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THE JAMAICA AGRICULTURAL EDUCATION PROJECT
END OF PROJECT REPORT
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EXECUTIVE SUMMARY

The goal and specific objectives identified within the JAEP Logical Framework have, in a holistic sense, been achieved. There is a "fully viable and functional Jamaican College of Agriculture with appropriate facilities, equipment, faculty and curriculum capable of substantially meeting Jamaica's needs for mid-level agricultural professionals." The Knockalva Agricultural High School student capacity has been expanded and "improved with satisfactory facilities, faculty equipment and curriculum to graduate a quality product, some of whom will matriculate to the COA."

Academic institutional development is a complex activity combining near and long term objectives into a responsive and dynamic program. Within the JAEP seven initiatives or thrust areas were identified and used to focus the development effort. Each initiative contained near and long term objectives that competed for resources internally, as well as externally, with objectives of other initiatives. This competition, of necessity, forces some prioritization since growth paths are usually uneven. Progress, in some cases, is a functional movement dependent on the resources created in completing one or more objectives, being primary input resources needed to achieve other objectives. For example, a functional applied research program at the COA was not attainable until participant trainees returned to the institution as faculty.

There was success and there was failure. Objective and subjective evidence indicates the former dominated. However, it was not easy and there is much left to be done. In an objective sense, the following is an assessment of the outcome associated with specific project initiatives. The modified participant training initiative was successful. Twenty nine individuals were sent for academic training; 33 academic degrees were earned—20 BS, 11 MS, and 2 Ph.D. The construction initiative was partially so. First, the de-obligation of project funds by USAID modified the growth path of both institutions as well as their ability to employ and retain competent faculty and administrators. Second, the failure to complete all items on the modified construction profile further constrains the effective utilization of physical plant and faculty resources. However, the combination of new and old facilities and faculty complement each other nicely and the quality of graduates has and should continue to improve. The JAEP provided both institutions an adequate fleet of transportation and farm vehicles but both were poorly managed. The procurement initiative was poorly planned and managed and all involved have much to learn from this experience. Procurement of books to upgrade library facilities was not accomplished. This is a major project failure. The internal generation of income by each institution was stressed in the Project Paper. The GOJ/MOE provided both institutions farm land to be used in meeting this requirement. The COA was successful in accomplishing this at Spring Garden. The KAS has not effectively incorporated the land it received at Montpelier into its farming activities.

Those JAEP initiative outcomes specific to the COA are: (1) the development of a project driven applied research activity and establishment of professional links with faculty at U.S. academic institutions: research findings are beginning to be published as papers and articles in international professional publications. However, a clearly articulated research agenda is not in place at this time and is sorely needed to provide direction; (2) a number of extension/outreach activities have been

tried. Lack of program continuity has been a major problem. A professional extension coordinator was hired to address this problem. However, the integration of faculty into this activity has not occurred and there has been little progress; (3) the COA curriculum has been modified to address the diverse but interfacing needs of students, employers, and national and international accreditation. The addition of the "pre-college" program reflects the increased sensitivity of the COA faculty and administration to the academic needs of entering students. It is a good omen of things to come. The shift of emphasis from farm practice to the use of a tutorial farm as an extension of the formal lecture and laboratory training will, in the near term, not be well accepted by a segment of potential employers of graduates, however, it is a positive action; (4) The initiative to establish a viable COA/CDC failed. The Project Paper failed to recognize the structural impact of moving this activity from the MOE to the COA. As the COA grows in stature some sharing of this activity between the Division within the MOE with this responsibility and the COA through a MOU could emerge; (5) There is little doubt of the profound impact of the participant training program on the COA's academic and administrative activities. The injection of quality human capital into any public or private institution is pivotal in fostering rapid growth and development; (6) The construction initiative was not without problems, however, the academic and administrative physical plant will support a student population of 400. Student and faculty housing is marginally adequate at this time; (7) JAEP resources played a central role in addressing near and long term administration and management problems at the COA. Passage of the College of Agriculture Act, creation of the College of Agriculture-Jamaica Foundation and establishment of an endowment within the COA-JF will have significant long term impact on the COA's academic, research and extension/outreach programs. The COA and the LSU Agricultural Center had the foresight to work persistently toward the creation of the COA-Jamaica Foundation long before the end of the JAEP. This effort, coupled with the endowment that will hopefully be established in the near future, will enhance the JAEP investment and the COA. Such additional sources of funding are key to the academic growth of the COA, professional currency of the faculty, and will help retain trained faculty and staff at COA. Short term efforts assisted in developing a departmentalized and budgetary cost centered administrative structure. A set of administrative policy statements describing COA wide policies and procedures have been published. All administrative and academic employees have detailed job descriptions and similar documents are being prepared for all support staff and farm technicians. The business office accounting system has been computerized as have student records. There is a concerted effort by the administration and faculty to address those factors that prevent the national and international academic accreditation of the institution.

Linking the budgetary cost center concept used to manage non academic support with academic disciplinary departmentalization has played a significant role in addressing a number of interrelationship and communications problems. The budgetary process is now decentralized. Departments develop a budget that is then aggregated into an institutional entity. Downward adjustments to match the annual subvention are resolved among department heads. This activity has created a COA wide responsive vertical and horizontal administrative and communications system.

JAEP outcomes specific to KAS are: (1) the participant training program will have a positive impact on the quality of the entire curriculum since faculty teach courses in more than one disciplinary area; (2) the construction initiative deleted the multipurpose structure and faculty housing. Both were sorely needed. Dormitory needs were addressed by retrofitting a "farmer training structure" and building a single 48 unit structure. Student population may be expanded to 190. The classroom and laboratory space are sufficient to meet the academic needs for some time into the future. The new animal production facilities are centrally located to facilitate control and management; (3) JAEP resources were used to provide academic and professional administrative and management training for the current KAS Principal. During the life of the JAEP, KAS administrators have not faced financial and personnel problems similar to those found at the COA. However, the continued decline in the GOJ/MOE annual financial subvention support to the

institution is becoming a serious problem.

BACKGROUND

Agricultural education in Jamaica began with the Farm School at Hope in 1910. The Farm School at Hope specialized in agriculture and the related sciences. In 1957 the Farm School relocated to Twickenham Park and became known as the Jamaica School of Agriculture (JSA). In 1981 the JSA was moved to Passley Gardens near Port Antonio in Portland and renamed the College of Agriculture (COA). At the outset COA's academic program emulated that of the JSA. However, the COA academic program has undergone considerable modification just as the JSA program had evolved to meet the growing and more diverse requirements of the agricultural sector in earlier times.

In 1936 programs were established at the secondary level in institutions which were then known as practical training centers at Holmwood, Knockalva, and Dinthill. Later, Knockalva Rural Secondary Technical High School was transformed into the only specialized agricultural institution at the secondary level. In 1976, two additional agricultural high schools, Elim and Passley Gardens, were added to the national agricultural education system. This modification of the agricultural educational system reflected the need to address regional differentiation emanating from physical and climatic differences affecting the nation's agricultural resource base. USAID funded the development of these two institutions. The Passley Garden school site became the home for the COA in 1982.

INTRODUCTION

The goal of the Jamaica Agricultural Education Project was to contribute to the resuscitation and rejuvenation of the agricultural sector in Jamaica. The specific objectives of the project were to "develop and expand the Jamaican College of Agriculture and expand and improve the Secondary Agriculture School at Knockalva." These objectives would be accomplished when "there is a fully viable and functional COA with appropriate facilities, equipment, faculty and curriculum capable of substantially meeting Jamaica's needs for mid level agricultural professionals and the KAS is expanded and improved with satisfactory facilities, faculty, equipment and curriculum to graduate a quality product, some of whom will matriculate to the COA."

Technical assistance was provided by a three university consortium consisting of the Louisiana State University Agricultural Center, Southern University and Sam Houston State University. These institutions provided 31 professional technical advisors in 16 disciplinary areas for a total of 212 person months. In addition 18.20 person months of professional assistance in areas not identified in the JAEP were provided through Title XII Program Support Grants to the JAEP at no cost.

The thrust of the development effort was broken down into seven initiative areas by the senior administrative staff of the COA, the Principal of KAS, the Project Implementation Unit Coordinator, and members of the three university consortium technical assistance team. These initiative or thrust areas were Applied Research, Extension/Outreach, Curriculum Development, Participant Training, Accreditation, Construction and Procurement, and Administration and Management.

This report is focused on the change in each of these initiative or thrust areas emanating either directly or indirectly from project activities for each of the institutions.

