund is necessary to ensure that the focus does not become dependent on support from governmental or secular interests. However the creation of an endowment should follow a fairly long period in which the institution has proven its capabilities and relevance.
3. The likelihood of project success is increased if an established organization is chosen to implement the project. USAID was able to support a research facility which had a long operating history and a base of trained employees, although in a limited area of operations. This gave the project a good chance of success.

### **III. BACKGROUND**

#### **A. ARF Project Overview**

The Agricultural Research Foundation Project (ARFP) began in September 1984 and was designed to establish the Honduran Agricultural Research Foundation (FHIA) as an independent, private research institute. Through the creation of FHIA, the project addressed the basic problem of low agricultural productivity in Honduras, and supported the achievement of the GOH goal to improve basic food production and research. The project was structured to take advantage of a unique opportunity which resulted from the donation by United Brands, a multinational corporation, of their banana research facility at La Lima to the people of Honduras. The book value of the donated facility, including land, building, and equipment, was US \$1.8 million. However, United Brands assessed its contribution to FHIA, including banana and plantain germ plasm developed after nearly two decades of research, at US \$20 million.

The goal of the project was to increase employment, and increase income for farmers. The purpose of the project was to establish FHIA, which in turn would expand and improve the agricultural research system in Honduras and enable it to be more responsive to the technological needs of farmers, particularly those producing non-traditional crops for export.

It was initially planned that FHIA would be organized to do research and train its personnel through in-service or other training, and collaborate with extension organizations responsible for disseminating research results.

The project was designed with four interrelated components related to the development of appropriate agricultural technology, the provision of technical services, and the long-term financial viability of FHIA. These components were the following:

- 1) The establishment of FHIA, including initial capital investment, technical assistance, and core administrative staff support.
- 2) The development of research programs by FHIA, aimed at improving the productivity of non-traditional export crops, traditional export crops, and basic food crops. The expanded production of non-traditional export crops was FHIA's main priority.
- 3) Develop programs in communications, outreach, and institutional strengthening through the creation of a Communications and Development Directorate at FHIA. It was planned that modern communications technology would be used to produce materials in various media, improve the quality of training provided for extensionists, and to maintain research data and information.
- 4) Implement a multidisciplinary research and technical services program by continuing (and expanding) the laboratory testing service previously carried out by United Brands.

**AGRICULTURAL RESEARCH FOUNDATION PROJECT  
SUMMARY FINANCIAL PLAN (US \$000)**

<u>ACTIVITY</u>	<u>USAID GRANT</u>	<u>GOH</u>	<u>PRIVATE/ OTHER</u>	<u>TOTAL</u>
<u>Administrative/Operating Costs</u>				
Salaries/other operating expenses	6,185	1,175	1,180	8,540
Technical assistance	650			650
Total administrative/operating costs	6,835	1,175	1,080	9,190
<u>Capital Investments</u>				
<u>Experimental Substations</u>	220	150		370
<u>Research Programs</u>				
Non-traditional export crops	3,470		4,420	7,890
Traditional export crops	100	775	250	1,125
Basic food crops	1,200	1,455	475	3,130
Other research operations	770	160		930
Total research programs	5,440	2,380	5,145	12,975
<u>Communications and Development</u>				
<u>Technical Analytical Services</u>	2,700			2,700
<u>Evaluation</u>	200			200
<u>Project Liaison Officer</u>	375			375
<u>Contingency</u>	280			280
Total Project Costs	20,000	6,000	7,000	33,000

The project budget was established in an amount calculated to fully fund FHIA's core operations for a period of ten years. Funds were budgeted to cover the following startup and operating costs:

**Salaries and other operating expenses:** All of FHIA's administrative operating costs were covered, including the salaries of a Director General and three Directorate Heads.

**Technical assistance** was required to evaluate the laboratories and related equipment, to train FHIA employees in equipment repair, and to help develop research programs. A total of 123 person-months of technical assistance was planned.

**Capital investments:** Although the property donated by United Brands included 130 acres of land suitable for research, it was planned to acquire additional property as needed, until a total of 250 hectares was obtained. Additional capital investments included the

refurbishment of the La Lima facility, the purchase of farm equipment, vehicles, office furniture and equipment, communications equipment, radios, computers, and laboratory equipment.

**Experimental substations** were equipped with the necessary infrastructure and equipment required to conduct research at the sites.

**Research programs:** This component funds all aspects of research programs in the targeted crops, including equipment, supplies, labor, and technical supervision.

**Communications, outreach, and institutional development** activities were planned, which would a) create a communications network to facilitate the rapid flow of information to other research organizations and extension services, b) create and staff a Communications and Development Directorate, and c) provide training and courses in technology transfer to MNR extension agents, cooperatives and producer associations, and farmers in general.

**Technical analytical services:** This component was to ensure that FHIA had the capability to carry out laboratory testing services required to support Honduras' export promotion strategy. It was planned that FHIA would carry out analyses on soil, water, plants, bacteria related to processed food, levels of chemicals and pesticide, nutritional levels of animal feed, and diagnose disease and insect problems.

**Evaluations:** Two interim evaluations and one final evaluation were scheduled for the project.

**Project liaison** between USAID and FHIA was to have been done by a project liaison officer at USAID.

It was planned that by the end of the USAID funding period, FHIA would be a fully institutionalized, financially viable research center. It was also planned that cash generated from the sale of services would at least cover core administrative operating costs, and that FHIA's ability to develop effective research programs, combined with a proven track record would enable the organization to obtain the continued support from the GOH and other donors to cover recurring costs in the research programs, and for their expansion.

## B. Interim Evaluations

An interim evaluation of Project 522-0249 was conducted in November, 1987 by a five-person team contracted through Winrock International. A second evaluation on the research programs *per se* was made by a single consultant contracted by Development Alternatives (DAI) in August, 1989.

The purpose of the evaluation performed by the team from Winrock was to determine the amount of progress made with respect to organizing FHIA operations and initiating

programs in research, communications and sourcing funds; and to determine the future financial viability of FHIA.

The first evaluation was generally favorable, and complementary on the progress FHIA was making toward becoming a mature, viable, international research organization. The evaluation found that FHIA had taken on too many tasks for the limited organization, and was over-extended into too many areas. The more important recommendations arising from the first evaluation were the following:

- 1) Redefine FHIA's mandate, placing greater emphasis on export crops, and refraining from direct involvement in production development.
- 2) That an endowment fund be established, with funds from GOH and USAID.
- 3) That FHIA Initiate an aggressive fund-raising program.
- 4) That research activities be prioritized and that greater staff support be given to programs of greater priority.
- 5) That a "critical mass" of research effort be organized and funded on a long-term basis.
- 6) That FHIA continue to establish and strengthen linkage with other organizations to enhance the dissemination of research findings.

The purpose of the evaluation carried out by DAI in 1989 was to look at means of improving the productivity of FHIA's research programs and projects, and to determine the optimum size and composition of FHIA's research staff consistent with research goals and the availability of long-term funds. Important recommendations from the second evaluation were the following:

- 1) That FHIA initiate a membership program to attract notable individuals and prestigious organizations as members of FHIA. It was also recommended that FHIA charge a fee for the privilege of membership.
- 2) That FHIA create a nucleus of professional employees to handle basic research activity, at a level determined by long-term funding levels. Additional projects would be staffed on a life-of-project basis.
- 3) It was recommended that FHIA fill certain high-level positions which were vacant at that time.
- 4) That a source of long-term funding be assured, such as an endowment.
- 5) That FHIA concentrate research efforts on the following crops: bananas, plantains, cacao, and "diversified products" including mango, black pepper, and palm cultivation.

- 6) That FHIA develop an institutional structure and develop organizational procedures for carrying out "special" (non-basic) research projects.
- 7) Management organizational structures were recommended for technical and administrative support units.
- 8) Procedures for personnel administration were recommended.
- 9) Finally, it was recommended that FHIA emphasize that it is a Honduran organization, by changing the logo of the institute to something identified with Honduras.

## IV. ANALYSIS

### A. Achievement of Goals and Objectives

The modified logframe for the project is shown in Table 4 of Annex II. The original logframe for project 522-0249 was modified by PIL No. 33, published on May 26, 1992. Table 3 of Annex II compares actual and calculated (or estimated) performance in meeting project goals.

The more important economic objectives of the project were the following: a) increasing sector GDP by 3% - 5% annually, b) bring about an increase in average income of the participating farmers by 25% over the life of the project, c) create 10,000 jobs by 1994, d) bring about an increase of US \$65 million in national sales by 1994 for six or seven commodities, e) provide foreign exchange earnings of 150 million over the life of the project, and f) develop a black-sigatoka resistant banana variety which would save US \$15 million over the life of the project. The following discusses the changes in each of these economic indicators during the course of the project.

#### 1. Gross domestic production

Based on information published by the Central Bank, the agricultural sector GDP increased slightly more than an annual average of 3.4 percent (in constant 1978 Lempiras) for a total increase of 32 percent during the period 1984 - 1992. The percentage increase in agricultural sector GDP was slightly more than the increase for the total economy during the same period.

Within the agricultural sector, during the 1984 - 1992 period the coffee sub-sector provided one-third of the total increase in gross value added, whereas several other traditional activities either stagnated or decreased in size. For non-traditional products, gross value-added remained relatively unchanged between 1984 and 1989; beginning in 1989, however, there was a dramatic increase in the gross value added of these products. By the end of 1992, the gross value-added of NTAE's had grown by 50 percent over 1984 levels. The growth of gross value-added for plantains (another crop which was also heavily supported by FHIA during the same time frame) also registered a 50 percent increase during the 1984-1992 period.

