

PD BAY 358

EVALUATION OF CAPE VERDE FOOD CROPS RESEARCH

PROJECT (655-0011)

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BY

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I. INTRODUCTION

The objectives of this evaluation were as follows:

1. To evaluate the role the Food Crops Research Project (655-0011) has played in the development of the Center for Agrarian Studies (CEA).*
2. To review documentation in the mandate of CEA and provide comments on the premise and justification for this mandate.
3. To comment on research strategy of CEA and how current or planned research conforms to this strategy.
4. Evaluate efforts being made to ensure that research topics are appropriate for the needs of Cape Verde.
5. Evaluate institutional relationships being established outside of Cape Verde.
6. Provide recommendations to maximize the Food Crops Projects contributions to CEA's effective operation.

This proved to be a large task to complete thoroughly and accurately in a brief two week assignment. A large volume of documentation is available on this project and related projects and several site visits were necessary to appreciate the unique agricultural situation in Cape Verde. My sincerest thanks to Eng. Horacio Soares, Director General of CEA, Mr. Joe Hartman, ADO Praia, and Dr. Victoria Marcarian, Chief of Party for the Food Crops Project for the excellent itinerary arranged for my visit. Despite time constraints, I was provided with a thorough overview of the diverse agriculture on the islands of Santiago and Fogo complimented by visits with key technical and Government of Cape Verde personnel affiliated with agricultural development projects. My sincerest thanks to all who contributed to a most interesting and informative visit.

II. BACKGROUND

The archipelago of Cape Verde is a unique and remarkable country which is relatively unknown outside of Africa. The country consists of 9 inhabited islands of volcanic origin located approximately 400 miles off the West African Coast. Its population of approximately 300,000 people, predominantly of African origin, are largely involved in agriculture with approximately 70% of the population classified as rural.

The archipelago was discovered by the Portuguese in 1456 and colonized by African slaves brought to work on Portuguese plantations. It remained a colony of Portugal until 1975 and has only recently developed policies and an infrastructure for independent government and development.

* Officially became The Cape Verdean Institute for Agricultural Research on July 19, 1985.

Agriculture has historically been the major industry of Cape Verde and remains the livelihood for a majority of its inhabitants. Approximately 60,000 ha of the country's total area has been assessed as farm land. Approximately 2,000 ha of this total is currently subject to water control through irrigation. The recent drought in the Sahelian region of Africa has seriously affected Cape Verde and agricultural production has fallen far short of meeting even subsistence needs of the rural population.

The new Government of Cape Verde (GOCV) has made a major commitment to assist future agricultural development through soil conservation, expansion of irrigated agriculture, and the improvement of technologies used for agricultural production. To achieve these goals, it has sought assistance from the international community to conserve and more efficiently exploit its limited soil and water resources. Extensive projects are currently in progress to develop the human resources to serve agriculture and to address problems of reforestation, conservation and utilization of water and soils, and improvement of technologies used in agricultural production.

The Cape Verde Food Crops Research Project (FCRP) was developed to provide assistance and manpower training to assist GOCV to fulfill its commitment to the long term agricultural development of the archipelago. This project is being carried out in cooperation with the newly formed (1979) Center for Agrarian Studies (CEA) located in Sao Jorge dos Orgaos on the island of Santiago. The primary objectives of FCRP are to provide institutional support and advanced training of personnel during the formative years of the CEA. The current project was initiated in 1982 and is scheduled to be terminated in 1987. It complements major U.S. supported projects in Watershed Management (655-0006) and Watershed Development (655-0013), the latter scheduled for 1984-89.

III. EVALUATION PARAMETERS

A. ROLE OF FOOD CROPS RESEARCH PROJECT IN THE DEVELOPMENT OF THE CENTER FOR AGRARIAN STUDIES

The Food Crops Research Project (FCRP) is currently assisting the Center for Agrarian Studies (CEA) as follows:

1. Six (6) students employed by CEA are abroad for advanced training under the auspices of FCRP. These trainees are working toward MS degrees with specialization in plant breeding, vegetable production, field crop production, plant pathology and nematology, irrigation engineering and agricultural economics. In addition, three short term trainees in library science, administration and management and sociology/anthropology are being sponsored. Ph.D trainees in Soil Science and Crop Science are scheduled to initiate training programs in 1986.

2. A center which will include offices, a significant research library, meeting rooms and a weather and agricultural meteorology center is being completed with partial support from FCRP to accommodate CEA staff on their return following studies abroad.