THE COLLEGE OF AGRICULTURE

APPLIED RESEARCH

A discipline oriented, project driven, applied research program is emerging at the COA. However, a formalized documented program prioritizing both near and long term local, regional and national agricultural research needs has not been developed. The current program is being driven by recently returning faculty trained under the JAEP participant training program. Collaborative efforts to broaden this project oriented relationship between the COA and several universities in the U.S. is being developed and will be functional early in 1993. In addition, all individuals involved in advanced degree programs within the participant training activity are doing their thesis/dissertation study addressing agricultural problems or opportunities in Jamaica. Some plant species varietal testing, including primary and minor nutrient requirements and soil interactions research has been done as well as some basic herbicide research (materials and application rates) on vegetable and other horticultural crops. Some work has been done to assess modification of specific swine husbandry practices and a food science study is beginning to provide some useful results. To date COA faculty have not been successful in acquiring research project funding through the JADF/JARP. Considerable progress has been made by the COA in developing a national germ plasm bank for allspice/pimento, papaya, and breadfruit. COA administrators and faculty have established an informal cooperative applied research linkage with counterparts in the LSU Agricultural Center. This resulted in the testing of an emerging supplementary irrigation technology in Jamaica that, when adapted to local conditions, may have substantial impact on productivity and production costs for banana and possibly sugarcane. A collaborative effort to affect a formal linkage program between the COA, the Louisiana State University Agricultural Center, and Delaware Valley College is being discussed. This proposal should be formalized early in 1993. This linkage program encompasses more than applied research. However, the sharing of germ plasm, ideas, and faculty should have considerable impact on the COA applied research program in the near as well as long term.

The COA research program still lacks some of the primary activities normally associated with a forward looking applied agricultural oriented research effort. The formalized species varietal testing programs associated with plant science research are not in place. Nor are fundamental studies in the animal science area dealing with the possible adaptation of local plant sources of carbohydrate and protein as a supplement to commercial feed rations. Basic farm management and market analyses projects await the return of faculty currently being trained abroad under the participant training program. The COA budget does not provide funding to support the fundamental elements of an applied plant science or animal science agricultural research program. It is imperative that an appropriate stable funding source such as that envisioned through the College of Agriculture Foundation be identified to support applied research that is of vital interest to all of production agriculture in this nation. Specific problems that are commodity and/or area specific may be funded through grants from either national or international public or private sources. It is of the utmost importance that a clearly articulated, prioritized and documented research program be developed within this institution. It is this document that establishes those parameters needed to link research priorities to research projects. A list of research activities undertaken during the JAEP and current and ongoing research activities are attached as Appendix I.

EXTENSION/OUTREACH

The development of a comprehensive E/O program that addresses the multiple needs of youth education, adult education and technical training of professional extension specialists is a major undertaking. The COA has been involved in a variety of these activities while the JAEP was in progress. The institution's faculty and students played a central role in the development of a successful and responsive regional 4-H activity. Agronomic information and service support to

farmers participating in the Dutch Government Community Development Program in the Rio Grande Valley was instigated in the spring of 1988. This project integrated the agronomic/soil fertility and agricultural and extension education classroom training of third year students together with the college faculty and other resources with the extension activities of the Rio Grande Valley IRDP and the soils laboratory in the Ministry of Agriculture. College faculty and the TAT extension education specialist, at the request of the Cocoa Board, developed and taught an intensive short course on extension methods to the extension personnel employed by the board. Currently, the COA is involved in the development and implementation of a regional school garden program. This activity utilizes students as well as faculty.

Historically, none of these programs have been sustained over a period of time. The COA created an Extension Coordinator position and employed a competent individual. However, a detailed job description has not at this time been developed for the position and there was considerable disagreement as to what was and is the primary responsibility associated with this post. This individual developed and implemented the current school farm garden program. He was offered a full scholarship to study abroad and is currently pursuing a baccalaureate degree in the U.S. The COA has employed a replacement and plans to provide this post a vehicle to facilitate expansion of the program. It is important that a carefully formulated, sustainable extension/outreach program be put in place. This program is pivotal in the development of the COA's image as a public oriented educational, research and outreach institution.

CURRICULUM DEVELOPMENT

The JAEP curriculum development initiative has two central components: First, was the creation of a Curriculum Development Center (CDC) that was to assess and address the agricultural educational courses being taught in primary and secondary schools, and; secondly, assisting the COA faculty in the evaluation and modification of the institution's course offerings to support international accreditation of the COA and improving the marketability of its graduates.

The effort to establish a viable CDC failed. This activity was already being addressed by a functional division within the MOE and it became clear that this responsibility would not be partitioned. Considerable effort was made to develop a memorandum of understanding (MOU) between the MOE Division director with this responsibility and the COA, however, a workable functional relationship could not be achieved. JAEP funds allocated to this activity were shifted and used to return the plant science structure onto the construction profile. Space was allocated within this building for a CDC if a workable MOU becomes possible in the future.

Considerable effort has been made to modify the curriculum to facilitate its responsiveness to the dynamic needs of the agricultural sector. Several administrative actions have materially affected this activity. First, the COA developed a comprehensive academic catalogue that clearly states the purpose of the institution and provides a detailed outline of the curriculum. Second, departmentalization of the faculty materially reduced the individualistic approach to course offerings that had prevailed in the past. Disciplinary departments were required to define a basic set of required courses and faculty were required to provide detailed syllabi for all academic offerings. Areas of disciplinary concentration were identified and students were permitted to use elective offerings to develop an area of specialty. Lastly, departmentalization has been linked to funding through the cost center concept. Each academic department is a cost center and is required to prepare an annual budget request which is then consolidated into a proposed budget for the COA. Department heads are integrated into the process when downward adjustments are made to match the GOJ subvention to the COA with cost center requests. Once allocations are made each department head is financially accountable for all departmental expenditures. Thus, a clearly defined line of communications from the faculty through disciplinary departments to the COA senior administrative

team has been created.

An extensive modification of the academic curriculum has just been completed. A five month pre-college program has been added to ensure that students with non-traditional qualifications have a grade 12 equivalent before entering the degree program. Credits accrued in this program are not transferable into the Associate of Science Program. The Associate Science degree program was modified and now requires the completion of 74 semester credit hours over two summers and four semesters. The course offerings coupled with the academic qualifications of the faculty will satisfy the requirements for international accreditation of the ASc. program. A summary of the basic program is attached as Appendix II.

The failure of the JAEP to upgrade the library collection at COA and KAS is a major project shortcoming. At this point in time the condition of the library collection at COA would prevent the accreditation of the institution. The situation at KAS is even worse.

The successful development of a state-of-the art tutorial farm immediately adjacent to the COA campus will play a vital role in linking the traditional lecture and laboratory academic activities with the real world. This is extremely important as the student population of the COA is beginning to emulate that of Agricultural Colleges in the Land Grant institutions in the U.S. where a major percentage of the students are from urban areas and have limited if any basic knowledge of production agriculture.

The COA Department of Agricultural and Extension Education is completing a national study assessing how employers of COA graduates in the public and private sectors rate the competency of this institution's product. In all categories employers rated graduate employees from a high of excellent to a low of good. Curriculum development is an ongoing activity that should reflect the needs emanating from the agricultural sector. During the life of the project there has been a steady flow of discussion alluding to the inadequacy of that portion of the COA academic program in developing the capacity of graduates to make practical application of principles learned and the poor work attitude of some graduates. However, a COA/CDC study of 1985-1987 COA graduates indicated that of those located (88.78%) none were unemployed. The 1991 study indicates employers of COA graduates rate their competency in technical, practical, and interpersonal skills above average. Summaries of these two studies are attached as Appendix III.

PARTICIPANT TRAINING

The participant training plan outlined in the PP and discussed at length in the three institution consortium technical proposal was modified to maximize the number of degree programs in those disciplinary areas critical to the long term development of the COA, KAS, and EAS. A serious problem emerged in that many of the COA, KAS, and EAS faculty did not have the academic qualifications necessary to study for an advanced degree in the U.S. The program was revised with participants being selected from the top 10 percent of the COA graduating class as well as from the faculties of the three institutions. Students selected from the COA graduating class were sent to the UWI-Trinidad to complete a baccalaureate degree and then to the U.S. for an advanced degree. A participant training schedule for the JAEP is attached. Twenty nine individuals were sent for academic degree training; 33 academic degrees were earned-20 BS, 11 MS, and 2 Ph.D.

This has probably been the most successful initiative implemented under the JAEP. As a group the trainees performed extremely well and all but one returned to the faculty of the three institutions, and at this time only two have left. All three are employed elsewhere on the Island. It was recognized that this program would not meet the intermediate nor the long term needs of the three institutions. An advanced degree is a necessary but not sufficient condition in the development

of professional teachers and researchers. However, an advanced degree coupled with a personal commitment to teaching and research can lead to a rewarding professional experience. Thus, some rate of faculty attrition was expected and a 10 year participant training plan, extending far beyond the JAEP was developed and submitted to the GOJ/MOE and USAID. The thrust of the proposal was to have COA disciplinary departments headed by a Ph.D. and all teaching faculty to have at least a MS degree. In addition, the principals at KAS and EAS were to be Ph.D's. and all faculty were to have at least a Baccalaureate degree in their disciplinary area. This proposal addresses the mid-term JAEP evaluation recommendation concerning the upgrading of the degree programs at COA, KAS, and EAS. In addition, the proposal addresses the human capital needs of the entire agricultural education sector in Jamaica. A copy of these documents are attached as Appendix IV.