It is evident from the data that the plantain and NTAE sub-sectors in which FHIA was active grew considerably more than the entire agricultural sector during the project period. However, it is virtually impossible to quantify the contribution that FHIA has made towards increasing GDP.

The following information may help place a value on FHIA's efforts: Recently FHIA estimated that its contribution towards the value of NTAE and plantains exported in 1993 was approximately 18 percent of total export value. In 1993 the export value of these crops was US \$45 million, of which FHIA's contribution was calculated to be US

\$8.1 million. In attempting to make a similar analysis for earlier years, it was concluded that the factor of 18 percent is not valid because the mix of crops and FHIA's level of contribution was different. Therefore, estimates for earlier years are not available.

## 2. Employment

Meaningful statistics on Honduran rural employment are not available. The only data which can be generated are mathematical calculations based on assumptions about economically active people, projected from the 1971 and 1988 census.

However, a recent estimate by FHIA of its own contribution to employment indicated that roughly 6,389 full-time jobs resulted from its current activities with 14 crops during 1993 alone. The employment generated by these crops prior to 1993 (using FHIA's coefficients and not including those in the 1993 estimate) would have been approximately an additional 5,200 persons. Indirect employment in an unknown amount has also resulted from the processing, transport and other secondary activities related to increased non-traditional export and import substitution crops. This implies that the project goal of 10,000 additional people employed in the rural sector was easily met.

Much of this employment favors the female work force, given the preference for women in some field and especially packing shed and processing operations.

## 3. Participating farmer's income

National statistics on income growth in the rural sector are simply not available, nor is baseline information available at FHIA which could be used to analyze the impact on participating farmer's income. Therefore, any conclusions as to the impact on participating farmer's income resulting from FHIA's programs to enhance NTAEs must come from deductive reasoning.

FHIA has estimated the change in productivity induced by its technology development and transfer activities with major commercial crops, and this change should relate directly to increased incomes (i.e. cocoa productivity increased by 60 percent as a result of FHIA's intervention). FHIA has actively promoted plantains and non-traditional crops, which, as explained previously, collectively increased in gross value-added by approximately 50 percent between 1984 and 1992. This increase must surely result in increased income by participating farmers. Therefore, it can be inferred that FHIA program beneficiaries exceeded the 25 percent target set by the Project.

## 4. NTAE exports

Reliable statistics on the value and volume of non-traditional exports are not available from government sources. A rough estimate of NTAE export earnings was calculated

for the period 1986-87 to 1991-92 by the USAID/H Agriculture Office, which reviewed U.S. import data on non-traditional products exported from Honduras. The original estimate was later updated with data obtained from USDA, PROEXAG, and FHIA, and the results extended through 1993. The final estimated value of NTAE exports for the six-year period between 1987-1993 was US \$138.9 million. This is a conservative estimate since it does not include some amount of NTAE products exported by truck to other Central American countries. If the value of NTAE exports for the period 1984-1987 and 1993-1994 were added to the above estimate, the value of non-traditional exports surely exceeded the goal of US \$150 million set by the project.

#### 5. Domestic consumption of non-traditional products

The same difficulty in obtaining appropriate information applies to the project objective of generating US \$65 million in local sales on non-traditional products by 1994. The objective appears excessive, given the size of the Honduran economy. Local sales valued in the amount of US \$65 million by 1994 equates to L. 364 million, or the equivalent to approximately 6% of 1994 GDP. It is highly unlikely that this objective was met.

The project design apparently failed to consider the effect of devaluation. At the 1984 exchange rate, the objective of US \$65 million would have translated into only L 130 million, which is a more reasonable objective.

#### 6. Disease-resistant plant varieties

The final quantified economic target in the logframe concerns benefits from utilization of the disease-resistant banana and plantain varieties already developed. A 1988 study calculated the net present value for the banana-plantain program of \$ 317.5 million and an internal rate of return of 42.6 percent. Since commercial production from these new varieties have yet to develop, no tangible benefits have been received to date. However, FHIA has negotiated contracts with tissue-culture laboratories in South Africa, the United States, and Australia to license the production of commercial banana plants of the sigatoka-resistant "FHIA - 01" variety, known commercially as "goldfinger" in these countries. The South African laboratory also negotiated to open a modular laboratory at La Lima. However, few plants have been produced commercially since plant production is still in the startup phase. Furthermore, planting material (seed) samples have been distributed to a large number of countries, for purposes of observation.

Economic benefits derived from the new disease-resistant variety have, until now, been small, but the potential is quite large. The greatest impact would be derived from introducing the new variety as a "commercial", or export banana. However, this decision will depend on several critical factors, all presently unknown: consumer acceptance of a more tart dessert banana, future severity and geographic reach of black

sigatoka, and the willingness by the industry to replace existing plantations with disease-resistant plants instead of simply moving to another location.

## B. Management Issues

### 1. Institutional identity, philosophy, and goals

The origins of FHIA lay in the United Fruit Company's research department. In 1984 a corporate decision was made to divest the company's research facilities at La Lima. As part of the conditionality of donating the facilities to the Government of Honduras (GOH), funding had to be secured to insure its continued operation as a private sector, non-profit service. Through accords reached between the GOH and the United States Agency for International Development (USAID), FHIA was established in 1984.

By 1994 FHIA moved from a donor supported institution to a self-sustaining private sector entity.

While FHIA was meant to be an private sector institution, it has yet to develop an independent identity. FHIA is still identified by some as part of the United Fruit Company, while others in the agribusiness community perceive it as an USAID, or donor, project.

This does not constitute an identity crises, but FHIA should move aggressive in the coming months to present itself to the Honduran, regional, and international agricultural community as a truly independent organization. All past references to GOH or USAID support should be removed from its public relations documents. New brochures which describe the current organization and services, should stress the private sector, fee-based nature of FHIA.

The entire senior management staff should be involved in establishing FHIA's own institutional philosophy, goals, and methodology.

FHIA is largely staffed by research scientists (even in its managerial levels), who tend to view planning as a series of independent projects. To overcome this limitation it is suggested that FHIA ask for external moderators to assist in the planning exercise. This will promote greater interaction among all FHIA staff and eliminate the chances of strong personalities or programs from dominating the process.

The result of this activity would be a FHIA philosophy, a set of goals, a five-year plan, and methodology to be followed.

Once the institutional goals have been established, each Division and Program will have to develop their respective strategies.

## 2. Program planning

Allocation of resources (money, facilities, equipment, and personnel) within FHIA are determined through annual planning sessions at the program level. These sessions are held about months before the budget year begins. It may be necessary to have Six-month reviews may be necessary to make adjustments in research plans and/or budgeting.

During this evaluation, many scientists and technicians indicated they were not part of the planning and decision making process. Mention was made of instances where administrative and financial systems or structures had been changed without prior notice. By working within an institutional guideline, which all parties developed, the overall direction of each FHIA program would be established. Just as important would be the delineation of inter- and intra-program relationships and responsibilities.

## 3. FHIA organizational structure and field locations

FHIA has developed the necessary structure to conduct high quality research, and carry out technology transfer. As the organigrams show (Figure 3, Annex I), FHIA is divided into four major divisions; Administration, Services, Communications, and Research.

The administrative and communications functions are located at the headquarters in La Lima, as are the maintenance shops, analytical laboratories, and the technical support unit to the research program.

Research and technology transfer activities are carried out at several locations in Honduras. These programs are centrally administered from La Lima, but FHIA staff are permanently located at the sub-stations. During the evaluation, the following facilities (locations) were visited:

<u>Location</u>	<u>Major activity</u>
Guarama	Banana/plantain, citrus, palm heart, nurseries
Calan	Banana/plantain, (research and tech transfer
La Masica	Cocoa, black pepper, farming systems, tech transfer
Comayagua	Onions, peppers, peanuts, mango
La Esperanza	Cool season horticultural crops, apples

## 4. The Research Division

The Research Division is the heart of FHIA's efforts to develop non-traditional exports. However, the research organization is not structured around logical crop groupings, and consequently, there is a mixing of objectives, crops, and responsibilities. It would be easier to define departmental objectives if crops treated within the department fell

within logical groups. For example, the diversification program incorporates many different short cycle crops, as well as tree fruit crops. The seed program is organized around a single individual who has an affinity for research on soybeans and sweet corn.

If the research programs were organized around similar crops (perennial vs annuals, vegetables vs grains, high value vs low value), it would be easier to focus on research goals and objectives. Marketing and economic data could be gathered, and research recommendations made for common groupings of crops. The research program might ultimately be streamlined if multiple, similar crops were treated on a similar basis. This organizational structure will be consistent with demand-driven research.

FHIA's research program is providing high caliber technical assistance to Honduras but the programs covers a wide range of products and the research staff is working at full capacity. Careful planning and resource allocation will be necessary to maintain the quality of research now being conducted, and to enlarge the program in the mid- to long-term.

#### 5. Cost and Pricing of Services

FHIA is a private sector, non-profit, self-sustaining, research foundation. This definition causes confusion among potential clients, and seemingly, among FHIA staff. There exists some confusion as to how and why a "Foundation" charges for its services when it is supposed be "non-profit". Within FHIA, several staff members expressed their concern over the fees being charged.

FHIA needs to explain more clearly its role to the public, and to its own employees. FHIA cannot be an independent and self-sustaining institution if it does not charge or contract for its services. The fees should not only cover the cost of materials and overhead, but should also include a reserve for future growth. Without this reserve, FHIA will not be able to enlarge its service base.

