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OFFICE OF THE AUDITOR GENERAL
AREA AUDITOR GENERAL - LATIN AMERICA

AUDIT REPORT

USAID/BRAZIL

AGRICULTURAL RESEARCH PROJECT

LOAN NO. 512-L-077

For the period March 9, 1971
through May 31, 1974

Audit Report No. 1-512-75-18
September 12, 1974

TABLE OF CONTENTS

	<u>PAGE</u>
SECTION I - INTRODUCTION	1
SECTION II - SUMMARY	2
SECTION III - STATEMENT OF FINDINGS AND RECOMMENDATIONS	4
A. PROJECT IMPLEMENTATION	4
B. PROJECT PROGRESS	6
C. CONTRACTORS' PERFORMANCE	8
D. TRAINING	9
E. COMMODITY PROCUREMENT	11
F. USAID MONITORING	12
SECTION IV - BACKGROUND AND SCOPE	14
A. BACKGROUND	14
B. SCOPE	16
SECTION V - FOLLOW-UP ON PRIOR AUDIT REPORTS	17
 <u>EXHIBITS</u> 	
EXHIBIT A - FINANCIAL STATUS AS OF MAY 31, 1974	18
EXHIBIT B - DISTRIBUTION OF AUDIT REPORT	19

REPORT ON EXAMINATION

OF

AGRICULTURAL RESEARCH PROJECT

LOAN NO. 512-L-077

FOR THE PERIOD MARCH 9, 1971 THROUGH MAY 31, 1974

SECTION I - INTRODUCTION

The Agricultural Research Project financed by A.I.D. Loan No. 512-L-077, in the amount of \$11,930,000, was entered into on March 9, 1971 between the Government of Brazil (GOB) and A.I.D. The Project is a 5-year program to assist the GOB in planning and administering a large-scale national research program, emphasizing applied research in predetermined priority commodities and substantially increasing its research activities in key areas. The Project incorporates three interrelated elements : technical assistance, training, and the conduct of research programs (including commodity procurement). The ultimate goal is to transform traditional agriculture, improve the economic status of the farmer and increase agricultural production.

The primary purposes of this examination were to determine the degree of attainment of the Project's objectives, and the effectiveness of the planning and implementation of the Project. Other purposes were to evaluate the effectiveness of the financial and administrative management of the Project and the degree of compliance with A.I.D. policies, regulations, and procedures.

SECTION II - SUMMARY

The Agricultural Research Project, still in its early stages, is at least one year behind schedule in implementation. This delay was primarily caused by the late signing of the contracts between the GOB and two of three U.S. universities selected to provide technical assistance under the Project.

Additional delays were attributable to the establishment of a new government agricultural research corporation, Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), by the GOB in March 1973. EMBRAPA assumed the responsibilities of the previous executing agency, which was not considered by the GOB to be responsive to agricultural research needs and was abolished on January 1, 1974. It was formed around the philosophy of the subject Project, namely that of building the research around commodities or disciplines rather than disbursing researchers over a multitude of tasks within a geographic area. Thus, the Project may be considered as a catalyst for this needed institutional development. EMBRAPA is currently reviewing the status of the program and a major reorganization is underway.

The periods covered by the three contracts mentioned above extend beyond the Loan Agreement terminal disbursement date (TDD) of December 31, 1976. Two of these extend nine months beyond the TDD. Consequently, planned technical assistance and participant training activities may be incomplete when the TDD is reached.

As a consequence of all of the above factors, we have recommended that the USAID request EMBRAPA to formulate, for USAID approval, a detailed, comprehensive operational and financial plan covering the remaining Project activities and amend the TDD if appropriate. Any funds determined to be excess to needs should be deobligated.

The majority of the contractors' staff have arrived in-country and appear to be performing well. This initial Project period was used to survey existing facilities, review prior research and to develop beginning reference marks and project plans. Productive research has been initiated, but the final results of the researchers' efforts may not be known for several years.

The participant training program, an integral part of the Project, has not generally progressed according to plan. However, once EMBRAPA effects the major reorganization of the program, improvements should be made in this area, along with others.