ACCREDITATION

National and international accreditation was one of the major objectives of the JAEP. Initial steps were taken by the LSUAC/TA team at the request of the COA senior administrative staff. Accreditation is a holistic process that involves an in-depth self-study and assessment of each segment of the institution. It was quickly recognized that considerable upgrading of the faculty was necessary as was a major improvement in the library collection. The COA has requested through the TAT that Dr. James Firnberg, former chancellor of LSU, Alexandria and currently employed by the National Science Foundation, and considered to be one of the most knowledgeable individuals on the accreditation of academic institutions, be made available to the COA on a semiannual basis. Dr. Firnberg has visited the COA regularly and assisted the senior administrative staff to address various aspects of the accreditation process. It is his belief that the COA could meet the Associate of Science accreditation criteria of the Southern Association of Colleges and Schools of the United States if the library deficiencies can be addressed.

CONSTRUCTION AND PROCUREMENT

CONSTRUCTION

The construction program at the COA was modified in the fall of 1986 reflecting the impact associated with the de-obligation of three million United States dollars from the JAEP. The institution's senior administrative staff along with the Ministry of Education PIU Coordinator and the Technical Assistance Team developed an adjustment strategy designed to salvage as much as possible of those facilities required to support the academic program. The final construction profile for the COA was modified as specified in the APEC Consultants Final Design Report dated June 1988. A summary of this report is attached as Appendix V. Some late additions have been made to the procurement and construction profile that are not shown in this report. These additions include complete climate control for the new administration annex, the development of a paved road linking the tutorial farm with the campus, the addition of several vehicles to the COA fleet, and the acquisition of additional computers and copiers.

The combination of new and renovated classrooms and laboratories will support a student body of at least 400 students. Faculty offices have been clustered to affect disciplinary departmentalization of the academic staff. The new construction has been almost completed as is the renovation of the multi-purpose structure. Partial renovation of the kitchen has alleviated several major health hazards. However, the removal of certain vital pieces of equipment from the procurement initiative makes the current kitchen situation marginally acceptable at best. Renovation of classrooms north and south have not been effected and there is little evidence that the contractor is ready to begin the work. The west end of classroom south has been turned into a state of the art climate controlled computer laboratory. The library was expanded and secured to protect the collection. Other renovations needed to preserve the collection have not been done. It is

imperative that the academic engineering and agricultural mechanization department and the physical plant department be housed in independent but interacting structures if they are to function effectively. Major renovations of the abattoir and the hatchery have been done in conjunction with the Portland Integrated Rural Development Project. A mushroom propagation and a bio-gas unit have been completed with grant funds. All facilities with coolers and freezers now have an emergency power supply. In addition, a stand-by generator with the capacity to support the entire COA complex is now properly housed. The necessary electrical work to permit its safe interface into the power system still must be done and an environmentally safe fuel storage support system added. A hard surfaced road now links that farm land lying east of the campus academic complex into a single unit. This will facilitate the development of this land to support all types of crop science and plant related research, to broaden the academic program in the plant sciences, and intensify its commercial exploitation in a manner that will improve the COA's income generating capacity.

One serious effect of de-obligation of project funds has already manifested itself in the inability of the receiving institutions to adequately process and secure inventory provided under the project. Another negative effect of this action, with much more far reaching and severe consequences is the removal of half the number of faculty housing from the construction profile. A review of the present position reveals that all housing on campus is fully occupied with the administration having to resort to accommodating junior faculty in the dorm. The severity of the housing shortage is fully appreciated when it is considered that there are still four (4) participants who will be returning to the College next summer for whom there is no available housing.

PROCUREMENT

The JAEP procurement program was fraught with problems from the outset. Lists were prepared by faculty and consolidated at the college level. These lists were then submitted to the JAEP through the PIU Coordinator. It was clear that the institution had made no attempt to prioritize this list and assumed that sufficient funds were available to satisfy wishes rather than quantified needs. The document was returned to the institution for modification, which took some time, and was still over budget when returned to the JAEP/PIU Coordinator. The PIU Coordinator with the assistance of the JAEP/TAT trimmed the request and returned it to the institution for final review and approval. This was a time consuming process and delayed the onset of the procurement activity. Further review by USAID resulted in additional modifications that had to be reconciled with the institution's administration.

The actual procurement activity was handled through the MOE as a Host Country Contract. This was not without some problems. In addition, the MOE was responsible for receiving and inventorying those items procured, clearing them through customs and arranging their transportation to the COA. This activity was poorly coordinated at the Ministry level.

The combination of procurement lists of the COA and KAS created a major problem in the distribution of material. Some items that were procured for KAS were stored at the COA. However, KAS administrators have not retained a copy of their procurement documents to verify quantities of specific items that they have not received. The COA now has a documented inventory of all non-land capital and has been able to make suitable arrangements to secure this inventory. Thus, it should be relatively easy to reconcile what items should be where and in what quantity.

A major defect in the procurement process was the aborted procurement of books needed to update the library collections at the COA and KAS.

The procurement activity was badly flawed. First, was the lack of prioritization by the faculty and administration of the two institutions; second, the failure to train those responsible for

developing procurement lists as to what information was required and its proper format for transmission through USAID to the procurement agency; third, was the failure of the procurement agency to meet the terms of its contract with the MOE; fourth, the failure of the MOE to properly process the arriving commodities through customs, arrange for secure storage and rapid transshipment to the COA and KAS and; lastly, the removal of the contract store facility from the construction profile as a result of de-obligation of funds seriously hampered the efforts of the receiving institutions to properly process and secure the incoming inventory.

ADMINISTRATION AND MANAGEMENT

Three major accomplishments emanating from the JAEP that have and will continue to play a significant role in the development of the COA are: (1) the legal modification of the COA with the passage of the College of Agriculture Act; (2) the creation of The College of Agriculture-Jamaica Foundation (COA-JF); and (3) the establishment of an endowment within the COA-JF whose income will be available to support the future growth and development of the COA.

The College of Agriculture Scheme legislation replaced the primary and secondary school rules and policies that the COA was functioning under with a set similar to those of CAST. There was an immediate positive response to this legislation. A precise mission statement was developed. The administrative structure was modified and the faculty was departmentalized. All administrative and academic employees of the institution have a clearly stated job description. Similar documents are being prepared for the auxiliary staff and field technicians. A set of Administrative Policy Statements that describes COA wide administrative policies and procedures has been prepared and published. Considerable progress has been made in the financial administration and management of the COA. Budgetary cost centers have been established and funded on a fiscal year basis. All COA non-land property has been inventoried and accounted for by location. The inventory has been computerized and property has been issued and signed for by those in supervisory positions. The purchasing and receiving functions of the COA have been centralized and interfaced with the business office. The institution's business office accounting system has been upgraded and totally computerized. The student records system has been upgraded and computerized. Further refinement of the system by members of the TAT including the development of a comprehensive student file and transcript format is being completed. All past student records will be entered into this quick recovery system. Physical plant maintenance has been added as a cost center with the responsibility and accountability vested in one individual. A functional system is evolving, however, considerable improvement in the response time is needed. Grounds maintenance is now provided by students through a "contract work" arrangement. The improvement in the campus appearance is noticeable. A similar arrangement has been affected for all but major plumbing work. This activity has greatly improved the response time when emergencies occur.

The COA administration, particularly at the President's level, and the LSU Agricultural Center as the TA contractor were able to foresee the need for financial and program sustainability long before the end of the JAEP. Evaluations and follow-up studies in similar projects have indicated that development assistance initiatives have sometimes faltered and/or the host country institutions regressed due to the lack of financial sustainability. In addition, the issue of academic growth and wellbeing of the host country institution and the continuation of collegial relationships of the faculty are vital if the TA efforts in a project such as the JAEP are to have a lasting impression. The LSU Agricultural Center has worked collaboratively with the COA and consistently pursued several ideas and concepts with some success at this point. They have established the COA-Jamaica Foundation (COA-JF) and are now pursuing an endowment scheme to perpetuate a funding mechanism that will complement the host country subvention to the COA.

The COA-JF was conceptualized within the JAEP. Its development as a legal entity was a

joint effort involving the COA, the JADF, and the LSU Agricultural Center. Its design is similar to that establishing the Land Grant Universities in the U.S. Its function is to be a repository for revenue generating resources and to use the earnings from these resources to augment public funding support of the COA's academic, research, and outreach programs. USAID has financially supported this activity as has the Government of Jamaica by shifting the Spring Garden Farm lands and associated assets to the COA-JF. In addition the JADF and the LSU Agricultural Center have continued to assist the foundation in a variety of ways.