This building is in the final stages of construction. In addition, 4 homes are being built to house staff during their tenures in Sao Jorge. Construction on homes appears to be progressing well.

3. FCRP is providing some logistical support for current operations of CEA in the form of laboratory equipment, supplies and vehicles to travel to outlying research sites.

4. FCRP is providing U.S. technicians located at CEA to assist in the formalization of agricultural research, the development of an institutional framework and the prioritization of research activities with Cape Verde counterparts. Two full time and two part time technicians are presently in country. These include research co-directors in crops (Marcarian) and in soils (Crawford), and field technicians in agricultural economics (Langworthy) and economic anthropology (Finan).

FCRP staff are currently involved in research to determine proper fertility levels for irrigated agriculture and evaluate novel irrigation practices for local adaptation (Crawford), introduction and evaluation of new varieties and crops (Marcarian) and surveys of farm structures on the islands (Finan and Langworthy). A program to survey major crop pests and explore integrated pest management approaches is being carried out with German and USAID support to CEA. Research activities should increase considerably when participants return to initiate active research programs in CEA. The CEA also has an active training program for extension agents to serve agriculture in Cape Verde and plans are apparently being developed to incorporate both extension training and teaching components into CEA. This effort to integrate research with teaching and extension should be strongly encouraged and supported by FCRP to ensure an effective infrastructure within CEA to disseminate results of future research to the user level.

B. MANDATE OF THE CEA AND JUSTIFICATION AND PREMISE FOR THIS MANDATE

The current mandate of the CEA is to "Promote and coordinate throughout the country, scientific investigations in the areas of interest to rural development namely renewable natural resources, dryland and irrigated agriculture, livestock production, hydrology and agroclimatology, crop production, rural sociology and agricultural technology." It appears that the CEA will assume a primary responsibility to foster future agricultural development. The CEA's mandate appears to go beyond research however, as active teaching and extension training components are being built into CEA's mission. This, from my personal perspective, is excellent, and should be fostered and strengthened where necessary by FCRP.

The justification and premise for this mandate is that technically trained people are required to help Cape Verde help itself in future agricultural development. This mandate requires no justification but rather, an in-depth analysis of its viability and the capability of the GOCV to provide long term support for an institute of appropriate size with this mandate.

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The GOCV clearly supports the concept of research to stimulate agricultural development. The predominantly rural nature of the country and its difficulty in providing adequate levels of food to support its population makes agriculture a key target area for future development. The future support of CEA will unquestionably depend upon its ability to have a visible impact on agricultural production of the country. This will be a long term effort requiring continued support from the international community. The creation of CEA is a step in the right direction. It has dynamic leadership and is creating an effective infrastructure to support agriculture.

The CEA has recently (July 19) been provided with institute status to provide greater autonomy. At present, a second 5 year plan for agricultural development is being prepared with assistance from Dutch agricultural scientists. This exercise will presumably develop a more definitive mandate and strategy for the newly formed institute and define its role in research and training to foster future agricultural development.

The uniqueness of Cape Verde's natural (and human) resources and its geographic isolation from the African continent virtually necessitates the development of its own research capability (as opposed to borrowing from or following its neighbors). The underdeveloped water resources and limited arable land will require more careful and efficient use of these essential resources than may be the case in other areas where water is the primary limiting factor. Appropriate research, coupled with the creation of a support infrastructure which will foster implementation and use of technologies developed through research is unquestionably a wise investment for the agricultural development of Cape Verde. At present, the average yields of most commodities does not exceed 30-35% of world or U.S. average yields for these same commodities. Thus, the genetic potential of these crops is not being achieved because of constraints in present production systems. In particular in areas where water can be eliminated as the primary constraint to agricultural production, dramatic improvements in yield (and more stable production) should be possible in a relatively short period of time.

C. RESEARCH STRATEGY OF CEA AND RESEARCH PLANS TO CONFORM TO THIS STRATEGY

By virtue of the brief tenure of CEA, its research plans and strategies are not yet clearly consolidated. Furthermore, with trainees abroad, a comprehensive research effort has not yet been developed. A major focus at present is research on soil and water resources, and excellent facilities are in place to support this effort. Research efforts have also been initiated in integrated pest management and facilities are being developed to support this program.