Problems have been experienced in obtaining the necessary import permits from the responsible GOB agency, CACEX, to import equipment, machinery, and supplies financed under the Project. In our opinion, these problems, in part, stem from the fact that the EMBRAPA unit assigned this responsibility is basically unfamiliar with procurement sources for similar items manufactured in Brazil, and CACEX's procedures and requirements. As a result, CACEX, in many cases, either returns the requests for further documentation, or spends undue time in determining whether similar local items exist. Consequently, some delays have occurred in the development of facilities. Therefore, we have recommended that this function be transferred to EMBRAPA's Procurement Office which should have considerably more expertise with this area.

The USAID monitoring of the Project has been satisfactory. We did note, however, two areas requiring improvement which may further enhance the USAID's ability to more effectively monitor the Project. First, a reporting provision has not been made to assure that the GOB has met its required financial commitments under the Loan Agreement. We have recommended, therefore, that such information be incorporated in EMBRAPA's Semi-Annual Progress Reports. Second, EMBRAPA has not complied with the 60-day advance notification requirements regarding independent audit coverage. Moreover, the scope of the independent audit of EMBRAPA has not included a review and evaluation of the progress of the Project, as envisioned in the Loan Agreement. Accordingly, we have recommended that EMBRAPA comply with the requirements, and ensure that future audits incorporate a review and evaluation of Project progress and that the audit reports make specific reference to this fact.

This report contains four recommendations for USAID action.

SECTION III - STATEMENT OF FINDINGS AND RECOMMENDATIONS

A. PROJECT IMPLEMENTATION

Implementation of the Agricultural Research Project, though in its early stages, is at least one year behind schedule. The primary cause for this delay was the late signing of the contracts between the GOB and two of the three U.S. universities selected to furnish technical assistance under the Project.

The Loan Agreement was entered into March 9, 1971 and the first contract was signed on January 21, 1972 with the Regents of the Wisconsin System (Wisconsin). However, the signing of the other two contracts with the University of Florida (Florida) and the Purdue Research Foundation (Purdue) did not take place until October 3 and 6, 1972, respectively, almost 19 months subsequent to the signing of the Loan Agreement. The two latter institutions preferred to contract directly with A.I.D. rather than with the GOB, consequently, problems arose which required extensive negotiations between the parties resulting in excessive time delays.

Additional delays in Project implementation were attributable to the establishment of a new government agricultural research corporation, EMBRAPA, by GOB Decree No. 72,020 of March 28, 1973. EMBRAPA assumed the responsibilities of the previous executing agency, Departamento Nacional de Pesquisas Agropecuárias (DNPEA)^{1/}, which was not considered responsive to Brazil's overall agricultural research needs. Upon the formation of EMBRAPA, a special commission was established to survey and determine the disposition of DNPEA resources. DNPEA activities were continued until January 1, 1974, at which time EMBRAPA officially assumed full operational responsibility. All DNPEA employees were offered positions with EMBRAPA, subject to final selection by June 30, 1974.

EMBRAPA incorporates the philosophy employed under the Project, i.e., building research around commodities or disciplines rather than deploying researchers over a multitude of tasks within a geographic area. Provision has also been made to provide higher levels of compensation for research personnel as contemplated in the Loan Agreement. Therefore, it may be considered that the Project has served as a catalyst for this needed institutional development.

^{1/} Previously known as the Escritório de Pesquisas e Experimentação (EPE).

The status of the program is currently being reviewed by EMBRAPA and a major reorganization is in process. Changes in the locations, staffing and organization of the program are under consideration. Committees have been formed to study site locations for new national research centers and to nominate personnel to head the centers. It is anticipated that several of the Project research locations will be changed to allow greater crop growth potential by relocation to the south central area of Brazil.

The process of reorganization has, of course, delayed or affected implementation of the Project. For example, the contractors' staffs are currently unable to plan for faculty development and cannot effectively plan research for the 1974-75 cropping season due to the lack of data on the availability of human and physical resources.