Communication within the institution, both vertical and horizontal, is greatly improved. Those with supervisory responsibilities appear to be functioning effectively as evidenced by the reduction in the number of inconsequential problems that are migrating to the President's office for resolution. There is a sense of purpose within the faculty that was missing at the onset of the JAEP and was still apparent at the mid-term review. The general attitude of the student body is much improved. Problems do exist: two senior administrative positions are vacant; management of transportation resources and personnel time management are seriously deficient. The transportation problem is being addressed, however, the personnel problem will require a clearly stated standard operating procedure that provides accountability and is easily enforceable. Quality faculty for non-agricultural disciplinary areas are difficult to recruit and employ. GOJ budgetary problems have resulted in a reduction in the annual subvention to the COA. There is no doubt that the programs emanating from the JAEP have increased the institution's recurring expenses. It is impossible to maintain a quality faculty at the salaries being offered and as additional faculty return from abroad that portion of the annual subvention allocated to faculty salary will increase. The seriousness of this situation must be addressed quickly if the growth envisioned for this institution is to be achieved.

KNOCKALVA AGRICULTURAL SCHOOL

APPLIED RESEARCH

Students continue to be involved in non-replicated studies dealing with the interface between environment and various aspects of agronomic technology in the production of vegetable crops. In addition, animal science studies dealing with specific aspects of poultry, swine, dairy and goat production are continuing. These activities were ongoing prior to the start of the JAEP and hopefully will continue.

CURRICULUM DEVELOPMENT

KAS administrators and faculty have, to the best of their ability, used the resources made available to them through the JAEP to broaden a clearly defined academic mission. Historically, faculty staffing at KAS had been quite stable. However, the JAEP participant training program created serious problems as short term replacements for faculty being sent abroad to school were difficult if not impossible to find. It appears that the participant training program adversely affected the quality of instruction at KAS since most of those leaving for training also taught in areas other than the agricultural sciences. However, this problem is now less important since most of the trainees have now returned.

The administration and faculty at KAS still see their prime mission as the education of future farmers and farm managers. There has been an increased emphasis in academic achievement, however, the demand for excellence in the applied elements of the curriculum have also been strengthened. The increase in student capacity is forcing KAS administrators and faculty to actively recruit students from urban as well as rural areas.

It will be difficult to retain the JAEP BS. trained faculty unless there is some adjustment of

the current GOJ/MOE salary scale. This is particularly true in the case of faculty with BS qualifications in agribusiness. There will be continuing problems with retention of quality faculty throughout the agricultural education system of the country. A proposed plan that would facilitate a holistic faculty training program, starting with employment at the BS at KAS and EAS, followed by graduate degrees and employment at COA has been discussed earlier in this report under participant training. This proposal provides for professional growth and the development of a career path in agricultural education and research.

PARTICIPANT TRAINING

The JAEP/Knockalva participant training activity has provided academic training for seven individuals. These individuals have earned or are in the process of completing a total of 4 BS. and 2 MS. degrees. One participant dropped out of the baccalaureate program prior to completion. These individuals have played a significant role in the strengthening of the KAS academic program. This, coupled with the COA's new pre-college program, will insure a steady flow of KAS and EAS students to the COA.

CONSTRUCTION AND PROCUREMENT

CONSTRUCTION

The construction program at KAS was modified in the fall of 1986 to address the re-prioritization of the JAEP construction profile required by the USAID de-obligation of project funding. The indivisibility of building resources made the modification of the KAS construction profile difficult. The final plan deleted the multipurpose structure and a major portion of the on-campus faculty housing and new student dormitories. All new academic construction has been completed and is in use. A portion of the planned retrofitting of the old classroom and laboratory structure is partially complete. However, the modification of the old "first year classroom" into a receiving and warehouse facility has not been done. A new girls dormitory is occupied and the old farmer education complex was retrofitted and is now a fully occupied girls dormitory. These additions have increased the student capacity of the institution to 190 students. The entire farm complex has been centralized adjacent to the dairy facility. Some modification of the new poultry houses must be made to address a unique climatic problem. In addition, the piggery needs some minor technical modification made to the birthing areas. The equipment for the new abattoir has not been installed and seriously deters the use of the new production facilities. Only one of the two faculty housing units left in the construction profile was built. The structure has been completed for some time, however, there has been some problem in supplying power to the structure and it is at this time unoccupied. The rural location of KAS will make it difficult to expand the student population without additional faculty housing.

It appears that the capacity of on campus student housing complements the capacity of the academic facilities. However, the support facilities, such as dining, kitchen, student assembly, and faculty housing and planning areas are severely overtaxed. In addition the library situation is worse than that at the COA and the lack of text books, especially for the biological and agricultural sciences, deters intensifying the depth of study in these areas.

PROCUREMENT

An assessment of the JAEP procurement program has been presented in an earlier section of this report. The combining of KAS procurement requests with those of COA was serious mistake. KAS administrators could not produce copies of the PIOC's that they forwarded to the JAEP/PIU so it is difficult to ascertain what was requested, what was denied, what was procured, and what was

received. Since most of the material was shipped to the COA, it seems that the KAS administrator should list all such short comings and seek the help of the COA President in determining if these items were received and are available.

ADMINISTRATION AND MANAGEMENT

KAS is facing financial difficulty similar to that of the COA. The MOE has failed to maintain the annual subvention for KAS at the level prior to the onset of the JAEP. The negative impact of this action may be seen in the lack of maintenance of pre-JAEP faculty housing and other physical plant structures, and deterioration in the quality of the permanent pasture resulting from failure to control broad leaf weeds. Lack of funds to affect minor modifications of the new poultry and swine facilities has delayed their use for almost a year. This has reduced the effectiveness of the academic program and reduced internally generated funds that normally play a significant role in funding the institution. The JAEP/PIU provided KAS two computers and an intensive short training program in their use. The use of these machines for other than secretarial purposes is minimal. There is no evidence that they are being used to maintain a non-land inventory of institutional property or by the bursar in accounting for dispersal of the annual subvention as well as self-generated funds.

The GOJ/MOE transferred to KAS approximately 106 acres of prime farm land approximately 5 miles north of the school. These lands were to be improved and the earnings used to supplement the annual GOJ/MOE subvention. However, KAS has done nothing to improve this property and it has provided no income to the institution during the life of the JAEP. This is a serious shortfall and should be addressed immediately.

KAS is faced with a transportation control problem similar to that found at COA. A major portion of the vehicle complement made available through the JAEP is no longer road worthy. Most of this occurred prior to the return from training of the current Principal. However, the current financial crunch has limited the acquisition of essential repair parts for the usable vehicles within the motor fleet. These are problems similar to those faced by the COA during the first three-fourths of the JAEP.

The growth path of the KAS has been slow but steady. Returning participant trainees will improve the overall curriculum and the quality of student produced by this institution should improve in the near term. Prospects for the intermediate and long term may not be too good unless a mechanism to provide a steady flow of BS qualified young women and men into a professional agricultural education system that affords them professional upward mobility can be established.

Individuals Contacted

Mr. Owen Henry - Principal, KAS

Mr. Donald Aird - Faculty, KAS

Mr. Alan Rickards - Rickards & Rickards Consultants, Kingston

Dr. Terrence Thomas - President, College of Agriculture (COA)

Dr. Dudley Cawley - Executive Assistant to the President, COA

Dr. Desmond Hastings - Vice President of Research and Development, COA

Dr. Ismail bin Yahya - Head, Dept. of Agriculture and Extension Education, COA

Mr. Lloyd Bailey - Lecturer, Dept. of Plant Science, COA

Mrs. Vera Badresingh - Head, Dept. of Animal Science, COA

Mr. Jonathan Lamey - Head, Dept. of Agricultural Engineering and Plant Science, COA

Mrs. Donna Lamey - Lecturer, Dept. of Food Science, COA

Miss Lueda Forrester - Lecturer, Dept. of Rural Science, COA

Dr. Keith Roache - Chairman, COA-JF Board of Governors

Mr. Lenworth Fulton - Managing Director, COA-JF

Mrs. Cecile Jarrett - Acting Managing Director, JADF

Mr. Terrence Bowyer - Physical Plant Maintenance Supervisor, COA

Mr. Donald Burke - Storekeeper, COA

Mr. Edward Winnen - Director, Rio Grande Valley Integrated Rural Development Project, Portland

Mr. Odrie Ortego - Vice Chancellor Emeritus, Louisiana State University

Mr. Paul Ivey - Lecturer, Dept. of Plant Science, COA

Documents Consulted

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Abbreviations

COA	College of Agriculture
JAEP	Jamaica Agricultural Education Project
USAID	United States Agency for International Development
GOJ	Government of Jamaica
MOE	Ministry of Education
CDC	Curriculum Development Center
MOU	Memorandum of Understanding
COA-JF	College of Agriculture - Jamaica Foundation
KAS	Knockalva Agricultural School
JSA	Jamaica School of Agriculture
EAS	Elim Agricultural School
LSUAC	Louisiana State University Agricultural Center
JADF	Jamaica Agricultural Development Foundation
JARP	Jamaica Agricultural Research Project
E\O	Extension\Outreach
IRDP	Integrated Rural Development Project
TAT	Technical Assistance Team
PIU	Project Implementation Unit
ASc	Associate of Science
CAST	College for Arts, Science and Technology

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project
from FY 04 to FY 09
Total U.S. Funding:

Date Prepared: 6/9/04

Agricultural Education Project (532-0082)
NARRATIVE SUMMARY

PROGRAM OR SECTOR GOAL	OBJECTIVELY VERIFIABLE INDICATORS MEASURES OF GOAL ACHIEVEMENT	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS ASSUMPTIONS FOR ACHIEVING GOAL TARGETS
To support a significant increase in agriculture's contribution to the Jamaican economy.	Significant increases (estimate 10%) in agricultural production, profitability, exports, FX earnings, gross sales and in farmer real income and in absolute value of agriculture's contribution to GDP.	Economic statistics	No decline below present real levels of inputs, investment, markets and infrastructure. Appropriate utilization of trained agricultural professionals by farmers, agre-industry and public sector. Continuation of current trends toward removal of disincentives and counterproductive effects of public policy. Proper and effective administration and use of extension service. Increased availability of well trained agriculturists available for employment in the sector

NARRATIVE SUMMARY PROJECT PURPOSE:	OBJECTIVELY VERIFIABLE INDICATORS CONDITIONS THAT WILL INDICATE PURPOSE HAS BEEN ACHIEVED: END OF PROJECT STATUS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS ASSUMPTIONS FOR DELIVERY SERVICE
Fully viable and functional COA, with appropriate facilities, equipment, faculty and curriculum, capable of substantially meeting Jamaica's needs for mid level agricultural professionals.	(a) Total COA enrollment increased from 150 to 450. (b) 100 Assoc. of Science graduates per year. (c) COA faculty/student ratio 1:18. (d) First COA class graduated having completed new curriculum including applied research instruction. (e) 20% of annual graduates of KAS feeder institution enroll at COA. (f) KAS total enrollment increased from 154 to 300 with 95 graduates per year. (g) KAS faculty/student ratio of 1:20. (h) Capability of COA program evidenced by 15% of EOP graduating class entering extension service or public sector g. support, 15% of EOP graduating class become voc. ag. instructors, 15% of EOP graduating class enroll in D.S. or advanced degree programs, 10% of EOP graduating class enter private agriculture or agribusiness.	KAS records and reports COA COA follow up records Placement records Alumni records	Proper and effective administration of COA Quality of COA education and graduates appropriate base for advanced education Existing private sector demand continues Quality of KAS education and graduates suitable for enrollment at COA.

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NARRATIVE SUBDIARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS FOR ACHIEVING OUTPUTS
OUTPUTS	MAGNITUDE OF OUTPUTS		
COA expanded and improved in following areas:			
Classrooms	3 new classrooms	Reports and inspections	Timely and effective teacher assistance, construction commodity procurement and training
Dormitories	3 new dormitories (total 450 students) 2 existing dormitories improved		
Faculty housing	10 new faculty homes		
Library	Library volumes increased from 5,000 to 10,000, and library alterations		
Curriculum	Courses increased from 35 to 60 and new curriculum completed. Faculty w/B. Sc. degree increased from 2 to 4, Faculty w/adv. degrees increased from 10 to 25.		
Applied research program	Research instructional program for each student and research instructional program fully staffed and equipped and 10 Applied Research reports produced.		NOA cooperation with COA on applied research. NOA cooperation with CDC on curriculum development center.
School farm	School acreage increased from 450 to 700 with 350 added for irrigation agriculture and school farm fully equipped		
	2 new poultry bldgs. Existing poultry facilities altered.		
	new piggery		
	new dairy		
	expansion of abattoir and new refrigeration facility		
	completion of feedmill		
	completion of hatchery		
	new farm store		
Laboratories	4 new labs; conversion of eng. bldg. to animal science lab and central storage		
	New plant propagation lab and classroom bldg. with terracing for shaded plant propagation.		
Staff housing	Duplex for ancillary staff		

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS FOR PROVIDING RESULTS
INPUTS	IMPLEMENTATION TARGET		
Engineering Services	Design, construction, management and supervision (NDA) (and private firms)	RFP documents, contract awards, inspections and quarterly reports.	Timely preparation of RFPs and award of contracts.
Construction and renovation services and materials	AID GOJ COA KAS	Contracting Process, quarterly reports and inspections.	Adequate funding for GOJ contributions, timely preparation of IFBs and award of contracts.
Land	For school farm irrigation programs. GOJ will purchase 350 acres additional land for COA and 30 acres for KAS.	Inspection and quarterly reports.	Timely purchase, no transfer of ownership problems
Increased Faculty and Staff	COA: ___ faculty and ___ staff hired KAS: ___ faculty and ___ staff hired	Quarterly Reports.	Qualified faculty available funds available for competitive salaries.
Institutional and agricultural equipment and supplies	AID GOJ COA KAS	Quarterly reports, inspections and procurement process	Timely preparation of procurement documents and placement orders.
Curriculum Development Center	AID		
Commodity procurement services	Estimated 10% of commodity costs of ^m	Contracting Process	Timely contracting with procurement services agent.
Faculty training	Degree programs: See Appendix II. COA: eight person years KAS: twelve person years Nondegree Programs: COA: seven person years KAS: five person years	Quarterly reports, participant training process	Adequate number of qualified with release time for training replacements for training position. Timely completion of training plans and processing trainees.
Technical Assistance (COA)	Title XII Technical Assistance (person months). Curriculum Development 36 PH Applied Research Development 48 PH Pedagogic and In-service Faculty training 132 PH ^A ^A Approx. 20% short term.	Contracting and assignment process, quarterly reports and inspection.	Timely preparation of procurement documents and contract awards.
Student Enrollments	COA: Continue entering enrollment at 100 per year until 450 final capacity is reached. KAS: Enroll 50 additional students per year until 300 final capacity is reached.	Quarterly reports enrollment reports and records	Adequate funding for maintenance and operations.

completed -

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Administration	<p>New partial second level to admin. bldg. and improvements to existing bldg.</p> <p>New laundry</p> <p>Improvements to multi-purpose bldg. conversion of guest quarters</p> <p>Improvements to workers welfare and storage bldg.</p>		
Engineering	<p>New engineering workshop and 1,100 foot access road</p>		
Maintenance	<p>New maintenance and repair workshop and 109,000 gal. storage tank</p> <p>Civil works support for all above.</p>		
<p>KAS feeder institution expanded and improved in following areas:</p>	KAS:	Same as COA	Same as COA
Classrooms	New bldg. with 6 classroom		
Dormitories	5 new dormitories (for total 120 students)		
Faculty housing	5 new faculty houses		
Library	Library volumes increased from 1,000 to 5,000,		
Faculty upgrading	Faculty w/B. Sc. increased from 2 to 12, Faculty with COA upgrading 10.		
School farm	<p>School acreage increased from 214 acres to 244 acres with 30 added for irrigation agriculture. School farm fully equipped and operational.</p> <p>2 new poultry bldgs.</p> <p>new abattoir</p> <p>new piggery</p>		
Administration	<p>New multipurpose bldg. with dining facilities</p> <p>Civil works in support of foregoins</p>		

RESEARCH AND OUTREACH

Apart from the regular teaching requirement of COA full time staff, they are required to perform Research and Outreach activities in the area.

The following are some of the activities performed by staff members of the various departments of the College.

Each activity is cleared for implementation only after its presentation to a committee where each project is examined for its suitability and usefulness to the community.

Examples of projects taken on by Departments are as follows:

Plant, Soil Science and Engineering Department

1. An estimate of the number of tillage operations required to control weeds in a sandy loam and heavy clay.
2. Mixed cropping of cabbage: a cultural method for reducing Diamond back-Plutella xylostella (L) Infestation.

Animal Science Department

3. Effect of Zeronol (Rolgro) on weight gain and feed efficiency of pasture reared beef cattle.
4. Evaluation of the effectiveness of Amprolium against *Eimeria* sp. in sheep.
5. Determination of the effect of Amprolium on weight gain and feed conversion in sheep.
6. Determination of the Epidemiological Parameters relating to the occurrence of Fascioliasis and estimate of the economic cost attributable to the persistence of the disease on College of Agriculture Livestock Farm.
7. Effect of Amprolium on weight gain, feed efficiency, and control of Coccidiosis in weaner lambs.
8. Signal grass (*Bracharia decumbens*). Toxicity in sheep and goats.
9. The suppression of offensive odours at the College of Agriculture Pig Pens.
10. Effect of selective tooth clipping on the survival and growth of piglets.

Department of Humanities and Social Sciences

11. A measure of the extent of the damage done to the Annotto River Watershed by members of the community resulting in a reduction in the quality and quantity of water.

Department of Natural Science

12. Evaluation of the toxicity of Gramoxone (Paraquat) on the germination of red peas, cow peas, blackeye peas, sweet pepper, tomatoes, and string bean seeds.

In addition to the foregoing, a full time member of staff of the Plant Science Department was assigned duties to conduct simple "hands on" pieces of Research in crops for one year.