FHIA must also recognize that much of its physical plant and equipment will have to be replaced or updated periodically. The cost of replacement for many of these items (vehicles, new laboratory equipment, and computers) will require significant dollar expenditures to replace. Depreciating the original cost of assets valued in Lempiras will not create adequate reserves to replace the assets in (appreciated) dollar costs.

For the last three (3) years the analytical services laboratories have indexed their costs against inflation, and have raised their prices on an average of 10% every six months. As a result it is the only program that is paying its own way.

As part of the FHIA planning exercise, the issue of cost vs. price of services, will have to be addressed. Again, an external consultant may have to be called in to develop a price analysis and indexing system. (The firm of Price Waterhouse has provided this service to FHIA in the past.)

## 6. Dissemination of Information and Production Technology

FHIA generates excellent research results and production-oriented information, and most of it is presented in the Annual Report.

Almost every researcher interviewed admitted there is not enough effort put into transferring the information into "user friendly" documents, particularly for the small and medium sized producer. This is not an unusual situation, and should not be viewed as a failure of FHIA scientists to be aware or responsive.

Few top-notch scientists are also good technology transfer agents. Agricultural scientists like to see the results of their efforts translated into action (production) rather than publications. All too often it is assumed that the publication function belongs to someone else.

Another area of concern to the evaluators is the quality of research reports, and their dissemination, outside of FHIA. Few research reports are in a form suitable for international publication or presentation. If FHIA is to maintain and improve its international status, it will have to develop a system of peer review of its research results.

With the virtual demise of the extension service in Honduras, FHIA has come under pressure (some external, and some internal), to fill this void. FHIA should not be expected to meet Honduras' need for agricultural extension. FHIA's role is that of technological transfer, which is communicating results in usable form to producers and other interested parties, and by training interventions. FHIA's should respond to this pressure by setting priorities on technology transfer, and to use the Communications Center to provide the information.

The team concluded that FHIA should do more to communicate with the general public about FHIA's programs, accomplishments, and available services. Attendance by FHIA senior managers at international events such as trade shows where promotional material can be presented is one means whereby this could be accomplished. This will ensure that FHIA maintains an international perspective, and can be a good means of marketing FHIA's services. Otherwise, the potential danger is that FHIA could shrink into a mere national organization of limited scope.

## 7. Future Direction and Sustainability

FHIA is now at the threshold of becoming its own institution. With the eminent termination of USAID funding, FHIA will be free to determine its own philosophy, goals, and methodology.

FHIA should seek outside advice on administrative and/or technical questions when the existing staff lack the training or experience to address them. FHIA must also remain open to outside review of its scientific programs and methodology

Expansion of the FHIA services will depend on finding more fee-paying clients in the private sector, within Honduras and Central America.

To continue and increase services in technology transfer to the poorer sectors of the economy, FHIA will have to lobby strongly among the donor community.

As long as the level of excellence is maintained, and pricing of services accurately reflect the cost of doing business, FHIA will survive.

### C. Finance and Administration

FHIA's Administrative and Finance Departments provide administrative support to the generation of research information, to those activities involving technology transfer, and to training programs. In this way they indirectly support FHIA's efforts to develop NTAEs or products to substitute imports.

FHIA's accounting system has been reviewed and modified several times since the inception of the organization (most recently reviewed by a Canadian consultant in January 1993) and, as currently operating, provides the financial information needed by its various operating units to monitor performance while maintaining the necessary controls and segregation required by its funding sources and applicable Honduran laws and regulations. The most recent modification was in August 1993, when new computer software was installed. The new system was appropriately tested by operating parallel with the previous system through Dec. 31, 1993, and is now functioning satisfactorily. However, one modification remains to be made which will enable the inclusion of individual project information in the consolidated financial statements thus presenting FHIA's complete financial position and operating results for management's use. This final step was discussed with the general manager for administration and finance and the chief of the accounting department who agreed that this modification would be completed within the next two months; therefore, we have not made any formal recommendation in this regard.

The accounting system described above provides daily cash activity and balance reports for all the various funds and accounts. In addition, frequent cash flow projections are prepared for both short and long term needs and actual flows are compared with such projections to further refine this process and optimizing cash usage and the investment of surplus funds in interest bearing vehicles.

FHIA's procurement system is appropriately structured requiring the submission of formal requisitions which include the approval as required by written operating policies and appropriate budget information to ensure the availability of funds before the process is

initiated. The procurement of articles above a certain value requires at least three formal quotations with related review procedures for selecting the vendor before a purchase order is issued. Receiving reports and when appropriate entry in inventory records is also required.

All of FHIA's operating policies and the related implementing procedures were in the process of being rewritten at the time of this evaluation. FHIA has had written policies and implementing procedures, including related handbooks/manuals, for some time; however, current management recognized the need for modifying and updating prior to this evaluation. The review and writing process has been continuing for some time and has included the participation of staff at all levels to ensure that a sense of ownership will exit when finally issued and implemented. The personnel policies manual has been completed and is ready to be submitted to the board of directors for approval. We reviewed current draft status of the other policies and believe they will all be ready for submission for approval by the end of April 1994.

Written policies and procedures are established for control and safeguarding physical assets and, based on interviews and personal observations, are being implemented satisfactorily. Physical security at the La Lima headquarters is very tight, e.g., vehicles must have the appropriate documentation before leaving the premises; entry and exit of personnel during non-working hours (including the Director General and members of this evaluation team) must be recorded and signatures obtained; buildings and file cabinets, desks, etc., are locked during non-working hours, periodic physical inventories are taken and reconciled with property and accounting records, and all property is "tagged" with appropriate identification disks and numbers.

We have concluded that FHIA currently has sufficient control of its physical resources.

**Endowment Fund:** As of the date of this evaluation the endowment fund has received its principal funding from the Government of Honduras of approximately one hundred million lempiras. The first deposit was made in 1993, and the remainder was received in January 1994. In addition funds are being generated by FHIA from non-government sources and the fund balance is projected to total approximately one hundred six million lempiras by the end of 1994. A board of directors for the fund has been appointed in accordance with the governing agreement and the directors have had five meetings since May, 1993 (the most recent meeting was in March, 1994) and the next meeting is planned for April 20, 1994. The directors have established appropriately conservative procedures for safe and secure investment of the fund while ensuring that maximum return on invested funds is received from such minimum risk vehicles.

Based on current investments and conservative projected returns on subsequent investments this year, the fund is expected to earn approximately seventeen million lempiras in 1994. FHIA's approved operating budget for 1994 has resulted in requested disbursements from the fund of approximately ten million lempiras and one hundred thirty thousand dollars (at

the present time the principal of the fund includes \$390,000, invested in short-term U.S dollar certificates of deposit in a local bank).

Based on our review of the current operation and management of the endowment fund we believe there are adequate systems in place for ensuring maximum security of FHIA's endowment fund, and the projected uses of the fund are in accordance with FHIA's stated objectives and those of AID Project No. 522-0249. In the opinion of the writer of this report such uses are about as close to "optimum use" as any AID project will ever come.

**FHIA self-sufficiency:** FHIA's endowment fund, as discussed above, will generate sufficient additional income, which, when combined with current levels of income from services and projects will enable FHIA to operate as a financially self sufficient organization, including provision of funds for replacement of capital assets.

**Adequacy of FHIA's membership fees:** We do not believe that there was ever any intention of establishing any relationship between membership fees and any services that may be provided to members of FHIA. The cost of services provided by FHIA to members are generally fully covered by the fees charged for such services.

#### D. Training and Technology Transfer

Training and technology transfer are important functions which are carried out by FHIA's Communications Center, an operating unit which is critical to FHIA's success. If research results are not communicated to others in a form they can use, or if others are not trained to use research results, the research is of no benefit. The role of the Communications Center is to link the researcher with the end user.

##### 1. The Communications Center

FHIA's Communications Center includes the library, training center, and the publications department. The Center's constituency included agricultural technicians, producers, and students. The Center also supports FHIA's administrative and research functions by providing in-house training, by publishing research information, and by the providing library services. While the Communications Center has fully surpassed all project objectives, it has not operated at full capacity. In particular, the production of audiovisual material has been considerably less than its capacity to produce.

FHIA has experienced difficulty in attracting and holding qualified, experienced staff at the Center. During the evaluation it was noted that three key positions were vacant, including the Communications Manager, a publications specialist, and a specialist in planning and carrying out training programs. The shortage of staff has had the effect of slowing the production of audiovisual and other training material.

Another problem is that many division chiefs and program leaders look at the Center as merely a resource to produce documents and to organize training events. The responsibilities of the new Communications Manager should be seen as an integral part of institutional activity, and it should be kept in mind that communications is a technical discipline which plays a key role in getting information to the user. Utilization of this technical resource to its greatest potential is needed in order for FHIA to reach maximum effectiveness as a research organization.

## 2. FHIA training programs

FHIA has developed both internal and external training programs at a level which considerably surpasses the objectives of the project. Training participants have recognized the high quality of FHIA's training programs, and have provided feedback and suggestions on how to make additional improvements in training courses.

Selection of training participants is done primarily by means of an invitation published in local newspapers - once weekly, for four consecutive weeks leading up to the training event -and by word-of-mouth promotion of the event by FHIA's technical field staff. In this manner, the opportunity to participate is offered to all interested persons.