The term of each of the three contracts mentioned above extends beyond the Loan Agreement TDD of December 31, 1976. In accordance with each contract's provisions, program activities are to be rendered and the right to incur obligations shall be continued for five years unless the termination clause is exercised. Consequently, Wisconsin's contract is valid until late January 1976 while Florida's and Purdue's contracts do not expire until early October 1977, or more than nine months after the TDD. The Project was originally envisioned as a 5-year program, hence the GOB negotiated the contracts for a compatible period. As a result, planned technical assistance and participant training activities may be incomplete when the TDD is reached.

As a consequence of all of the above factors, we are recommending that the USAID request EMBRAPA to formulate, subject to USAID approval, a detailed, comprehensive operational and financial plan covering the remaining activities to be accomplished under the Project. The TDD should be amended, if considered necessary, and any excess funds should be deobligated.

Recommendation No. 1

That the USAID (i) request EMBRAPA to formulate, for USAID approval, a detailed, comprehensive operational and financial plan covering the remaining activities to be accomplished under the Project, (ii) amend the Loan Agreement TDD, if appropriate, and (iii) deobligate, subject to the Borrower's agreement, any Loan funds determined to be excess to valid requirements.

B. PROJECT PROGRESS

The three contracted U.S. institutions were selected to provide the necessary technical assistance under the Project. At the EMBRAPA national headquarters level, Wisconsin has the responsibility for rendering required assistance. This work includes assisting EMBRAPA in the evaluation of needs, research programming and administration, adoption of modern research techniques, and in establishing and carrying out a coordinated research effort among state, federal and university organizations.

At the six national research centers, assistance is being furnished as follows :

<u>Contractor</u>	<u>Sub-Project</u>	<u>Location</u>
Purdue	Edible Bean	Viçosa
Purdue	Corn Sorghum	Sete Lagoas
Florida	Cattle	Brasília
Wisconsin	Rice	Pelotas
Wisconsin	Soybean	Porto Alegre
Wisconsin	Resource Development	Recife

This aspect of the Project is designed to develop and carry out the above priority research projects; to assist and train the staff of the centers and other research institutions in specialized research technology and methodology; and to expand the capacity of Brazilian entities to carry out timely research on a more efficient basis and publicize results more quickly.

This initial Project period was used to survey existing facilities, to review prior research, and to develop beginning reference marks and project plans. Productive research was begun, however, difficulties were encountered in the assignment of research plots, and also because of the unavailability of machinery and equipment, and farm workers. Other problems involved transportation and procedures for obtaining and disbursing Project funds.

In-service training and specialized training at each national center were limited because suitable counterpart personnel were not available or because of the inability to formalize the assignment of counterpart staff. The Soybean and Rice sub-projects have developed training activities and are actively engaged in post-graduate training and research. The other sub-projects have planned training activities for 1974. Other training activities are elaborated on in Section D. of this report.

EMBRAPA is currently considering relocating some of the national centers. At present, these particular centers are located in the southern area where most of the current production is obtained. At these locations, there are fewer opportunities to increase production because this area is already relatively highly cultivated. More research emphasis is needed in developing production in the south central area of Brazil in order to better utilize the soils of this section. The present locations will continue to serve the needs of the area as a satellite of the national center. Another factor for changing locations is that EMBRAPA activities located in non-EMBRAPA institutions do not coincide with the activities of host institutions, and facilities are inadequate.

Most of the problems of the initial period have been resolved or it is expected that they will be resolved as soon as EMBRAPA completes the reorganization. Because of the reorganization, EMBRAPA had not submitted an Implementation Plan for 1974 as of the cutoff date of our audit. However, subsequent to this date, USAID officials informed us that a draft plan had been received and was undergoing review.

C. CONTRACTORS' PERFORMANCE

Our review of the documentation related to the contractors' activities under the Loan and visits to each of the sub-project sites disclosed that generally the performance of contractors has been satisfactory.

Staffing under each of the respective contracts has generally proceeded well. As of May 31, 1974, a total of 32 staff members were serving in-country. Except for the Cattle and Bean sub-projects, staffing has been as projected. The site for the Cattle sub-project was not determined until January 1974, and the plans for the development of the station were not approved until March 1974. Consequently, full staffing of this sub-project by Florida has been delayed. At present, however, a task force is reviewing other locations for the center. Four technicians are on board and the required five additional personnel should be available by September 1974, however, EMBRAPA has not yet received nominations for these positions.