The following are some of his achievements during the year:

<u>Titles of Research Projects</u>	<u>Journals in which publication of Results would be made</u>
(a) Yield of corn as affected by type, planting date, and rates of N,P,K	(i) Agronomy Journal (American Society for Agronomy)
(b) Dry matter and chemical composition of Banana and Plantain Fruits at different stages of maturity.	(ii) Crop Science (Crop Science Society of America)
(c) Physical and Chemical properties of five soil types of the parish of Portland, Jamaica.	(iii) Tropical Agriculture (Trinidad) Journal of the Faculty of Agriculture, University of the West Indies.
(d) Yield of some tropical food legumes planted on two soil types in the parish of Portland, Jamaica.	(iv) Tropical Agriculture (Trinidad) Journal of the Faculty of Agriculture, University of the West Indies.
(e) The production of Ware Yams (<i>Dioscorea spp</i>) in Portland using modified Miniset Techniques.	(v) Tropical Agriculture (Trinidad) Journal of the Faculty of Agriculture, University of the West Indies.

Outreach Activities

Outreach programme in Food Technology involving Food Processing and Storage.

This is a programme designed to enable participants to be able to access gainful employment on successful completion of the training.

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Monitoring and Supervision of the distribution, care of, and rearing of Revolving herd heifers distributed to farmers of the parish by government agencies.

Advising and monitoring the care and well-being of day old chicks and feed distributed to farmers of the parish of Portland.

The introduction of Artificial Insemination Service for cattle in the parish, particularly to revolving herd heifers.

Encouraging in Primary Schools of the parish, the reintroduction of School Gardens, and rearing of small livestock such as goats, pigs, rabbits, and chickens.

This effort has automatically fostered the reintroduction of soup kitchens, providing hot lunches for children of the participating schools.

Agricultural technologies in Plant and Animal Sciences is also taught in participating schools by our Outreach Staff.

Our Outreach Staff consist of two full-time members of staff, one each in Animal and Plant Science.

The Professional Staff of the Plant Science Department was responsible last semester for training 12 students in Ornamental Horticulture on behalf of the Portland Women's Multipurpose Training Organization.

All the trainees have since been gainfully employed in the area.

EXTERNAL LINKAGES

The COA believes it should forge linkages with these agencies it regards as its natural constituencies or users of its products. Through these public education programmes we have been able to establish linkage with Agri-business and other commercial entities e.g. a joint project.

Listed below are a number of agencies who have agreed to participate in COA's programmes:

- (1) Ueshima Coffee Development who will be providing a grant of US\$10,000 and fund a development research in coffee cultivation.
- (2) The Japanese Overseas Volunteer Cooperation who will be funding an establish a Tissue Culture Lab.
- (3) Agricultural Development Cooperation who have agreed to donate 20 beef weaners and assist with the establishment of a feedlot.
- (4) Agualta Vale with has agreed to fund the development of four acres of citrus and four acres of mangoes.
- (5) We have received a grant of \$70,000 to establish a Breadfruit Nursery.

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(6) Negotiation will be initiated in late September through October with the following agencies to define the nature and extent of participation in COA's programme:

- (i) Jamaica Banana Producers Association
- (ii) Agricultural Credit Bank
- (iii) National Development Foundation

COA believes that it is more likely to accomplish its mission if it works with the business community who are the eventual users of its products whether this is by the students or the services it provides through its applied and outreach programme.

We will be working to cement relationships already established and to forge several others.

It is our intention to extend the resources of COA to various communities. The successful implementation of this model will depend on the capacity of the College to recruit capable faculty. Developing a first rate College hinges on recruiting and retaining capable faculty. It is generally acknowledged that the most valuable resource of an institution of higher learning is its faculty. In business the saying goes that good management pays for itself, likewise in academic circles capable faculty will also pay for itself.

There is evidence to indicate that investment in research and outreach has generated rates of returns which are comparable to rates generated by commercial investments. The rates of return on investment in research and outreach can be attributed to the high quality of human capital employed in the research, education and extension system. One can therefore infer that it is worthwhile to invest in the creation of high quality human capital.

PROPOSED TWO YEAR DIPLOMA IN AGRICULTURE

Students not obtaining 80% average grade in the Pre-College programme will take this two year course if they have achieved satisfactory passes in the Pre-College programme. Those at 80% average grade or above, would proceed to the Associate of Science or Bachelor of Science courses.

Pre-College Programme

1st Year - Chemistry, Biology, Physics, Mathematics, English to the "A" level standard.

<u>Year 1</u>	<u>Courses</u>	<u>Lect</u>	<u>Lab</u>	<u>Total</u>
Semester 1	Agricultural Botany	2	2	3
	Agricultural Zoology	2	2	3
	Introduction to Microbiology	2	2	3
	Communication	3	-	3
	Agricultural Chemistry	2	2	3
				<u>15</u> hrs
Semester 2	Agricultural Engineering I	3	2	4
	Fundamentals of Extension Methods	3	-	3
	Sociology	2	-	2
	Agricultural Economics, Marketing	3	-	3
	Introduction to Soil Science	3	2	4
				<u>15</u> hrs
Summer	Surveying	2	2	3
	Computer Science	2	2	3
				<u>6</u>
<u>Year II</u>				
Semester 1	Soil and Water Management	2	2	3
	Animal Science I	3	2	4
	Crop Science I	3	2	4
	Agricultural Engineering II	3	2	4
				<u>15</u> hrs
Semester II	Animal Science II	3	2	4
	Crop Science II	3	2	4
	Animal Health	2	2	3
	Plant Protection	2	2	3
	Introduction to Genetics, Plant and Animal Breeding	3	-	3
				<u>17</u> hrs

APPENDIX 3.

Extract of Results from College of Agriculture
Graduate Follow-up Study 1985-7

One of the major purposes of this study was to determine the type of employment held by the graduates. The following table gives a breakdown by category of the COA graduates:

<u>TYPE OF EMPLOYMENT</u>	<u>NO. OF GRADS</u>	<u>PERCENT OF GRADS</u>
Teaching Agriculture	48	25.3
Teaching Non-agriculture	2	1.0
Agricultural Research	11	5.8
Agricultural Processing	9	4.8
Agricultural Marketing	5	2.6
Agricultural Credit	6	3.1
Agricultural Extension	20	10.5
Quarantine	8	4.2
Crop Production	26	13.8
Farm Manager	10	5.3
Livestock Production	5	2.6
Landscape Architecture	2	1.0
Ornamental Horticulture	2	1.0
Pest Control	2	1.0
Apiculture	1	.5
Agricultural Dev. Promotions	1	.5
Veterinary Medicine	1	.5
Tourism	2	1.0
Military Service	2	1.0
Higher Education	18	9.6
Self Employed (In Agriculture)	3	1.7
Migrated	5	2.6
Deceased	1	.5
Total	190 (214)	100.0

A total of 190 graduates were located giving 88.78% of the total number of COA graduates. It is impressive that none of the graduates located are unemployed and only five are in non-agricultural disciplines. The total number working with government organization such as the Ministry of Education, Ministry of Agriculture, Urban Development Corporation and Commodity organizations is 104 or 54.7 percent. Leaving 86 working in the private sector or 45.2 percent. This study suggests there is a demand for COA graduates in the agricultural sector which is verified by the fact that none of the located graduates are unemployed and that most are in agricultural positions.

TABLE 2: Ratings of COA, Graduate-Employees Overall Technical and Professional Competence and Personal Attributes Disaggregated by Type of Employer.

Competency/Attribute	Employer by Category				
	Private Farms (Ne = 10) (Ng = 38)	Statutory Produc. (Ne = 8) (Ng = 28)	Statutory Serv. (Ne = 5) (Ng = 36)	Agri. Schools (Ne = 2) (Ng = 27)	Other Sci. (Ne = 10) (Ng = 22)
01. Have good working <u>knowledge</u> of the subject-matter required in their jobs.	2.30	3.14	3.20	2.00	2.60
02. Are able to solve <u>technical</u> problems in a professional manner.	3.80	3.14	3.40	3.50	2.70
03. Have sound <u>practical</u> skills.	2.78	3.50	3.60	2.50	2.70
04. Use good <u>judgement</u> in making decisions on job related matter/questions.	3.10	3.50	3.60	4.00	3.00
05. Manage workers (labour) effectively.	3.60	3.62	4.25	3.50	2.10
06. Relations with fellow-workers are:	2.60	3.00	2.80	1.50	2.40
6.1 Cooperative	2.80	3.14	3.00	3.00	2.57
6.2 Productive	3.30	3.14	3.50	3.00	2.43
6.3 Professional					
07. Relations with <u>superiors</u> are:	2.70	2.88	3.00	2.00	2.30
7.1 Cooperative	3.00	3.00	3.20	3.00	2.43
7.2 Productive	2.70	3.14	3.60	2.00	2.57
7.3 Professional					
08. Are <u>dedicated</u> to the organization.	2.90	3.14	3.80	2.50	2.40
09. Observe <u>rules</u> and <u>regulations</u> .	2.50	3.14	3.60	3.00	2.70
10. Behave in a <u>disciplined</u> manner	2.30	2.75	3.20	3.00	2.50
GRAND MEAN	2.60	3.16	3.41	2.75	2.53
SD	0.93	0.24	0.38	0.70	0.22

NOTES: Ne = Number of Employer-Respondents
Ng = Number of COA Graduate-employees

TABLE 1: Employer Ratings of COA Graduate-Employees Overall Technical and Professional Competence and Personal Attributes.