As indicated by FHIA's method of announcing training programs, many of these training interventions are heterogenous courses geared to the general public. The team concluded that FHIA should also work to develop specialized courses for specific clients by reducing the number of subjects to be treated, and provide more in-depth training on the relevant subjects. Furthermore, producers with experience in export crops should be invited to participate in the specialized courses.

FHIA's in-house training programs should be focused on team building and the development of skills related to working in groups. Internal programs should be structured to emphasize better communications, and employees should be trained to better promote the image of FHIA as an organization.

A general review of FHIA's training programs should be made jointly by the Communications Manager and the Research Director, under the guidance of the General Director. The purpose of the review would be to ensure that training programs are developed which best serve the needs of the organization.

While visiting the center the team observed that FHIA does not have a data base to facilitate the planning, execution, monitoring and evaluation of training activities. Priority should be given to developing this management tool. Information to be captured would be a registry of training events, the type and number of participants, the location and date of the training event, and a directory of training instructors and facilities.

FHIA's training programs have exceeded, by far, the project objectives. Through September 30, 1993 a cumulative total of 5,447 persons had been trained, including 2,592 producers, 2,083 professionals, and 772 students. Females accounted for 11% of the total people trained.

### 3. Publications

Written publications produced by FHIA have been of generally good quality, in volumes which exceed the goals of the project. The principal publications include manuals, guides, pamphlets; technical reports, handbooks, and summary outlines; institutional information on FHIA, and administrative material. The majority of the publications generally have been oriented toward technical personnel and highly-educated agriculturalists. However, a few specific training programs have been developed for groups with little or no educational background, such as cacao producers and small farmers producing chile tabasco.

Field observations made during the evaluation confirm that technical material such as the crop production guides is a continuing source of information for the technical field staff and for producers with a technical orientation. However, the annual research reports are a different matter: these provide technical information on different research programs, and are in much less demand because they are not sufficiently "user friendly". They appear to be too specialized and focused to be very popular. These could also provide an excellent source of published information if the reports were edited into a form more palatable to the agricultural community.

The team believes that FHIA should consider the possibility of creating a publications review board whose principal function would be to ensure that material published by the organization meets rigorous quality standards in terms of content and presentation.

The team also believes that FHIA could improve their publications department by developing a data base and putting it into service to help with the planning, production and distribution of publications and other written material held at the communications center. The data base should include information such as title, medium, type of publication, author, publication date, dates printed, and number of copies. The department could be further upgraded if modern desktop publishing equipment were acquired, including a computer, software, and laser printer.

### 4. Technology transfer

FHIA has provided an important service to non-traditional agriculture through the transfer of technology and by providing technical assistance to producers. Technology transfer takes place by disseminating project-related information to farmers and technicians at field days, through demonstration, and by publications, seminars, and training courses. The demonstration projects managed by FHIA have attracted a great many visitors including technicians, producers, and local and international students.

The dissemination of technical information is important, and FHIA should make an effort to fully document the contacts made and the information distributed.

What is needed is to "organize" all efforts to transfer technology, which are composed of many diverse activities spread over a large geographic area. Now that FHIA's financial security appears assured, the institute should take the opportunity to carefully analyze its institutional program with regard to technology and extension services, and develop a strategy to follow for the efficient transfer of research technology. This should be done by the Communications Manager jointly with the Research Director, with the support of the General Director.

Field observations and interviews carried out during the evaluation affirm that field days and demonstrations have been well accepted by farmers, both male and female. These activities have undoubtedly contributed to the achievement of FHIA's objectives, and have helped to develop the image of high technology and competence which the organization enjoys.

For example, the cacao development program has achieved positive results in terms of area covered, and crop productivity. This was accomplished by a combination of outreach activities including field days and demonstration plots, and by working in cooperation with both public and private organizations: MNR and AHPROCACAO.

FHIA also provides direct technical assistance to growers, who are required to pay fees which offset the cost of the service. For example, on the Comayagua onion export project, a FHIA technician made weekly visits to individual farmers who participated in the project. On each visit the FHIA technician left technical recommendations to be implemented by the farmer, and made observations about how well previous recommendations were being carried out. Areas requiring immediate attention were highlighted. This practice has had good results, and has also provided a multiplier effect as the recommended practices are spread by word-of-mouth to neighbors and friends.

In general, FHIA has surpassed all project objectives in terms of technology transfer. Through September 30, 1993, the Communications Center had conducted a total of 182 seminars; had organized 93 field days, and had published 308 publications.

## E. Economic Aspects

### 1. Benefits for the economy

A chronic deficiency in attempting to analyze the economic benefits attributed to the ARF Project is the fragmented and inconsistent data published by different official sources. Comparison of data between the different sources is virtually impossible, and the validity of much of the basic data is questionable. Furthermore, a precise,

quantitative appreciation of the impact of the project on the national economy is difficult to define, much less calculate. For this reason the following discussion summarizes the macroeconomic changes which have taken place over the life of the project, without attempting to link these changes to project interventions.

Adaptive research carried out by FHIA, coupled with training and extension outreach activities have unquestionably stimulated widespread NTAE growth. This growth has undoubtedly had a direct, positive effect on national employment, investment, and exports, and has indirectly affected consumption, and investment in other activities. On the other hand it can be argued that some amount of NTAE growth would have taken place had FHIA never existed. Starting in the late 1980s, key changes took place in macroeconomic policy which brought about structural adjustment and a loosening of export controls which undoubtedly was a stimulus to NTAE exports.

The Central Bank data indicate that agricultural sector GDP increased just over an annual average of 3.4 percent in constant 1978 Lempiras for a total of 33 percent increase for the period 1984-1992, slightly more than for the total economy. Agriculture is the largest productive sector in the national economy, registering a stable 27-28 percent of GDP from 1984 to 1992 (in constant terms) despite the recent boom in manufacturing and construction. If the economic activities that support agriculture in general were added, such as transport, manufacture of packing materials, services, etc., the share of GDP which respond to agricultural activities reportedly would near 50 percent (IICA, p.8). (All figures are expressed in constant terms; if unadjusted Lempiras were used, the GDP would have grown by 182 percent).

Nationally, the production of the primary export crop, bananas, has grown by nine percent from 1984 to 1992, whereas non-traditional crops grew by 56 percent. For the more limited span of 1989-1992 the change in export value is more dramatic, with a drop of 16 percent for bananas and an increase of 33 percent for "other products" (which include NTAE). Internal production credit has risen also, from L.36 M to L.189 M for bananas in new loans, and from L. 102 M to L.175 M for "other crops" during this period.

All the above factors (area, export value, bank credit, and employment) point towards a positive economic impact of NTAE on a larger, more diversified, and potentially sustainable growth.

The role of FHIA has been to focus substantial research efforts on crop lines with export potential, coupled with a variable amount of directed production and marketing assistance. Many of the crop lines FHIA has been active in supporting with research and extension have been expanding in production: plantain, cucumber, cocoa, winter squash, processing tomato, and mango. Production statistics indicate substantial changes in volumes of these crops between 1984 and 1992: plantain up 44 percent, cucumber up 908 percent, tomato up 134 percent, cocoa up 20 percent.

## 2. Other benefits

The Project has supported a broadening of commercial agriculture by stressing NTAE. While not suitable for the very small farm unit because of some minimum capital and technology requirements (eg. for irrigation and pesticide use), the small and medium-sized units are major NTAE producers in Central America.

Another observed but not quantified benefit seen in areas with larger-scale commercial agriculture relates to technology transfer. The rural wage laborer, often with access to one-half manzana or less, is seen to be partially replacing traditional crops with vegetables to be sold at farmgate to traders, who often prefer buying mixed loads rather than only one product. This production technology is obtained from working on commercial farms and later transferred to family members. Since these trucks cross borders with minimal documentation, national income accounts do not include these flows. Census and Statistics Office figures indicate that over ten percent of pineapple and nearly 80 percent of plantain exports are to Central American countries. Supposedly these numbers are under-reported or not included in official Central Bank export calculations, because these products do not pass through port facilities.

## 3. Cost Effectiveness of the Project

Through Project support FHIA has been able to structure its operational strategy to continue basic varietal and adaptive research in the banana-plantain area, while dedicating substantial resources to other programs (cocoa, horticulture and diversification). Indicators of the success of this approach include: 1) the sustained support of general NTAE activities, which sector-wide have shown impressive minimum earnings of \$ 138.5 M (1987-1993) for the \$ 20 M Project investment; 2) an estimated \$ 8.3 M contribution to export earnings in 1993 alone, compared with L. 12 M operational expenditure; and 3) potential savings of at least \$ 9 M annually from Sigatoka disease control for Honduran commercial banana producers, plus the doubling (or more) of plantain yields through use of the disease-resistant variety.

Although there may be more cost efficient techniques to obtain specific results for different crops and production systems, once they are defined and tested, it seems clear that FHIA's structure as an independent private research foundation continues to be the most effective choice to determine these variables and options.

## F. Women in Development Issues

This project was authorized in August 1984, and the conceptual planning and design started in 1983. At that time AID design guidance did not include gender specific guidance regarding target beneficiary groups directed toward improving the lives of women. The project paper makes no mention of women in any section, including the social soundness

and targeted beneficiary sections. In fact the word "women" is not in any section of the project paper index.

Since the original design and early years of implementation did not include any specific measures to improve the economic, education, and social status of women there were no built in indicators to measure even the indirect benefits for women. The project has directly benefitted approximately six hundred women producers, agricultural professional, and students through its various training activities where such statistics were maintained. In addition, women have benefitted from the general improvement in food production attributable to FHIA's research activities, along with the rest of the Honduran populace.