The Bean sub-project, staffed by Purdue personnel, is closely identified with the bean research of the University of Viçosa and has not been in a position to develop a similar national project. Three staff members are on board and two additional members are scheduled to arrive in late 1974.

D. TRAINING

One of the primary objectives of the Project is to increase the competence of personnel of EMBRAPA, cooperating state and university research organizations to plan and carry out agricultural research through a comprehensive training program. This is to be accomplished through degree and non-degree programs both outside of and inside Brazil.

For degree training outside Brazil, it is proposed that a total of 71 participants will receive MS degrees and 49 Ph.D. degrees. The following schedule summarizes this activity projected through calendar year 1974 :

<u>Degree</u>	<u>No. of Participants</u>							
	<u>Programmed</u>				<u>Projected</u>			
	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>Total</u>	<u>Actual</u>	<u>In Process</u>	<u>Total</u>	<u>Deficit</u>
MS	10	15	16	41	12	4	16	25
Ph.D.	<u>5</u>	<u>11</u>	<u>15</u>	<u>31</u>	<u>11</u>	<u>7</u>	<u>18</u>	<u>13</u>
Total	15	26	31	72	23	11	34	38
	==	==	==	==	==	==	==	==

As shown above, there is a projected deficit of 38 participants at the end of 1974.

Since the Ph.D. activity is already considerably behind schedule, it will not be possible for all of the proposed Ph.D. candidates to complete their training by the TDD. This is because the period required to acquire such a degree normally takes from 3 to 4 years. Consequently, it will either be necessary to reduce the projected total number of Ph.D. candidates or extend the TDD to allow for this factor. Since this area should be given appropriate treatment in light of Recommendation No.1, we are not making a separate recommendation on this matter.

Degree training in Brazil has considerably exceeded that programmed. EMBRAPA's Training Office reported that 279 participants were in training as of May 31, 1974, including 12 for Ph.D. degrees. It was planned that only 125 would be in training by that date.

Non-degree programs outside of Brazil, also currently behind schedule, include research and extension training and research administration training. The following presents the programmed and actual training through May 31, 1974 :

	<u>No. of Participants</u>	
	<u>Programmed</u>	<u>Actual</u>
Research technical training	28	6
Extension programs	18	0
Research administration	16	0

The above training has been delayed because of the personnel changes being made during EMBRAPA's reorganization process. There will be a need to develop the infrastructure of EMBRAPA once the decision is made regarding the staffing and location of the national centers.

In Brazil, non-degree training in research methodology and techniques has been given to 64 selected participants. In addition, technical training in field and laboratory techniques has been given to 180 trainees newly hired by EMBRAPA. Planned training in research administration and management has been delayed for the same reason cited in the preceding paragraph.

B. COMMODITY PROCUREMENT

EMRAPA has experienced considerable difficulty in acquiring the necessary import permits from the supplying countries, which is import commodities financed by the U.S. To a certain extent, due to the anticipated facilities development in other countries.

The Project provides for acquiring commodities and services necessary for conducting research and for disseminating research information to the farmers. Approximately \$ 700 million of total funds are now budgeted for procurement of machinery and agricultural equipment in the U.S. Additionally, \$400 million additional commodity and equipment to about \$ 4.5 million have been allocated for the procurement of machinery, agricultural equipment, services, and general project support in Brazil.

Under current procedures, services and equipment for items previously identified to be procured in the U.S. are reviewed and processed by EMRAPA's Office of the Senior Advisor to determine if a similar item manufactured in Brazil exists and will suffice. If such a determination is positive, procurement action is initiated locally. If the determination is negative, the necessary documentation is prepared to seek the approval and issuance of the required import permit.