Competency/Attribute	No. of Employer-Respondents	\bar{X}	No. of Graduate Employers
01. Have good working <u>knowledge</u> of the subject-matter required in their jobs.	35	2.69	160
02. Are able to solve <u>technical</u> problems in a professional manner.	35	3.14	160
03. Have sound <u>practical</u> skills.	34	3.29	159
04. Use good <u>judgement</u> in making decisions on job related matters/questions.	34	3.03	159
05. Manage workers (labour) effectively.	28	3.16	125
06. Relations with fellow-workers are:			
6.1 Cooperative	35	2.60	160
6.2 Productive	31	2.87	149
6.3 Professional	31	3.03	149
07. Relations with <u>superiors</u> are:			
7.1 Cooperative	35	2.63	160
7.2 Productive	32	2.91	154
7.3 Professional	32		154
08. Are <u>dedicated</u> to the organization.	35	2.91	160
09. Observe <u>rules</u> and <u>regulations</u> .	35	2.83	160
10. Behave in a <u>disciplined</u> manner	35	2.63	160
	GRAND MEAN	2.93	
	SD	0.25	

Opinion Scale: 1 = Superior; 2 = Excellent; 3 = Good; 4 = Fair; 5 = Poor

Summary: Technical Competence ($\underline{n} = 3$): $\bar{X} = 2.95$
 Professional Competence ($\underline{n} = 6$): $\bar{X} = 3.01$
 Personal Attributes ($\underline{n} = 5$): $\bar{X} = 2.72$

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COLLEGE OF AGRICULTURE, KNOCKALVA AND ELIH
AGRICULTURAL SCHOOLS
TEN-YEAR PARTICIPANT TRAINING PLAN

SUBMITTED

TO

THE CHAIRMAN
JAMAICA AGRICULTURAL EDUCATION PROJECT
MANAGEMENT ADVISORY COUNCIL.

SUBMITTED

BY

LSU TECHNICAL ASSISTANCE TEAM
JAMAICA AGRICULTURAL EDUCATION PROJECT
PROJECT IMPLEMENTATION UNIT/COORDINATOR

AND

THE COLLEGE OF AGRICULTURE ADMINISTRATIVE AND
PROJECT IMPLEMENTATION COUNCIL

APRIL, 1988

- 29'

TEN-YEAR PARTICIPANT TRAINING PLAN
FOR
COA, KAS AND EAS

INTRODUCTION

The College of Agriculture (COA) is currently receiving support and assistance from USAID to strengthen and expand its programs to better serve the agricultural sector of Jamaica. An important component of this strengthening process is the participant training program. This program seeks to upgrade COA faculty and teachers from Knockalva Agricultural School.

Participant training is probably the most important aspect of the Agricultural Education Project. Without a qualified, capable and dedicated faculty, institutional development is virtually impossible regardless of facilities and equipment available. Based on this common feeling by the LSU Technical Assistance Team, the JAE Project Implementation Unit Coordinator, the COA faculty and the COA administration this document was developed to clearly identify current inadequacies and propose an amendment to the present plan. The proposed plan will more efficiently and effectively strengthen the faculty while simultaneously meeting the accreditation requirements of the Southern Association for Accreditation of Colleges and Schools. This document uses a ten-year timeframe inclusive of the present participant training plan. Considering breaks between degrees and the intellectual drain due to concurrent absences of the most qualified faculty from campus, a ten-year plan remains optimistic.

It should be pointed out that the overall goal of the participant training program is to promote development of a comprehensive agricultural education system through faculty development at the COA and Elim and Knockalva Agricultural Schools. The three institutions are not viewed as separate autonomous institutions, but as integral parts of a system. Supplemental participant training for Knockalva and Elim Agricultural Schools will create a qualified cadre of teachers which, if necessary, can support the COA program.

Much effort has been made to standardize the curricula of the two secondary agricultural education institutions. A uniform curriculum will require equally trained faculty at the two schools. Based on this academic goal, and the fact that Elim is an integral part of the agricultural education system made up of the COA and Knockalva and Elim Agricultural Schools, the decision was made to include Elim in the ten-year comprehensive participant training plan.

Unless there is an amendment extending the current participant training program, the College of Agriculture will fall short of its mission to provide academic and applied research and outreach programs to effectively support the agricultural community of Jamaica. This ten-year plan should bring the COA and Knockalva and Elim Agricultural Schools to a point of stability, strength and responsiveness and thus greatly enhance the growth and quality of the entire agricultural education system of Jamaica.

THE EXISTING PARTICIPANT TRAINING PROGRAM

The on-going participant training program of the Jamaica Agricultural Education Project (JAEP) is vital to the growth of the COA and the success of the Project. The present plan includes upgrading five faculty to the B.S. level and eight to the M.S. level for COA. It also includes upgrading ten persons to the B.S. degree level for Knockalva Agricultural School (refer to Table I).

Deficiencies in the present plan are as follows:

1. There are no provisions for upgrading faculty in agricultural education, agricultural extension, fisheries, natural sciences, entomology, plant pathology, forestry, and food technology. A recent COA graduate follow-up study revealed that over ninety-seven percent of the graduates are employed in agriculture with forty-five percent employed in agricultural education and extension. Needs and opportunities exist in Jamaica for trained agriculturists in the other stated areas.
2. There are no provisions for faculty upgrading to the doctorate level in the present plan. All department heads at the COA should have a Ph.D. and the experience to effectively plan, develop and maintain quality academic, applied research and outreach programs at the COA. All faculty teaching transfer courses should possess at least a M.S. degree.
3. There is no consideration given to faculty upgrading at Elim Agricultural School. Uniform programs at Elim and Knockalva Agricultural Schools demand equally qualified instructors at both institutions. A severe imbalance in qualified teachers at Elim Agricultural School will result if this institution is not included in a participant training program.

PROPOSED PARTICIPANT TRAINING PROGRAM

The participant training program proposed herein redresses the deficiencies listed above. It builds on the present plan and seeks to achieve the following objectives:

1. Upgrade selected COA faculty so that each academic department head will have a Ph.D. The COA departmental structure includes animal science, plant and soil science, agricultural economics, agricultural and extension education, agricultural engineering technology, and natural science. The Plant and Soil Science Department will require two Ph.D's to give sufficient leadership in the agronomy and horticulture units of that department. The Agricultural & Extension Education Department will require a qualified head with either a Ph.D in agricultural education or agricultural extension. A similar situation exists for the social sciences/humanities department. It is suggested that the Head have a Ph.D in either agricultural economics or sociology. Thus a minimum of seven faculty will require training for the Ph.D. See Table 2.
2. Select and upgrade additional faculty to eliminate the present voids in agricultural education, agricultural extension, forestry, natural sciences, fisheries, entomology, plant pathology and food technology at the COA. All faculty teaching transfer courses are to hold M.S. degrees and all other faculty are to hold B.S. degrees. Training for eight B.S. and eight M.S. degrees are required to achieve this direction. See Table 2.
3. Upgrade Elim Agricultural School teachers so that each academic department has at least one M.S. degree holder and the principal holds a doctorate degree. This objective will require the training of ten faculty at the B.S, five at the M.S. level and one Ph.D. See Table 3.
4. Upgrade Knockalva Agricultural School teachers so that each academic department has at least one M.S. degree holder and the principal holds a doctorate degree. This component will require training one Ph.D, and six faculty at the M.S.level. See Table 4.

Increasing the total number of qualified agricultural instructors will strengthen the individual programs and the agricultural education system on a national basis. To ensure maximum effectiveness of the money invested in the infrastructure of these three institutions, the upgrading of faculty and staff is the only sustainable approach.

