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PROJECT ASSISTANCE COMPLETION REPORT

AGRICULTURAL RESEARCH PROJECT

PROJECT NUMBER 532-0128

JUNE 1994

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1. PROJECT PURPOSE AND OBJECTIVES:

The goal of the Jamaica Agricultural Research Project (JARP) was to increase agricultural production through improved crop and livestock productivity, thereby increasing rural income, decreasing dependence on food imports, and increasing foreign exchange availability. The project purpose was to identify solutions to current constraints to increased production and productivity by carrying out applied research in priority commodity areas. The purpose was to be accomplished by establishing an autonomous Research Advisory Council (RAC) which would determine policy and identify priority problems, and fund research directed at resolving the problems through grants and/or contracts. The JARP would promote cooperation among researchers, producers, extension agents and other agricultural support groups.

2. PROJECT DESCRIPTION:

The Project was authorized on July 30, 1986 with a PACD of July 29, 1993. In August 1993, the PACD was extended until December 31, 1993 to allow for an orderly closeout of the project and to honor commitments to students' degree programs which extended beyond the original PACD.

The project was a US\$7.6 million, seven-year activity created in response to the need for an agricultural research system to arrest declining production and to enhance development in the sector, especially among small farmers. In order to achieve its purpose, the Project aimed to: 1) strengthen the local research base, 2) support research activities directed at small farmers, 3) bring local researchers into contact with colleagues around the world and 4) establish more effective linkages between research, extension and farmers. The Project concentrated on applied research, that is, the use of available knowledge to solve problems. On-farm research received major emphasis with farmers actively participating in the evaluation process.

JARP was implemented through a Cooperative Agreement with the Jamaica Agricultural Development Foundation (JADF), a tax-free, autonomous, non-profit organization. The research program reported to the JADF Board with respect to financial and administrative matters and coordinated its need for support services with the existing structure of JADF. The research program was responsive to the RAC with respect to research priorities, the recruitment of personnel, and the implementation of its mandate. The research program was administered through contracts and grants to firms, agencies, and individuals.

Funding under JARP focused on the following:

Research Grants:

The project provided grant support to individuals and groups from public and private organizations that were identified as having the capability and motivation to design and implement a relevant research project or experiment within the priority areas in coordination with the RAC Executive Committee. It was assumed that experienced high calibre researchers for project management would be available when the project was prepared. The shortage of trained manpower affected research output in the early stages of the project and created an environment which did not attract bright young scientists to research. In 1991, the Cooperative Agreement was amended to include long-term training necessary for reaching project objectives. In turn, JADF entered into contracts with universities for cooperative research activities and master's and doctoral degree training. Jamaicans were recruited for masters and doctoral studies in Jamaica and the U.S. in areas relevant to the project's research priorities and students undertook field research in Jamaica.

Scientific Interchange/Short-Term Training:

JARP supported participation of more than eighty persons and institutions in forty-nine symposia, international scientific meetings, workshops, information visits and short courses. That contribution was further extended by visits to Jamaica of advisers of American graduate students doing thesis research in Jamaica. This allowed for their interaction with local researchers for exchange of ideas and knowledge of recent advances in their areas of specialization.

JARP also facilitated important linkages with overseas research institutions notably universities and International Agricultural Research Centers (IARC's).

Arising from collaboration with Texas A&M University in the investigation of "Land Quality and Restoration of Mined-Out Bauxite Lands" a link was established with TropSoils/CRSP (Collaborative Research Support Program). However, it was with the University of Florida that JARP had its most extensive overseas association. This involved training seven (7) graduate students, four (4) under a major contract, and the attendance of JARP-funded students and scientists at short courses and workshops. The University also provided visiting specialists to assist in investigation of commodity problems and to mount workshops on related topics.

Minor Rehabilitation of Existing Facilities:

Infrastructure upgrading at the principal government research station, Bodles, (inclusive of refurbishing security light, workshop repair and fencing of trial plots) and provision of selected items of equipment were undertaken and have made the citing of a limited number of on-station trials at that location possible.

It has also facilitated the introduction of genetic plant stock of pigeon peas (ICRISAT), fodder grasses (University of Florida), hot peppers (CATIE) and breadfruit for observation and testing.

The provision of equipment, occasionally of a specialized nature, to collaborating institutions undertaking research with grant funds from JARP served to further improve research capability in several institutions, notably the Natural Sciences Faculty at the UWI, CARDI and the Bureau of Standards.