The principal activity carried out by FHIA which directly benefits women is training. From the beginning of the project until September 30, 1993, a total of 599 women participated in FHIA training programs. The women participants came from the ranks of producers, agricultural professionals, and students. Female participation in FHIA training programs amounted to 11% of total participants. Although records were not kept on the number of women who participated in other training interventions such as field days, demonstrations, and visits to research sites, FHIA estimates that the number far exceeds the number of participants in formal training programs.

FHIA is aware of the importance of contributing to the improvement of the status of women in Honduras and in Central America, and such awareness is reflected internal employment practices (e.g., two senior scientists are women as are several laboratory technicians), and in current project planning. For example, the team visited Comayagua where FHIA has projects supporting the production of onions, tomatoes, mangos, and other export crops. Many women and young people are now employed in crop production, who otherwise would not have had employment opportunities. One farmer who grows and packs onions for export has 44 employees, of which 35 are women. Female employees are generally preferred over male employees for work which is delicate, or when greater precision is required. In this particular instance, females were used for transplanting onion plants, and harvesting, curing, and packing the end product. Male labor was used mostly for heavier work such as transport of harvested product, irrigation, and fertilization.

## V. FUTURE DIRECTION

The terms of reference for the evaluation required that the team look at possible future project activity to continue the work of FHIA and FPX. One issue to be addressed was the possible consolidation and streamlining of project activity by merging the two organizations or suggesting other means of integrating or coordinating their respective activities. This was later changed to an analysis of different alternatives that USAID might consider to continue the most important work performed by FPX, under the assumption that FPX would no longer exist as a federation.

### A. Services Provided by FPX To the NTAE Sector

The first step in the analysis is to define clearly what services FPX provides to their members. These are: a) market and product information, b) product development, and c) export marketing services.

**Market and product information** is provided by the CENDOC information center, and is supplemented by information on current market prices and market intelligence for specific products which is made available by import brokers to the FPX field representatives coordinating the production and shipment of that products.

**Product development** incorporates those activities in the "commodity system" required to develop a new product and ship it to market: research, seed selection, trial plots, crop cultivation, harvest, selection, grading, packing, cooling, storage, transportation, marketing, and sales.

**Export marketing services** include activities such as representing Honduran exporters of agroindustrial and aquaculture products at international trade fairs and conventions; providing a point of contact for foreign brokers wishing to source produce in Honduras, as well as Honduran exporters wishing to make contact with foreign importers; assisting importers and exporters "make deals"; weeding out dishonest brokers, and in general, keeping current with market intelligence on Honduran products in overseas markets. Operating the Miami office is another export marketing service carried out by FPX.

### B. Alternatives for Providing FPX Services

The following alternatives are presented for the consideration by USAID as a means of continuing the activities carried out by FPX:

#### 1. Market and product information

While there are a number of excellent institutions in Honduras (i.e. Zamorano) which could easily "absorb" CENDOC, the most logical solution would be to transfer the entire CENDOC facility to FHIA's Communications Center. Considerable synergy could result if the two information services were combined. However, it is

recommended that the functions of CENDOC not be merged with those of FHIA's library and information center; CENDOC should maintain its integrity as a marketing information unit, and function as a sub-unit within the Communications Center.

## 2. Product development

It is recommended that future USAID support of NTAE product development continue to emphasize the commodity systems approach. In addition, potential new commodities to be developed in Honduras should be selected on the basis of a) the size and availability of potential markets, b) the ability of involved and committed producers in Honduras to produce and deliver the commodity to market at competitive price and quality, and c) the potential overall economic of the new product on the Honduran economy.

Project activities to develop NTAE commodities should focus on a limited number of new products (say, 5 - 6 products for which real markets - niche or otherwise - exist), to be developed over a specified time period. Activities carried out under the project would include all those described in the "commodity system", as well as making a number of product trial shipments to targeted markets. The project would work with a group of Honduran producers to produce the targeted product, and would assist with marketing arrangements in the importing country. The project would support this activity until the product "graduates", or when the process reaches the state where shipments could continue on an unassisted basis.

The team could generate only two reasonable alternatives for product development: a) FHIA, and b) a "mini" version of the regional PROEXAG Project which could be designed to serve only Honduras.

FHIA is the recommended alternative for several reasons:

- a) FHIA has the in-house expertise (or the ability to easily acquire the technical expertise) needed to implement a project of this type. FHIA obviously has experience in carrying out research trials and production of diversified crops; FHIA's post-harvest program will soon be fully staffed, including a highly qualified expatriate technical advisor.
- b) Carrying out product development work through FHIA will be much more cost-effective than using a stand-alone, "mini" PROEXAG project partially staffed by expatriates. Some additions to permanent staff at FHIA would be required, which could be supplemented by STTA. Additionally, changes in the direction of FHIA's research, and changes in FHIA's research philosophy would be required.
- c) FHIA will be involved with international markets as a result of the work required to select the products to be developed, and by carrying out the trial shipments.

This experience will be of tremendous value to FHIA, and help the organization orient future research activity.

### 3. Export marketing services

Three possible alternatives were generated as a means of providing export marketing services if FPX is no longer capable of providing them. The advantages and disadvantages of each alternative are as follows:

- a) **Do nothing - for awhile:** FPX was a "top-down" Federation created from USAID project resources which never took root as a broadly-based organization with strong member support. One alternative for providing export marketing services would be to wait and see if an exporters' association or other similar organization might evolve as a strong, grass roots representative of Honduran exporters in the aftermath of FPX. In this event, the organization could be an excellent partner with which USAID could work to support export marketing. This would be a long-term solution which, in the end, could prove to be highly effective. Under this alternative, limited support could be provided to the Miami office on a phase-out basis as it achieves self-sufficiency.

The downside of this alternative is that an effective grass roots organization might never evolve, even with outside encouragement. However, in the face of limited project funds for future activities, this "holding" operation would require few funds.

- b) **Create an export marketing Division at FHIA:** This could be a cost-effective means of providing this category of services, since FHIA is a local, established organization. This alternative would also be a logical follow-on to relocating CENDOC to the FHIA Information Center and arranging for FHIA to carry out NTAE product development activity. Further exposure to international markets arising from this activity would also be beneficial to FHIA.

Under this alternative the project design would need to respond to concerns about FHIA's ability to continue as a premier research organization while providing a range of services not related to its primary purpose, and to what extent export marketing activity would be a distraction to FHIA management.

- c) **Contract a private company to carry out export marketing services on behalf of Honduras exporters:** This alternative could also be carried out through a "mini" PROEXAG project. It would be more costly on a "stand alone" basis, but it would most likely be a highly effective way to deliver these services since some of the staff would be expatriate professionals in the field. Under this alternative, the risk of "distracting" FHIA from its intended purpose of providing quality research would be minimized.

The organization would be responsible for promoting and assisting in the marketing of all Honduran agro-exports, and would attend trade shows, link brokers with exporters, assist in the screening of potential customers, become involved in shipping negotiations, perform inspections and quality control at both shipping point and the receiving point, and assist in meeting import regulation in the importing country. The organization could also provide valuable assistance to FHIA on the marketing aspects of product development.

The company would be contracted for a planned, limited life during which time USAID project support would be provided.

The project team might be able to work at FHIA's complex in La Lima. This would bring about some reduction in operating costs, and would ensuring close coordination with FHIA's information and product development activity.

## VI. EVALUATION METHOD

As specified by the terms of reference for the evaluation, the evaluation team carried out concurrent final evaluations of FHIA (Project No. 522-0249) and of the FPX component of the Export Development and Services Project (522-0207). The evaluations took place in Honduras over a period of nearly one month, from March 13 - April 12, 1994.

The evaluation team was composed of seven persons, whose individual skills, and the level of effort authorized for each member, are shown in the following table. The approximate breakdown in the amount of time spent between the two organizations is also shown.

For purposes of travel and logistics, two separate groups were formed. Group 1 (G-1) visited FPX projects, facilities, and subsidiary businesses in Comayagua, Choluteca, Yojoa, and San Pedro Sula. Group 2 (G-2) visited FHIA's research and production plots in La Lima, Comayagua, Progreso, La Masica, and La Ceiba.

GROUP	POSITION	% TIME WORKED	
		FPX	FHIA
G-1	Chief of Party; Ag Marketing and Member Organization Specialist (COP)	60	40
	Institutional Development and Management Specialist (IDMS)	65	35
	Market Information Specialist (MIS)	95	5
	Finance and Accounting Specialist (FAS)	40	60
G-2	Research Specialist (RS)	0	100
	Economist (EC)	40	60
	Communications/Training Specialist (CTS)	45	55

The team was based in San Pedro Sula for most of the evaluation with some of the members working at FPX's offices in San Pedro Sula, and others working at FHIA's offices in La Lima. During the final week of the evaluation the team moved to Tegucigalpa, to make presentations of work completed to USAID, and for drafting the final versions of the reports.

The Scope of Work specified that separate evaluations would be carried out for FPX and FHIA, and that a special report be written analyzing the possibility of a merger or some other means of achieving greater coordination of project-related work performed by the two organizations. Overall responsibility for producing the three reports was assigned to the COP, with the support of the other team members. In addition, each team member was responsible for writing individual evaluation reports on FPX and FHIA, from the unique perspective of their job specialty as shown in the above table. The individual reports also responded to the specific questions listed in the Scope of Work.