Our review disclosed that CACEX has issued only one import permit since the Project began. In many instances, CACEX has either denied the request for further documentation, or has spent considerable time in establishing if a locally manufactured item exists. In one instance, much of this problem stemmed from the fact that the Office of the Senior Advisor, which is staffed with a U.S. contract advisor and a Brazilian assistant, is basically unfamiliar with procurement sources for similar items and CACEX's procedures and requirements.

EMRAPA's Procurement Office, in addition to other duties, reviews and processes requisitions for non-project items which may require import permit approval. Since this office is under the Department of Administration and Finance, it should have the necessary staffing, capability, and experience to more adequately handle the same function for Project-related items. Consequently, we are recommending that this function be transferred to the Procurement Office.

Recommendation No. 2

That the USAID request CACEX to transfer the foreign procurement function for non-financed commodities to the Procurement Office.

1. Introduction

The purpose of this report is to provide a comprehensive overview of the current state of the industry. It will discuss the key challenges and opportunities facing the sector, and offer recommendations for how to address these issues. The report is intended for a wide range of stakeholders, including government, industry, and academia.

The first part of the report will provide a detailed analysis of the market environment. This will include an examination of the key drivers of growth, as well as the main risks and uncertainties. The second part will focus on the specific challenges facing the industry, and the third part will offer recommendations for how to address these challenges.

The report will also include a number of case studies, which will provide a detailed look at the experiences of leading companies in the industry. These case studies will be used to illustrate the key findings of the report, and to provide a practical guide to how to address the challenges facing the industry.

2. Market Environment

The market environment is characterized by a number of key factors, including a strong and growing economy, a highly skilled workforce, and a supportive regulatory environment. These factors are all contributing to a period of rapid growth and innovation in the industry.

However, there are also a number of challenges facing the industry, including a highly competitive market, a shortage of skilled workers, and a complex regulatory environment. These challenges are all likely to continue to shape the industry in the years ahead, and it is important to understand how to address them.

The key to addressing these challenges is to focus on innovation and collaboration. By working together, industry players can develop new products and services, and create a more supportive regulatory environment. This will be essential for the industry to continue to grow and thrive in the years ahead.

In order to assure compliance with these important monitoring control features, we are recommending the following :

Recommendation No.4

That the USAID request EMBRAPA (i) to comply with the 60-day advance notification requirements regarding audit coverage, and (ii) to ensure that the scope of future audits includes a review and evaluation of the progress of the Project, and that the audit reports make specific reference to the results of these reviews and evaluations.

We also noted that the annual evaluation review for 1973 has not yet been conducted. This is because the Implementation Plan for 1974, a draft of which was only recently submitted to the USAID, is considered as part of the evaluation process. USAID officials stated that the required annual review will be conducted in the near future.

SECTION IV - BACKGROUND AND SCOPE

A. BACKGROUND

The low farmer productivity common to most areas of Brazil is directly related to the lack of systematic research to increase yields of the basic food crops. The low yields account for low rural income; just as the lack of research into nutritious strains of basic crops is reflected in the undernourishment of large segments of both the urban and rural population. In addition, the lack of research is reflected in wastage at the national level through the misallocation of natural and human resources.

This Project, which is to assist in combating the above overall problem with the ultimate objective of increasing yields of the major food crops grown by small and medium farmers, is based on the following premises :

- The research program should be concentrated on a very limited number of high priority agricultural problems.
- The very best scientific talent, Brazilian and U.S., should be mobilized in a concerted effort to make major breakthroughs in making agricultural technology useful in the solution of these problems.
- The leading Brazilian agricultural research and educational institutions should form the central thrust of the impact research program.
- An environment conducive to the attraction of the best Brazilian and U.S. scientists must be created and maintained.
- The research program must be conceived, organized and operated in a manner that will contribute simultaneously to :
 - a) A sharp increase in useful scientific knowledge;
 - b) rapid expansion of the number of well-trained Brazilian agricultural scientists; and
 - c) the evolution of a more effective and efficient coordinated national system of agricultural research and postgraduate education.
- The research program should be pragmatically oriented to the needs of the Brazilian farmer and should include the extension linkage necessary to get research results effectively to the farmer and his farm.