Understandably, the focus of present research appears to be heavily oriented to generation of survey results and establishment of baseline data. This information will be used as a basis upon which to develop future research strategies and plans. Preliminary research activities have been introduced into areas of both irrigated and dryland agriculture. Present research plans are emphasizing irrigated agriculture (although not exclusively) in which water is not the primary constraint to agriculture production. While irrigated

5

areas represent a small but expandable percentage of the total agricultural land, they also provide the greatest opportunity to stabilize and diversify agricultural production. In addition, elimination of water as the primary constraint to production will justify additional inputs into agricultural production which are not feasible (or highly risky) in dryland agriculture. Research on technology for irrigated agriculture is badly needed in Cape Verde to increase the contributions of irrigated areas to total food supply. From this perspective, the strategy to place more emphasis on irrigated agriculture would appear justified, despite the relatively small area involved.

I feel that it will be critical for the CEA to develop a list of specific research priorities in the very near future. This will be particularly important for returning trainees to have a clearly defined "job responsibility" upon their return to Cape Verde. A ranking and justification for these priorities should be developed to provide a clearer focus for the research effort. A major part of the research effort should entail "action programs of adaptive research" to enhance the visibility and utility of the CEA with the agricultural community.

D. APPROPRIATENESS OF RESEARCH TOPICS FOR THE NEEDS OF CAPE VERDE

The development of a comprehensive research program in CEA is still very much in the formative stage. A clear picture of research topics and their appropriateness for Cape Verde will emerge only after participants return and establish their individual research programs.

Currently, research emphasis appears to involve surveying agricultural (soil and water) and human resources and defining agricultural problems. This is appropriate at this time but emphasis should soon shift to finding solutions to key problems of Cape Verdean agriculture

A detailed and in-depth discussion of agricultural development in Cape Verde was carried out via a workshop held in Praia in November, 1981. (1) This exercise examined the country's resources in detail and suggested an ambitious long term development plan for agricultural research and development through the year 2000. Included in the workshop was a discussion of research priorities to support better utilization of the country's fragile agricultural resources. A major effort was proposed to improve usage to the country's limited soil and water resources to permit expansion of irrigated acreage which would lessen dependence on the vagaries of Mother Nature (which can be very fickle in this small country).

This study appears to have fostered strong moral support for agricultural research from GOCV. Because of the limited resources available for support of the newly created CEA, careful prioritization

(1) Desenvolvimento e Pesquisa a Longo prazo em (Cabo Verde: Mesa Redonda. Armando Trigo de Abreu and Horacio Soares (Coordinators). Pub. by Instituto Gulbenkian da Ciencia, Av. de Berna, Lisbon, 1983.

6

of research will be essential. The current emphasis on soils and water use is totally appropriate at this time, however, expanding of research on new crops and varieties, improved methods of culture, pest management, and handling and marketing will be necessary to complete the research links in the production chain. The current trainees studying abroad appear to be in disciplines which are presently deficient in CEA and as a consequence, this broadening of program focus should occur naturally when trainees return to CEA.

There is currently a need to increase the amount of adaptive and "action oriented" research and development. This will be required early in the development of CEA to provide visibility and evidence of utility.

F. INSTITUTIONAL RELATIONSHIPS BEING ESTABLISHED OUTSIDE OF CAPE VERDE.

Many agricultural projects and related programs to support development of a more effective agricultural infrastructure have received support from the international community since independence. A large number of agricultural projects are currently under way on the several islands of the archipelago with support from different countries. A closer relationship must first be fostered with these projects to ensure coordination and communication among technicians and leadership of the Cape Verdean community involved in agricultural research and development. This might be accomplished via a national publication on topics dealing with agricultural development and/or an annual workshop in which research is discussed and the workshop subsequently published as a proceedings.

By virtue of the large number of Cape Verdeans trained abroad (in the U.S. and elsewhere), institutional relationships are also being established on an individual basis with several agricultural research and development programs throughout the world. The creation of library facilities at CEA will further strengthen contacts with institutions and the scientific community throughout the world. Purchase or exchange of publications by the libraries from international agricultural centers (e.g. ICRISAT, CIMMYT, IVRDC, etc.) and other institutions with agricultural resources and development needs similar to those in Cape Verde should be sought. In the future, provisions should also be made for trainees to periodically visit other research institutions and/or attend conferences dealing with topics relevant to Cape Verdean agriculture.

The archipelago of Cape Verde probably has much in common, in terms of agricultural development with the Canary Islands. The establishment of closer relationships with agricultural scientists and leaders from this area should be explored.

G. RECOMMENDATIONS TO MAXIMIZE FOOD CROPS PROJECT'S CONTRIBUTIONS TO CEA'S EFFECTIVE OPERATION

I commend the leadership of this country, and particularly the MDR (Ministry of Rural Development) and the CEA, for their efforts and accomplishments in the brief time since independence to create a viable infrastructure to foster agricultural development.