Given the large number of questions which had to be answered as part of the evaluation, it was necessary for each team members to answer a range of questions on the two organizations which were generally related to his area of expertise. (See Table 2 of Annex II for a listing of the required tasks, and their assignment for completion). Individual team members had to work independently, but in close coordination with other members. Therefore, a two-day meeting was scheduled for work planning and team orientation on the first day after the team was assembled in San Pedro Sula as a means of ensuring that the work would be tightly coordinated from the beginning. The meeting was attended by team members, USAID Officers, and managers from FPX and FHIA. Following the planning session, the team made a tour of FHIA's installations and research project activity in La Lima. Afterwards, several team members also made an informal tour of FPX's offices and documentation center in San Pedro Sula.

During the course of the evaluation, team members met with USAID officials involved with the two projects; with members of the Board of Directors, the General Manager, and technical employees of FPX and FHIA, respectively; past General Managers of FPX; FPX members; Government officials, producers, project managers, Cooperatives and other beneficiaries of services, and executives of FPX subsidiaries. A list of persons contacted and their role in the evaluations is shown in Table 1 of Annex II.

As part of our analysis and investigation, the team read a large number of documents related to both projects, and reviewed countless internal documents from the two organizations. A list of documents reviewed by the team is shown in Figure 3 of Annex I.

The evaluation reports were written after a fairly brief but extensive review of background material, and following many interviews with knowledgeable people. The results and conclusions are subjective. These are based on the information obtained and on the judgement and experience of the team members, whose collective input was the basis for the summary reports. The evaluations were not considered to be an operational audit of the two organizations, nor were they designed to investigate improprieties. The task of the evaluation was to analyze the work accomplished by FPX and FHIA, and to determine to what extent organizations accomplished the goals and purposes of the two respective projects.

# ANNEX I

## Figures

## LIST OF ACRONYMS

<u>ACRONYM</u>	<u>MEANING</u>
AGRIDEC	Agricultural Development Consultants, Inc.
AHPROCACAO	Honduran Cacao Association
ARD	Agricultural Rural Development
ARF	Agricultural Research Foundation
ARFP	Agricultural Research Foundation Project
ATI	Appropriate Technology International
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CDIE	
CENDOC	Centro de Documentación (FPX)
COP	Chief of Party
DAI	Development Alternatives, Inc.
EDS	Export and Development Services
EMSSA	Empacadora Marina del Sur, S.A.
FEPROEXAAH	Federación de Asociaciones de Productos y Exportadores Agropecuarios y Agroindustriales de Honduras
FHIA	Fundación Hondureña de Investigación Agrícola
FPH	Federación de Agroexportadores de Honduras
FPX	Federation of Honduran Exporters and Producers
GDP	Gross Domestic Production
GOH	Government of Honduras
MNR	Ministry of National Resources
NTAE	Non-traditional Agricultural Export
PIL	Project Implementation Letter
PP	Project paper
PROEXAG	Promotion of Export Agriculture Project
STTA	Short Term Technical Assistance
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

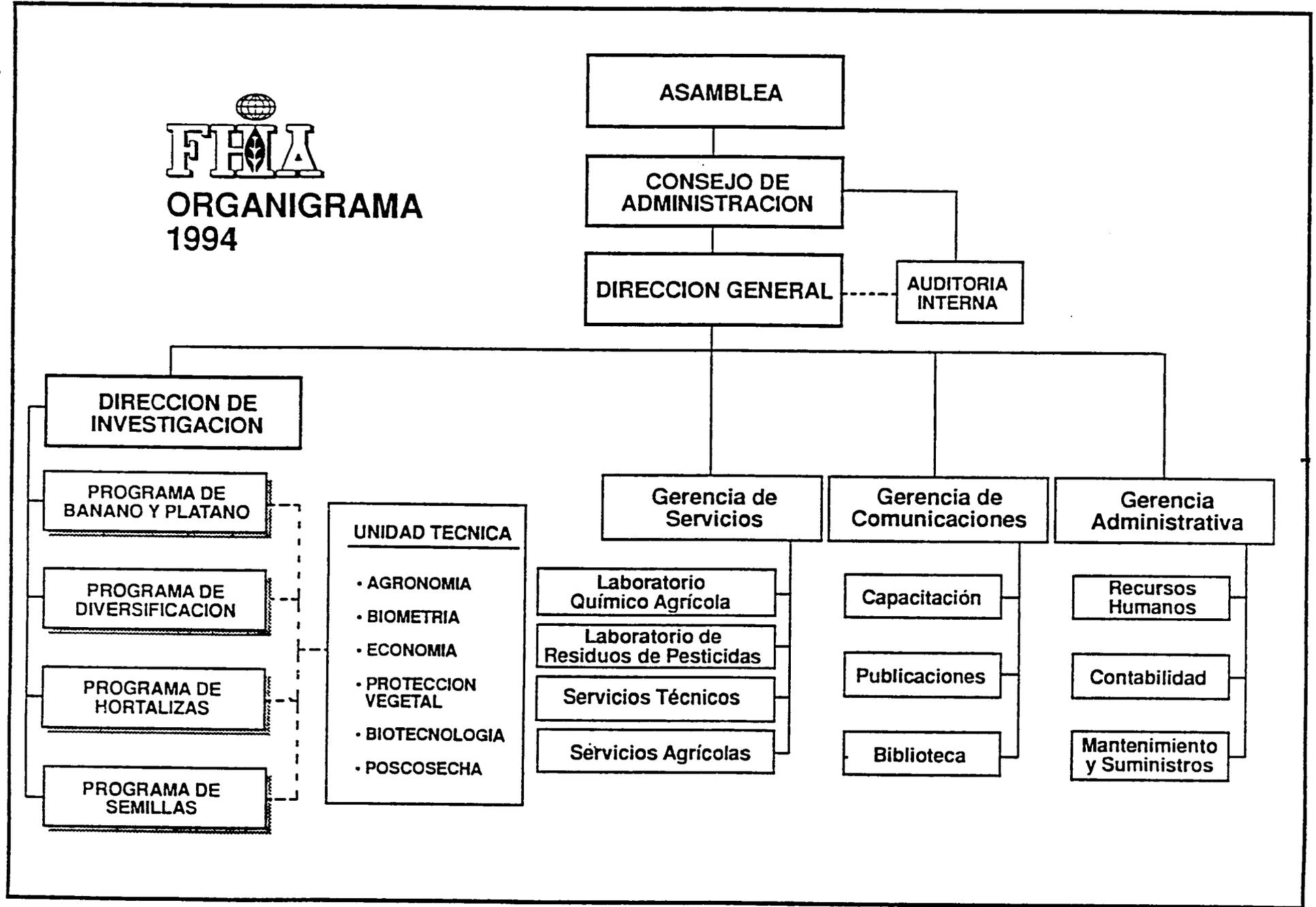
Figura 2. Organigrama de FHIA.

April 1994

**FHIA**  
**ORGANIGRAMA**  
**1994**

FHIA ORGANIZATIONAL CHART

Figure 2



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Figure 2

## **BIBLIOGRAPHY**

### **Documents reviewed**

1. USAID project paper and amendments
2. USAID project agreement
3. USAID semi-annual reports, '92 &'93
4. External auditors' reports, '89 to '93
5. Evaluation done by Winrock, Intl. in 1987
6. Annual operating plans and budgets, '91-'94
7. Report on research programs by Dr. E. Alvarez Luna. '89
8. FHIA quarterly reports for the nine quarters ending 12/31/94
9. Catalogs of publications for '92 &'93
10. FHIA report on development and fund raising, 1988
11. Thirty five technical reports and bulletins
12. AID (CDIE) case study-working paper No. 11
13. FHIA publications on its technical information capacity, '90 - '92
14. Five different FHIA guidance publications on cocoa production
15. FHIA 1994 training calendar

# ANNEX II

## Tables

**Table 1****PERSONS AND ORGANIZATIONS CONTACTED**

NAME AND ADDRESS	ROLE IN THE EVALUATION
Fundación Hondureña de Investigación Agrícola Apdo. Postal 2067, San Pedro Sula, Honduras	FHIA was one of the two projects being evaluated.
Sr. Adolfo Martínez R., Director General Tel (504) 68-2887; 68-2078 Fax (504) 68-2313	Adolfo Martínez is the current Director General of FHIA, and a past Director of FPX. He was a key contact person in the evaluation.
H. Eugene Ostmark, Ph.D., Director de Investigación Tel (504) 68-2809 Fax (504) 68-2313	Gene Ostmark is the head of FHIA's research operation. He was a key contact person in the evaluation.
Wesley Kline, Ph.D. Asesor de Investigación Tel (USAID) (504) 36-9320 Fax (USAID) (504) 36-7776	Dr. Kline is the USAID advisor to FHIA. He was a key contact person in the evaluation.
Phillip Rowe, Ph.D. Plant Geneticist	Dr. Rowe is in charge of FHIA's banana and plantain breeding program. He was a key contact person in the evaluation.
Emily L. de Alvarado, Ing. Agr., Jefe de Biblioteca	Sra. Alvarado was an important contact person for the CTS.
José A. Cueva, Ing. Agr. Gerente de Servicios	Sr. Cueva was an important contact person for the DF.
Jaime A. Luque, Gerente Administrativo	Sr. Luque was an important contact person for the DF.
Franklin Rosales, Ph.D. Plant Geneticist	Dr. Rosales participated in the tour of FHIA facilities.
Enrique Buchner, Ph.D. Plant Pathologist Tel (504) 68-2470	Dr. Buchner participated in the tour of FHIA facilities.
Teofilo Ramírez, Agronomist	Sr. Ramírez is Dr. Buchner's assistant.
Ing. Rene Laffite	Ing. Laffite is a member of FHIA's board of directors.
Sr. Francisco Martínez	Sr. Martínez is a cacao producer and a beneficiary of FHIA services.
Ing. Alice Gricelda Lambur, Asistente Técnico en Pimienta Negra	Ing. Lambur was a contact person for the CTS.
Sr. Buteau, Co-director Proyecto de Bosques Latifoliados	Sr. Buteau was a contact person for the CTS.
Ing. Arnoldo Dubon, Investigador Asistente Programa de Cacao	Ing. Dubon was a contact person for the CTS.
Dr. Ahmad Rafie, Biometrista, FHIA	Dr. Rafie was a key contact person for the evaluation.
Ing. Miguel Angel Bonilla	
Ing. Jesus Sanchez, Lider Proyecto Cacao Fhia	Ing. Sanchez was a contact person for the CTS.
Sra. Sonia Ortega, Secretaria de Gerencia de Comunicación Técnica, FHIA	Sr. Ortega was a contact person for the CTS.