TABLE I

SUMMARY OF DEGREE PROGRAMS AND ASSOCIATED COSTS

INST.	PRESENT PLAN			RECOMMENDED ADJUSTMENTS			TOTAL DEGREES PRESENT/ADJUSTMENTS		
	B.S.	M.S.	Ph.D.	B.S.	M.S.	Ph.D.	B.S.	M.S.	Ph.D.
COA	5	8	0	11	9	7	16	17	7
KAS	10	0	0	0	6	1	10	6	1
EAS	0	0	0	9	5	1	9	5	1
TOTAL	15	8	0	20	20	9	35	28	9

COST FOR RECOMMENDED ADJUSTMENTS

20 B.S. degrees x 7273	-	\$ 145,460
20 M.S. degrees x 48,000	-	\$ 960,000
9 Ph.D. degrees x 68,000	-	\$ 612,000

TOTAL		\$1,717,460

TABLE 2 - Page 1 of 4
 JAEP PARTICIPANT TRAINING PROGRAM
 COLLEGE OF AGRICULTURE

Candidate	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1 a J. Laney Ag. Engineering	Sept.	B.Sc. L.S.U.	2 Aug.	Sept. U.S.A.	M.Sc.	3 June		Sept. U.S.A.	Ph.D.		3 June	
1 b A. Brown Horticulture	Oct.	B.Sc. U.W.I.	2 June	Sept. U.S.A.	M.Sc.	3 June		Sept.	Ph.D. U.S.A.		3 June	
1 c G. Ennis	Oct.	B.Sc. U.W.I.	2 June	Sept.	M.Sc.	2.5 Dec.						
1 d L. Forrester	Oct.	B.Sc. U.W.I.	2 June	Sept.	M.Sc.	2.5 Dec.						
1 e E. Hyatt	Oct.	B.Sc. U.W.I.	2 June	Sept.	M.Sc.	2.5 Dec.						
i k T. Stoddart			Sept.	B.Sc. Alcorn	2 June							

Handwritten initials

TABLE 2 - Page 2 of 4
 JAEP PARTICIPANT TRAINING PROGRAM
 COLLEGE OF AGRICULTURE

Candidate	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
l q P. Brown Accounting		Jan. <u>Non-Degree</u> Jamaica		2 Dec.								
l r M. Mc-Nab		Jan. <u>B.Sc.</u> U.W.I.		1 Dec.								
l s E. Louis Agronomy	Sept. <u>M.Sc.</u> SHSU		2 Dec.			Sept. <u>Ph.D.</u> U.S.A.		3 June				
l t D. Williams Animal Science	Sept. <u>M.Sc.</u> L.S.U.		2 Dec.			Sept. <u>Ph.D.</u> U.S.A.		3 June				
u V. Badrosingh Animal Science	Sept. <u>M.Sc.</u> L.S.U.		2 Dec.									

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TABLE 2 - Page 3 of 4
 JAEP PARTICIPANT TRAINING PROGRAM
 COLLEGE OF AGRICULTURE

DEFICIENT DISCIPLINES	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
v Ag. Education				Sept.	B.Sc.	2 June	Sept.	M.Sc. 2.5 Dec. U.S.A.				
										Jan.	Ph.D. 3 Dec. U.S.A. (Pg. Ed. or Ext.)	
w Ag. Extension				Sept.	B.Sc.	2 June	Sept.	M.Sc. 2.5 Dec.				
x Fisheries				Sept.	B.Sc.	2 June				Jan.	M.Sc. 2.5 June U.S.A.	
y Forestry				Sept.	B.Sc.	2 June				Jan.	M.Sc. 2.5 June U.S.A.	
z Food Technology				Sept.	B.Sc.	2 June				Sept.	M.Sc. 2.5 June U.S.A.	
aa Entomology				Sept.	B.Sc.	2 June				Sept.	M.Sc. 2.5 June	

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TABLE 2 - Page 1 of 1
 JAEP PARTICIPANT TRAINING PROGRAM
 COLLEGE OF AGRICULTURE

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1 bb Plant Pathology :				Sept.	B.Sc.	2 June		Sept.	M.Sc.	2.5 June		
									U.S.A.			
1 cc Natural Sciences				Sept.	B.Sc.	2 June		Sept.	M.Sc.	2.5 June	Jan.	Ph.D.
					U.W.I.				U.S.A.		U.S.A.	3
1 dd Social Science/Humanities Agricultural Economics/Sociology				Sept.	B.Sc.	2 June		Sept.	M.Sc.	2.5 June	Jan.	Ph.D.
					U.W.I.				U.S.A.		U.S.A.	3

SUMMARY - DEGREES/PERSON YEARS

	Degrees	Person Years
B.Sc.	16	32
M.Sc.	17	42.5
Ph.D.	17	21

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TABLE 3 - Page 1 of 2
 JAEP PARTICIPANT TRAINING PROGRAM
 ELIM AGRICULTURAL SCHOOL

Participant/ Area	Entry Class	1987	1988	1989	1990	1991	1992	1993	1994	1995	1995	1997	1998
a	Agronomy				Oct. <u>B.Sc. 2 June</u> U.H.I.				Jan. <u>M.Sc. 2.5 June</u>				
b	Animal Science				Oct. <u>B.Sc. 2 June</u> U.H.I.				Jan. <u>M.Sc. 2.5 June</u>				
c	Agri. Mechanics						Oct. <u>B.Sc. 2 June</u> U.H.I.			Jan. <u>M.Sc. 2.5 June</u>			
d	Agri. Economics						Oct. <u>B.Sc. 2 June</u> U.H.I.					Jan. <u>M.Sc. 2.5 June</u>	
e	Fisheries							Oct. <u>B.Sc. 2 June</u>					
f	Horticulture							Oct. <u>B.Sc. 2 June</u>					
g	Agri. Mechanics								Jan. <u>B.Sc. 2 June</u>				

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TABLE 3 - Page 2 of 2
 JAEP PARTICIPANT TRAINING PROGRAM
 ELIM AGRICULTURAL SCHOOL

Participant/ Area	Entry Class	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998			
h	Food Technology					Jan.	B.Sc.	2	June							
i	Agromony				Oct.	B.Sc.	2	June								
j	Ag. Education								Sept.	M.Sc.	2.5	Dec.	Jan.	Ph.D.	3	Dec.

SUMMARY - DEGREES/PERSON YEARS

	<u>Degrees</u>	<u>Person Years</u>
B.Sc.	9	18
M.Sc.	5	12.5
Ph.D.	1	3

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TABLE 4 - Page 1 of 2
 JAEP PARTICIPANT TRAINING PROGRAM
 KNOCKALVA AGRICULTURAL SCHOOL

date	Participant/ Area	Entry Class	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	A. Ivey Agronomy		Oct.	B.Sc. U.W.I.	2 June		Jan.	M.Sc. U.S.A.	2.5 June					
	K. Dunder		Oct.	B.Sc.	2 June		Sept.	M.Sc.	2.5 Dec.					
	Ag. Mechanics			U.W.I.				U.S.A.						
	M. Jones Ag. Economics			Oct.	B.Sc. U.W.I.	2 June		Jan.	M.Sc. U.S.A.	2.5 June				
	H. Brown Animal Science			Oct.	B.Sc. U.W.I.	2 June		Jan.	M.Sc. U.S.A.	2.5 June				
	D. Henry Ag. Education			Jan.	B.Sc. Alcorn	June		Sept.	M.Sc. U.S.A.	2.5 Dec.		Sept.	Ph.D.	3 June
	Ag.			Oct.	B.Sc. U.W.I.	2 June								

SD

TABLE 4 - Page 2 of 2
 JAEP PARTICIPANT TRAINING PROGRAM
 KNOCKALVA AGRICULTURAL SCHOOL

Participant/ Area	Entry Class	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
G. Levy			Oct.	B.Sc. U.W.I.	June								

B. Henry Ag. Mechanics		Jan.	B.Sc. U.S.A.	June		Jan.	M.Sc. 2.5 U.S.A.	June					
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Oct. B.Sc. 2 June
 U.W.I.

Oct. B.Sc. 2 June
 U.W.I.

SUMMARY - DEGREES/PERSON YEARS

	Degrees	Person Years
B.Sc.	10	20
M.Sc.	6	15
Ph.D.	1	3

TABLE 1

<u>PRIORITY LIST 1986</u>	<u>PRIORITY LIST 1987</u>	<u>SCALED-BACK WORKS 1990</u>
8 No. 3-BR Apartments	4 No. 3-BR Apts.	4 No. 3-BR Apts.
12 No. 2-BR Apartments	6 No. 2-BR Apts.	6 No. 2-BR Apts.
3 Dormitories & improve- ment to two existing ones. Acc: 450	2 Dorms for 96 Altr. existing dorms	1 No. Girls' Dorm
Student Laundry Building		Student Laundry
Renovation of Great House	GH/Water Storage	GH/Water Storage
Classroom/Lab Building	Classr/Lab Bldg.	Classr/Lab Bldg.
Improvement to MP Hall	Impr/mt to MP Hall	Impr/mt to MP Hall
Improvement to Library	Impr/mt to Library	
Plant Prop. Lab & Classr		Plant Prop. Bldg.
Second Level Admin Block	Extension to Admin.	Extension to Admin.
Alterations to Poultry Unit	-	-
Dairy Building	-	-
Expansion of Abattoir with refrigeration	-	-
Conversion of Engineering Plant to AnSci. Lab & Central Storage	Altr. to Eng. Plant	-
Impr/mts to workers wel- fare & storage Bldg.	-	-
Completion of Feedmill Bldg.	-	-
Completion of Hatchery Bldg.	-	-
Maintenance & Repair Wkshop	-	-
Engineering Workshop	-	-
Duplex Residence For Ancillary Staff	-	-
Farm Store	-	-
1180 feet of access roads to Eng. Complex Site	-	-
Civil Works to support above	-	-
	Farm Manager's House/ Spring Garden	Farm Manager's House/ Spring Garden
		Classroom Conversion to a Computer Lab

UNFULFILLED PROJECT OBJECTIVES

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