The seeds of this effort are just beginning to germinate and long term support by GOCV and the international community will be required to bring this effort to fruition.

The creation of a sister institution relationship between CEA and the University of Arizona via FCRP should be viewed as a long term commitment. The emphasis on human capital development should be followed by programs which will guarantee that returning trainees have the facilities and necessary technical and financial support to develop relevant and aggressive programs to foster agricultural development. FCRP should foster and support the current effort by CEA to link research efforts with programs of teaching and extension. From my biased perspective as an employee of a U.S. Land Grant Institution, I view the creation of this three fold responsibility within a single administrative unit as a very positive development towards creation of an effective infrastructure to serve agriculture. This infrastructure, combined with a clear definition of missions and responsibilities, will serve Cape Verdean agriculture well.

Technicians within FCRP should develop close counterpart relationships with Cape Verdean technicians in CEA in disciplines identified as "high priority needs," and provide technical and logistical support until individual programs become self-supporting. FCRP's role would be one of expediting the development of human capital and ensuring that institutional and logistical resources are in place for returnees to work effectively during the formative years of CEA. Very shortly after participants return to CEA, a detailed review of their proposed programs and availability of the necessary resources and administrative support for their effort should be completed by a team of technicians representing relevant disciplines. This evaluation should be supported by FCRP and form the basis for decisions regarding the nature and form of future U.S. involvement with CEA following completion of the current project.

GENERAL OBSERVATIONS

The importance of agriculture to the Cape Verdean economy is most obvious from visits to agricultural areas of the two islands observed. Even more impressive is the clear evidence of the struggle this country has endured to exploit its limited agricultural and water resources throughout its history. The extensive dikes and retaining walls constructed to conserve limited water and soil resources, and the network of roads (all constructed with hand labor) linking major population centers on the islands stand as a tribute to the undaunted spirit of the Cape Verdean people. Nowhere in my extensive travels to some 20 countries throughout the world has the will and struggle to develop agriculture been more obvious. The Cape Verdeans are truly a unique and remarkable people!

I suspect that Cape Verdean agriculture (and the human and social infrastructure upon which it depends) is also unique. The challenge to future agricultural planners will be to develop programs which retain this uniqueness and yet foster conservation and rapid development of a diversified and stable agriculture which does not seriously disrupt the unique social infrastructure of the country. Long term plans should examine the future interdependence of

8

agricultural development with growth in other segments of the economy (tourism, fisheries, light industry) which will undoubtedly be necessary to achieve a sound and stable economy and interdependence in the world marketplace.

RECOMMENDATIONS

1. The uniqueness of Cape Verde's natural (and human) resources and its geographic isolation from the African continent virtually necessitates the development of its own applied research capability (as opposed to borrowing from or following its neighbors)
2. A clearer mandate and strategy for CEA based upon a prioritization of specific agricultural research and education needs should be developed in the near future. Apparently, this will be forthcoming in the second 5 year plan. The FCRP should reevaluate training needs based upon the new plan.
3. The division of responsibility for agricultural research for the country is still to be consolidated. If it is logistically feasible, both fundamental and applied research should be consolidated into a single administrative unit. An infrastructure with close linkage of research with teaching and extension should be developed.
4. Adaptive and action oriented research should be increased to enhance visibility and utility for CEA during its early formative years. This should be strongly encouraged when participants return from training abroad. Signs should be used to identify facilities and areas of activity.
5. The FCRP is providing invaluable assistance to foster the development of research capabilities in CEA through staff training. This should remain a major focus of future involvement to ensure that trained personnel are available to address key problems requiring research inputs.
6. Where U.S. technicians are involved in "on site" research and/or surveys, a close counterpart relationship should be developed with Cape Verdean technicians and scientists to ensure continuity of the program and provide on site training experience for local technicians.
7. Workshops (annually or biannually) and a publication to serve all "in country" research in agriculture should be initiated to provide a forum for presentation of research results.
8. Relationships should be fostered with areas of the world which are ecologically similar to Cape Verde. Current research to describe the agricultural resources and infrastructure should be used in the future to establish appropriate linkages with areas with similar needs and problems.
9. An in-depth evaluation of FCRP should be planned very shortly after participant trainees return to Cape Verde to ensure that adequate support is in place to encourage aggressive and relevant research programs. The nature of future participation of FCRP with CEA should be reviewed at that time.