According to EMBRAPA's Operational Plan, the Loan funds are budgeted as follows :

	<u>(in 000's)</u>
Administration	\$ 1,971
Research	4,345
Training	2,514
Equipment	<u>3,100</u>
Total	\$ 11,930 =====

In addition, P.L. 480 cruzeiro counterpart funds of CR\$ 23,300,000 have been designated for support of the Project. These funds emanated from Title I Sales Agreements.

The financial status of the Loan, as of May 31, 1974, is shown below (for a detailed breakdown, please see Exhibit A) :

	<u>(in 000's)</u>			
<u>Loan</u> <u>Amount</u>	<u>Committed</u>	<u>Disbursed</u>	<u>Undisbursed</u>	<u>Uncommitted</u>
\$11,930	\$5,265	\$1,798	\$3,467	\$6,665

B. SCOPE

The Brazil Residency of the Area Auditor General, Latin America, has performed an initial examination of the Agricultural Research Project financed by A.I.D. Loan No. 512-L-077. Our examination covered the period from the inception of the Loan on March 9, 1971 through May 31, 1974. The audit work was performed during the period from March 27, 1974 through June 30, 1974.

The examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the Borrower's financial records and loan related documents as were considered necessary in the circumstances. We also held discussions with concerned USAID, GOB, and contractor officials. Site visits were made to the six national research centers.

We did not examine the financial records maintained by the contractors employed by the Borrower since the records are generally maintained at the contractors' main offices in the U.S. and are subject to audit by the Borrower.

SECTION V - FOLLOW-UP ON PRIOR AUDIT REPORTS

There were three prior audit reports involving the Agricultural Research Project. The most recent was the Area Auditor General, Latin America, Audit Report No. 1-512-74-13 dated September 26, 1973, entitled "USAID/Brazil Higher Agricultural Education Subsector Program", which contained one recommendation addressed to the Project. This recommendation was concerned with the assignment of a high priority to the development of institutional linkages between selected agricultural universities, ABCAR^{1/} and State Secretariats of Agriculture. The recommendation has been satisfactorily cleared. Additionally, EMBRAPA has assigned a high priority to these linkages through operation of national research centers that are organized to coordinate university research and to exchange information at the producer level.

The second report was the Acting Inspector General of Foreign Assistance (IGA) Memorandum dated May 7, 1973 to the Administrator re : "Potential Loss of U.S. Export Earnings Due to AID-Financed Activities in Brazil". The report recommended that A.I.D. terminate its technical assistance concerning soybean research under the Project since future increased production could result in serious displacement of U.S. soybean exports in the world market.

The Administrator's official reply of June 12, 1973, to the IGA report did not concur with the recommendation and included the following statement:

"In summary then we cannot accept the recommendation of the Inspector General. We view the recommendation as : 1) unrelated to the major complex issues involved in expansion of U.S. exports and reduction of our balance of payments problem; 2) contrary to the basic assumptions which underlie U.S. development assistance; and 3) damaging to an important contribution to solution of a critical worldwide nutrition problem".

The third report was the Auditor General's Office of Audit (AG/AUD) "Report on Examination of the U.S. A.I.D. Mission to Brazil", Audit Report No. 72-003 dated September 15, 1971. The report contained one recommendation concerned with the Project. This recommendation dealt with a reimbursement problem which resulted from an overlapping of grant and Loan funded activities during the transition phase. AG/AUD advised us that this recommendation has been satisfactorily cleared.

Before issuance, this report was reviewed with appropriate USAID officials and their comments were given due consideration.

^{1/} Brazilian Association for Credit and Rural Assistance, the primary Brazilian extension system.

EXHIBIT B

DISTRIBUTION OF AUDIT REPORT

Mr. Marvin Weissman, Mission Director, USAID/Brazil 6

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Assistance (IGA) 1

State Department - Country Director - Office of
Brazil Affairs (ARA-LA/BR) 1

AID/W - Executive Director (ARA-LA/MGT/EX) 1

AID/W - Office of Program Operations (LA/OPNS) 1

AID/W - Office of Audit (AG/AUD) 5

AID/W - Operations Appraisal Staff (AG/OAS) 1

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