3. SUMMARY OF CONTRIBUTIONS:

Project Budget as of 6/15/94 - USAID Contribution

<u>Element</u>	<u>Oblig.</u>	<u>Committed</u>	<u>Disbursed</u>
Long-Term TA	1,146,587	1,146,587	1,146,587
Admin. Support	699,000	699,000	699,000
Rsearch Grants	2,745,870	2,745,870	2,745,870
Contract Supp.			
Training/Conf.	175,880	175,880	175,880
Rehab. of	315,000	315,000	315,000
Research Station			
Assessments	80,743	80,743	80,743
Miscellaneous	57,632	257,632	257,632
Proj. Final.	430,288	430,288	430,288
Costs			
TOTAL	5,851,000	5,851,000	5,851,000

N.B. Counterpart contribution was not required under the Cooperative Agreement.

JADF to support achievement of project purpose, provided the institutional framework - administrative and financial - within which JARP operated. Its input into the workings of the RAC through provision of a member of the Board of the Foundation and the presence of the Managing Director was of importance in defining JARP's policies.

Collaborating institutions-- CARDI, UWI, Ministry of Agriculture and overseas universities-- some by representation on the RAC, assisted in policy and priority development. In execution of JARP projects certain of their facilities were utilized and their senior research personnel acted as student advisors/principal researchers.

4. PROJECT ACCOMPLISHMENTS:

Project Outputs

	<u>Planned</u>	<u>Accomplished</u>	<u>%LOP</u>
1. Improved research capacity			
a) TA (p/m)	125	90	72
b) Workshops/seminars	50	38	76
2. Improved research quality			
a) Linkage with IARCs	5	7	140
b) Linkage with USLG	5	12	240
c) Monitoring visits	60	205	342
3. Improved research quantity			
a) Proposals reviewed	95	141	148
b) Proposals approved	60	61	101
c) Proposals completed	60	42	70
d) On-farm trials	55	54	98
4. Training (persons)			
a) Long-term (m/f)	15/10	31/24	207/240
b) Short-term (m/f)	30/20	30/25	100/125

During the seven years in which JARP was operational, the scientific and farming communities were supportive of its many initiatives.

Project accomplishments are reviewed by reference to the specific investigations undertaken within the twelve broad subject areas (summarized in Attachment 1) under which JARP research was classified and to the results and recommendations derived therefrom. The summary indicates that valuable information for improving the efficiency of agriculture has resulted and, although not all projects have produced results that can be immediately transferred, they have identified the effective limitations or indicated other research activities that could lead to the solution of problems now limiting productivity.

JARP research findings have contributed to significant increases in the export of ornamental flowers and orchard crops including anthuriums and papayas. The research program has provided solutions to problems affecting productivity of these commodities.

There has been positive impact in a number of areas such as:

- Adoption and commercial export development for blast freezing and vacuum packing of breadfruit and ackee;
- Development of techniques for prolonging the shelf life of selected ornamental and ethnic products;
- Introduction of new water aeration techniques in fish ponds to increase stock densities;
- Virology research on papaya identified the disease affecting large numbers of papaya growers in southern St. Catherine and has permitted them to control the condition and remain profitable;
- JARP's research on the forage value of African Stargrass is now being used by one of Jamaica's largest dairy producers, Serge Island Dairies;
- Commercial orchid adaptation trials in St. Thomas gave rise to a total of 10 new farms selling orchids in that area. Those farms are cooperatives, with support from the College of Arts, Sciences and Technology, in a self-financed expanded second phase to the JARP sub-project;
- Adoption of micro-irrigation systems on small scale vegetable farms in the Rio Cobre Basin increasing water efficiency and irrigated land area;
- identification of harvesting and transporting techniques for producing hypoglycin-free canned ackee; and
- Adoption of vegetative propagation techniques utilizing rooted cuttings for supplying planting material for orchard establishment.

Postgraduate training for fifty (50) persons of whom thirty-seven (37) are Jamaicans contributed to the pool of skilled manpower needed for an effective research system. This represented a major accomplishment from which public and private sectors can benefit. However, very few trained researchers are employed in research activities. As a long-term sustainable agricultural research program was not established, there are few employment opportunities to absorb this expertise.

While several linkages were established and maintained among research/extension groups and producers, no agreement was reached with the Government of Jamaica on a long-term sustainable Jamaica agricultural research program. However, these linkages have resulted in the hiring of at least 10 research scientists trained under JARP by successor research programs in which JADF is involved and collaboration with entities such as Alcan and Serge Island Dairies.

The JADF has set up an endowment of J\$10 million to support commercial agricultural production and research as part of their post-JARP sustainable research effort. Toward this effort, they recently purchased the 1,000-acre Water Valley Estate, in St. Mary, where they intend to conduct research on orchard crops and exotic plants.