**Table 1**

**PERSONS AND ORGANIZATIONS CONTACTED**

NAME AND ADDRESS	ROLE IN THE EVALUATION
Agency for International Development USAID/Honduras Apartado Postal 3453 Tegucigalpa, M.D.C., Honduras, C.A. Tel 32 3120; Fax 31 2776	USAID is the funding agency for both projects being evaluated.
Mr. Marshall D. Brown, Mission Director	Mr. Brown was a key contact person in the evaluation.
Ms. Elena Brineman, Deputy Mission Director	Ms. Brineman was a key contact person in the evaluation.
Albert Merkel, Ph.D., Project Officer, ARD Tel.: 36 9320	Dr. Merkel is the Project Officer for both projects being evaluated. He was a key contact person in the evaluation.
Mr. Kelly Flowers, Project Development Officer, Development Finance Tel.: 22 2658	Mr. Flowers is the Development Finance Officer for both projects being evaluated. He was a key contact person in the evaluation.
Ms. Betty Cárcamo Development Planning Program Assistant Tel.: 36 9320, ext. 2539	Ms. Carcamo is the Evaluation Officer for both projects being evaluated. He was a key contact person in the evaluation. She was a key contact person in the evaluation.
Mr. Dwight Steen, Chief, ARD	Mr. Steen was a key contact person in the evaluation.
Mr. Vince Cusimano, Project Officer, ARD	Mr. Cusimano was a key contact person in the evaluation.
Ms. Lisa Velazquez Bowie, Assistant Director Project Development Office Tel: 36 9320, ext. 2525 Fax: 36 7776	Ms. Valenzuela was a key contact person in the evaluation.
Mr. Robert Bonnaffon, Controller	He was a key contact person in the evaluation for the FAS.

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**Table 1**

**PERSONS AND ORGANIZATIONS CONTACTED**

NAME AND ADDRESS	ROLE IN THE EVALUATION
<u>OTHER INDIVIDUALS AND ORGANIZATIONS:</u>	
Chemonics PROEXAG II Project Bruce L. Brower, Ph.D., Chief of Party 5a. Av. 15-45, Zona 10 Edificio Centro Empresarial, Torre 1, Nivel 9 Guatemala, Guatemala, C.A. Tel (502) 233 7082/83/84; Fax (502) 233 7081	Dr. Brower has worked with both FPX and FHIA through the PROEXAG project. He provided valuable background information and insight.

Table 2

## ASSIGNMENT OF TASKS

NO	TASK DESCRIPTION	RESPONSIBLE	ASSISTED BY
	Final Evaluation of FHIA (Project 522-0249)		
	A. Relevance.		
1.	Did the project design correctly identify and address the development constraints?	RS	EC
2.	Are these constraints major problems that continue to be germane to the development strategies currently supported by USAID in Honduras?	RS	EC
3.	How did the project contribute to the Mission goal of more equitable and sustainable economic growth and development and the Mission strategic objective of increased agricultural investment, production, and exports?	RS	EC
	B. Effectiveness.		
4.	Is the project likely to achieve the purpose of the project and meet the projected outputs by the PACD? The question should be answered both in quantitative and qualitative terms: Quantitative:	FAS	
5.	Qualitative:	RS	
6.	What factors impeded project performance, and what actions could have been taken to improve the overall performance of the project?	RS	
	C. Efficiency.		
7.	What economic benefits accrued to the economy as a whole as a result of the agricultural export activities accomplished under the project?	EC	
8.	Using the approach selected by the Mission, are the effects of the project being produced at an acceptable cost compared to alternative approaches to accomplishing the same objectives? In the evaluator's judgement, what would have been the most cost effective alternative?	EC	
9.	Does FHIA require the services of an economist? If so, what should be the duties of the position, in light of the needs of a research institution?	EC	
	D. Impact.		
10.	What were the effects, both positive and negative, produced by the project on the intended beneficiaries? Were there any significant unplanned effects?	EC	FAS
	Management Concerns		
11.	How effective is FHIA's management system in identifying resources and allocating these to the research needs of the Agricultural Sector?	IDMS	
12.	To what degree has FHIA integrated its activities with the private and public sector? Is FHIA responding to research needs, monitoring its research findings and transferring these to recipient groups? If not, what were the constraints?	IDMS	

Note: RS = Research Specialist, COP = Chief of Party, IDMS = Institutional Development and Management Specialist, CIS = Communications and Training Specialist, EC = Economist, MIS = Marketing Information Specialist, FAS = Finance and Accounting Specialist, Team = All members

NO.	TASK DESCRIPTION	RESPONSIBLE	ASSISTED BY
13.	What should be the balance of funding between the operational staff (research, laboratory services and training) and support staff (administrative and accounting operations)?	IDMS	FASASSISTED BY
14.	Does FHIA meet its members needs? To what extent are these needs considered in FHIA's planning and operations?	IDMS	
15.	How effective is the process for reviewing and approving the annual work plans, budgets, and other planning documents, internally and externally? What methods should be used to evaluate progress toward accomplishing the objectives of the organization, as well as achieving the outputs in the annual work plans?	IDMS	
	<u>Research Concerns</u>		
16.	Does the design process for research projects include problem identification, statistics, economics, literature search, and work plan? How appropriate are the cost estimates and time frame?, and the adequacy of records kept on research projects?	RS	FAS
17.	What methods are used for the internal evaluation of research projects, such as peer review, annual review and presentation, and periodic supervision of field trials, etc.?	RS	
18.	Is the system transferring research-proven technology to potential users? If not, what are the constraints?	RS	
19.	What methods are used to determine the proper research balance between immediate field problem solving (e.g. identification and control of a plant disease from a request from the field) and long-term research (e.g. identifying new export crops)? Should other methods be used too?	RS	
20.	What is the impact of FHIA's policy that requires researchers to participate in extension-type services?	RS	IDMS
21.	What is the FHIA policy on publishing research results in refereed journals?	RS	
	<u>Administrative Concerns</u>		
22.	What has been the progress toward achieving an efficient and generally acceptable accounting system (including accounts, internal control, control of cash flow, and procurement systems)?	FAS	
23.	Are FHIA's written policies on operations adequate and up-to-date?	FAS	
24.	Is there sufficient control of resources such as vehicles, supplies, etc.?	FAS	
	<u>Training/Communications</u>		
25.	Is FHIA's Communications Center utilized for the purposes it was established?	CTS	
26.	During the last two years, how have training participants been selected? Is there follow-on evaluation of the training? Are gender concerns addressed?	CTS	

Note: RS - Research Specialist, COP - Chief of Party, IDMS - Institutional Development and Management Specialist, CTS - Communications and Training Specialist, EC - Economist, MS - Marketing Information Specialist, FAS - Finance and Accounting Specialist, Team - All members

NO.	TASK DESCRIPTION	RESPONSIBLE	ASSISTED BY
27.	What is the quality of published materials distributed to the public, such as newsletters, manuals, research reports, etc.? How have these materials been used by recipients?	CTS	
28.	Have extension services provided by FHIA reached project intended beneficiaries? Are there any behavioral changes due to extension activities?	CTS	
	E. Sustainability		
29.	Are there adequate systems in place for ensuring maximum security of FHIA's Endowment Fund and optimum use of income from the fund?	FAS	
30.	Are the fees FHIA charges for research reasonable in light of FHIA's policies and the constraints of working in Honduras?	RS	FAS
31.	Are FHIA's membership fees adequate compared to the services provided, needs met, etc.?	FAS	
32.	Is FHIA self sufficient when income versus expenses are analyzed?	FAS	
	F. Future Direction		
33.	Do the evaluation findings provide sound evidence of the value and relevance of the FHIA to merit continued support?	RS	
34.	To what degree were the basic assumptions of the project design valid and how did they affect project implementation?	RS	
35.	What changes in the design of the project would have increased the effectiveness, efficiency, impact and sustainability of the project?	RS	
36.	Should USAID continue to support agricultural research? Through FHIA? Are there questions or concerns that should be considered in the design of a new project?	RS	
37.	Should USAID pursue the idea of combining the two institutions (FHIA and FPX)? What are the advantages? What are the disadvantages? Would a merger detract FHIA's attention from what it does well now? Would having an export development capability (FPX) enhance FHIA's contribution to the Honduran agriculture sector?	COP	RS/IDMS
38.	Would a merger between FPX and FHIA improve the quality and applicability of their research and marketing support services? What organizational changes and structure would be required?	RS	IDMS/MIS
39.	What potential cost efficiencies in the utilization of infrastructure, staff support services, training resources, etc. would result from a merger of FPX and FHIA?	FAS	RS
40.	What steps would be required steps to merge FHIA and FPX into one organization?	IDMS	TEAM