5. EVALUATIONS AND STUDIES:

The Project's mid-term evaluation was completed in September 1990. The evaluation commended implementation progress and gave high marks to JARP's management. The evaluation report recommended that USAID continue to support JARP until the original PACD of July 29, 1993. Further, the report emphasized the need for a National Agricultural Research Institute (NARI) and encouraged USAID/Jamaica and JARP to support the formation and operation of NARI. In the event that NARI was formed, the evaluation recommended that JARP be phased into NARI. The need for a National Agricultural Research Center at Bodles was strongly supported along with a well-trained and adequately supported research staff. Finally, the evaluation report recommended that in the event NARI was not formed in the near future, JARP should be extended to give the GOJ additional time to develop an effective research capability.

A Sustainability Assessment in March 1992 recommended the establishment of an endowment to support agricultural research among private and public sector entities. The drastic reduction in the GOJ budget allocation to agricultural research and development and the continuing shortage of technical and professional personnel reduced the ability of government to provide adequate resources for research as well as collaborative projects with JARP.

In August 1993, the Office of International Training (OIT) conducted a review of JARP training programs. The concerns addressed included research and training commitments that extended beyond the original PACD and training conducted outside of HB 10 regulations. Long-term training necessary for the advancement of research projects was incorporated into JARP with an amendment to the Cooperative Agreement in 1991. JARP entered into contracts with universities for cooperative research activities and master's and doctoral degree training. Since the project clearly maintained research as the primary focus, though graduate training subsequently emerged as a principal means of reaching project objectives, the project defined the experience of those individuals enrolled in universities in the context of their thesis research activities rather than as training programs. The interpretation resulted in misunderstanding of the applicability of agency regulations regarding training and, consequently, Handbook 10 was not followed.

The OIT findings resulted in the extension of the PACD until December 31, 1993, to effect an orderly closeout of the project and to honor commitments to students' programs; the JADF agreed to fund the remaining students in the program after December 1993 through their completion dates in 1994; and the OIT issued a waiver permitting the remaining students in the U.S. to continue to be administered outside the regulations of HB 10 through December 1993. This was done to avoid unnecessary disruption in students' programs and the impracticality of bringing them under HB 10 procedures in the short-time left in the project.

6. CONTINUING RESPONSIBILITIES:

Formally, USAID has no continuing responsibilities under this project, beyond those related to completing the financial close-out process. Those responsibilities were fully met by the end of September 1994, the project's terminal disbursement date.

USAID's interest in agricultural research will continue, however, in so far as it indirectly affects the Mission's sustainable agriculture and agricultural export promotion projects. Both under Hillside and Agricultural Export Services, sub-projects, will encounter technique or technology constraints which various kinds of research could resolve. It may be necessary under those projects to invest in limited efforts which might have been undertaken through JARP, if it had continued.

The Mission also has a continuing programmatic, if not financial, interest in the Jamaica Agricultural Development Foundation. This lending, investment and research institution was founded and capitalized with the help of over US\$20 million in PL-480 Title II local currency sales proceeds, and as noted above, was the grantee and sponsoring organization for JARP. As USAID continues to address agricultural questions through AESP and HAP, the JADF may emerge as an institution which can contribute to those efforts. Hence, for the time being, ONRAD would continue to accept JADF's invitation to sit on its board of directors in an observer/advisory capacity.

7. SUMMARY OF LESSONS LEARNED:

- a. This project, from the outset, sought to promote agricultural research through a private foundation (JADF) and without providing any direct assistance to the Ministry of Agriculture or the public sector Agricultural Research Council (JARC), but GOJ research resources were never brought directly into the manageable interest of this project. This approach had the advantage of giving JARP a freer hand in establishing and managing its own program, but in the end probably helped set the stage for the Ministry of Agriculture's reluctance to participate in an initiative to secure a sustainable future for JARP.

- b. Agricultural research sustainability should have been a prime preoccupation of the project from the outset, rather than the subject of an external consulting team's brief effort in 1992.
- c. Training emerged as a critical element of the project, but was not adequately addressed at the outset. In a country like Jamaica, which lacks a large well-trained agricultural research community, the training factor is a critical and preeminent constraints.
- d. JADF learned from the JARP experience that the grantee institution must not delegate entirely the fiscal responsibility for a foreign donor grant to a subsidiary NGO (in this case, JARP). Had JADF maintained a stronger management involvement in JARP's financial and operational affairs, some of the confusion encountered in the audits at the end of JARP might have been avoided.
- e. If agricultural research is to continue in Jamaica, it will require initiative which fall into two general areas:
 - For relatively simple adaptive research questions primarily for the benefit of small farmers, the key to success will probably be a strong public sector role (donors and GOJ), combined with extension from commodity groups such as the parastatal commodity boards; and
 - For more technical and complex research questions such as addressing specific disease problems, maintaining livestock gene pools, and adapting technology appropriate for the commercial agricultural sector, the key will probably be a strong partnership between government and food processors, large agricultural estates and even foreign private agribusiness.