Note: RS = Research Specialist, COP = Chief of Party, IDMS = Institutional Development and Management Specialist, CTS = Communications and Training Specialist, EC = Economist, MIS = Marketing Information Specialist, FAS = Finance and Accounting Specialist, TEAM = All members

**Table 3****FHIA - ACCOMPLISHMENT OF PROJECT GOALS AND OBJECTIVES**

VERIFIABLE INDICATOR (PER LOGFRAME)	ACTUAL RESULTS
Increase in agriculture sector GDP of 3% to 5% annually.	33% increase in constant agricultural GDP 1984-1992; annual average 3.4%
Average increase of participating farmer income of 25% over the life of the project.	approximately 50% increase in constant aggregate value for plantain and "other agricultural products" 1984-1992, therefore participating farmers should have proportional share
Ten thousand jobs created by 1994.	completed
A regionally and internationally renowned National Agriculture Research Center.	completed except for lack of Director of Communications
Three capable and functioning and fully staffed departments in research, communication and analytical services.	completed
General Assembly, Administrative Council, Director General, Deputy Director General, Permanent Staff in Research and Communication Divisions, staffed administrative unit.	completed
Working capability established.	completed
Receiving research requests, grants, and endowments to provide long-term financial sustainability for the foundation.	receiving final tranche of L.100M endowment fund this year
Increase of \$65 million in national sales by the end of 1994 for 6 or 7 commodities.	inappropriate magnitude for increase in domestic consumption of few selected agricultural products; however agricultural <u>sector</u> grew by L.350M or \$47M 1984-1992
Cacao production increased 50% by improved planting stocks and cultural practices.	despite sluggish world commodity market, national production up 20% and estimate of 60% productivity increase by participant farmers
Tomato, cucumber, and other vegetable production doubled due to improved varieties and more efficient production practices.	production increases: tomato up 134%, cucumber up 908%, melons up 665%, total NTAE up 62% (no plantain) 1984-1992
Area in mango production increased by 50%.	sector production up 26% but no area planted data except for 300 mz. new commercial plantings
Three new but previously unidentified commodities (e.g., black pepper, palm hearts) demonstrated to have highly promising export potential and have attracted entrepreneurs with capital.	commercial plantings of black pepper, rambutan, sweet onion, tabasco chile, asparagus, winter squashes, pickles
One black sigatoka resistant variety developed for a savings of \$15 million over life of project	disease-tolerant variety in 43 trials throughout world but not in commercial production, potential savings of \$9M/year in Honduras once commercially adopted
Foreign exchange earnings of \$150 million over life of project	calculated minimum of \$138M for selected crops over 7 years, \$45M estimated for 1993 alone
One dwarf plantain variety with higher more stable yields released for Honduras: Estimated increase by 1994 of \$2 million per year	disease-tolerant variety ready but not in commercial production, should double productivity; estimated present net value \$10.4M

**Table 3****FHIA - ACCOMPLISHMENT OF PROJECT GOALS AND OBJECTIVES**

VERIFIABLE INDICATOR (PER LOGFRAME)		ACTUAL RESULTS
Information flow from the Research Foundation to agricultural professionals, investors and producers with field results flowing back to the foundation:		
Demonstrations and field days	30	93
External seminars:	15	part of 182 course/seminars
Short training courses for farmers and extensionists (40 participants/course):	15	part of 182 courses/seminars
Site visits	150	144 paid consultations, each requiring usually several site visitations
Technology, communication and development series:		
Pamphlets:	20	part of 308 publications
Manuals:	3	part of 308 publications
Research updates:	25	part of 308 publications
Continuing exchange of information, expertise, and materials between these institutions:		continual communication with CIAT, CATIE, CYMMAT, INBAP, WINBAN, Zamorano and others
Communication among scientists:		
Research progress reports	15	part of 403 research documents produced
Scientific articles	10	part of 403 research documents produced
Technical reports	20	part of 403 research documents produced
Institutional materials:		
Annual reports	5	part of 308 publications
Prospectus	2	part of 308 publications
Thesis and research project	25	25
In-service training and field practices	20	418 trained (183 males, 235 females)
Local agricultural professionals in improved production technologies	200	537 trained (258 males, 274 females)
Up-to-date library containing reference information on all crops which FHIA deals with.		completed
Institution development and achievements:		
Press notices	60	part of 308 publications
Computerized searches	5	part of 308 publications

**Table 3**

**FHIA - ACCOMPLISHMENT OF PROJECT GOALS AND OBJECTIVES**

VERIFIABLE INDICATOR (PER LOGFRAME)		ACTUAL RESULTS
Audiovisual series:		
Photographs	500	no data but probable completion
Slides	10,000	no data but probable completion
Transparencies (overhead)	250	no data but probable completion
Audio tapes	25	no data but probable completion
Video tapes	2	no data but probable completion
Approximately 150,000 separate tests conducted generating over L 5.0 million		120,000 tests completed -- 80% completion; approximately L. 4.8M received -- 96% completion

Table 4

## REVISED PROJECT DESIGN SUMMARY LOGICAL FRAMEWORK

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Program or sector goal. The broader objective to which this project contributes:	Measures of goal achievement:		Assumptions for achieving goal targets:
To increase incomes for farmers and generate additional employment	<ul style="list-style-type: none"> <li>- Increase in agriculture sector GDP of 3% to 5% annually</li> <li>- Average increase of participating farmer income of 25% over the life of the project</li> <li>- The thousand jobs created by 1994</li> </ul>	Central Bank statistics SECPLAN estimates, Mission calculations, producer interviews	stable political environment
<b>PROJECT PURPOSE</b>			
To establish a private, nonprofit Agricultural Research Foundation which will expand and improve research in Honduras	<p>A regionally and internationally renowned National Agriculture Research Center.</p> <p>Three capable and functioning and fully staffed departments in research, communication and analytical services</p>	<p>Survey of originating request points</p> <p>Review of foundation records</p> <p>Review of foundation records</p>	Top-notch researchers and managers continue their willingness to work in Honduras
<b>OUTPUTS</b>			
<p><b>I. Foundation Organization</b></p> <ul style="list-style-type: none"> <li>- Legally constituted foundation, established and operating effectively</li> </ul>	<ul style="list-style-type: none"> <li>- General Assembly, Administrative Council, Director General, Deputy Director General, Permanent Staff in Research and Communication Divisions, staffed administrative unit</li> <li>- Working capability established</li> <li>- Receiving research requests, grants, and endowments to provide long-term financial sustainability for the foundation</li> </ul>	Survey of Foundation Records; site visits	Foundation achieves long-term sustainability

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>3. Research Program</b></p> <ul style="list-style-type: none"> <li>- Expanded production of nontraditional crop exports</li> <li>- Increased production of traditional export</li> </ul>	<ul style="list-style-type: none"> <li>- Increase of \$65 million in national sales by the end of 1994 for 6 or 7 commodities</li> <li>- Cacao production increased 50% by improved planting stocks and cultural practices</li> <li>- Tomato, cucumber, and other vegetable production doubled due to improved varieties and more efficient production practices</li> <li>- Area in mango production increased by 50%</li> <li>- Three new but previously unidentified commodities (e.g., black pepper, palm hearts) demonstrated to have highly promising export potential and have attracted entrepreneurs with capital</li> <li>- Foreign exchange earnings of \$150 million over life of project</li> <li>- One black sigatoka resistant variety developed for a savings of \$15 million over life of project</li> <li>- One dwarf plantain variety with higher, more stable yields released for Honduras: estimated increased by 1994 of \$2 million/year</li> </ul>	<p>Government records, mission records, evaluations, FHIA records</p>	<p>Commodity prices do not decrease below production costs in a sustained basis</p> <p>farmers continue to participate in the program</p> <p>Production costs become internationally competitive</p>



Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
- Improved human resource base through training	<b>Communication among scientists:</b> - Research progress reports 15 - Scientific articles 10 - Technical reports 20  <b>Institutional materials:</b> - Annual reports 5 - Prospectus 2	Project evaluations Spot checks Interviews Performance reports	
	Thesis and research project 25 In-service training and field practices 20 Local agricultural professionals in improved production technologies 200	Project evaluations Spot checks Interviews Performance reports	
- Improved agricultural information services	<b>Up-to-date library containing reference information on all crops which FHIA deals with</b>  <b>Institution development and achievements</b> - Press notices 60 - Computerized searches 5 - Audiovisual series - photographs 500	Project evaluations Spot checks Review of library holdings	
	- slides 10,000 - Transparencies (overhead) 250 - Audio tapes 25 - Video tapes 25		
<b>4. Services: Analytical</b>	Approximately 150,000 separate tests conducted generating over \$5.0 million	FHIA records	
<b>INPUTS</b> (in thousands of constant dollars)			

	AID		OTHER			
	Base	Special Project	OCU	Case		
Administrative operating costs	6.8		6.5	1.2		
Capital investments	1.1	3.0		.7		
Experimental substations	.3					
Research programs	5.8			3.6	3.0	
Communications and training	2.7		1.5			
Technical analytical services	2.7					
<del>Program</del>	<del>2</del>					
<del>Program</del>	<del>2</del>					
	26.8		6.5	7.0		
<del>Program</del>						
<del>Program</del>						
Capital		3.0				
Operations					3.0	

USAID/Controllers  
Office records  
Foundation records

Private sector contributions as expected

\* From PL 480 or ESP funds