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931-0154

1. PROJECT NO. 431-11-130-154-73	2. PAR FOR PERIOD: Sept. 1973 to July 1975	3. COUNTRY	4. PAR SERIAL NO.
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5. PROJECT TITLE  
Disease Control and Related Insects and Cultural Practices of Soybeans and Other Food Legumes for Tropical and Subtropical Areas.

6. PROJECT DURATION Start FY 9/73 End FY 9/78	7. DATE LATEST PRCP 6/13/73	8. DATE LATEST PIP	9. DATE PAID PAA None
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10. U.S. FUNDING	a. Cumulative Obligation Thru Prior FY: \$ 500,000	b. Current FY Estimated Budget: \$ 100,000/yr.	c. Estimated Budget to completion After Current FY: \$ 300,000
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11. KEY ACTIVITY AGENTS (Contractor, Participating Agency or Voluntary Agency)		12. CONTRACT, PASA OR VOL. AG. NO.
a. NAME Raul Abrams		b. CONTRACT, PASA OR VOL. AG. NO. University of Puerto Rico

13. KEY ACTIONS PROPOSED AND REQUESTED AS A RESULT OF THIS EVALUATION

A. ACTION	B. LIST OF ACTIONS	C. PROPOSED DATE OF COMPLETION
1. Univ of Puerto Rico	Puerto Rico (Dr. Abrams) will propose a redesign of the remaining portion of the grant project, including attention to the above issues.	
2. Univ of Illinois	The University of Illinois (Dr. Thompson) will collaborate to the extent appropriate and feasible given its own needs to redesign its 211(d) grant project and research project on soybeans.	
3. AID/T	AID-TA/AGR (McDermott) will facilitate interaction with the various elements in AID in the redesign task.	
4. AID/T	AID-TA/AGR (Baird and Beck) will review the UPR research project in diseases of beans and cowpeas and other AID projects for the purpose of helping effect a greater coordination with the 211(d) grant project.	

REVISIONS REQUIRED:  None  1  2  3  4  5  6  7  8  9  10

PROJECT MANAGER: J. K. McDermott, TA/AGR      DATE: 7/10/75      SIGNATURE: Leon F. Huber, TA/AGR

## PAR NARRATIVE

### Report of Site Visit

Purpose of the 18-month 211(d) review is to provide an opportunity to the Grantee and AID to adjust the grant program design in line with experience and knowledge gained. In furtherance of this purpose, a site visit was made to the University of Puerto Rico, June 19 and 20, 1975 by Raymond E. Mitchell and Tom Elliot of TA/PPU and Guy Baird and J. K. McDermott of TA/AGR.

Also participating in the site visit were Bill Thompson, Carl Hittle and Hamer Paschal of the University of Illinois. Officials of the University with whom contact was made include: Mayaguez Chancellor Rafael Vicari Oros; Dean of Studies, Salvador Alemany; Acting Dean of Agriculture, Fernando Del Rio; head of Agronomy, Raul Abrams; and Professors Guillermo Riveros, Pedro Melendez, and Mario Ayala.

McDermott reviewed the AID position on soybeans, stating that the Agency intended to maintain its present level of activity with perhaps incremental increases if program opportunity justified them. The Agency is not taking an expansive attitude toward the crop because at present it is not widely grown as are several of the cereals and because soybeans are largely an industrial crop and not a small farmer or subsistence crop.

Baird discussed a growing concern within the Agency of having a significant grant with the University of Puerto Rico in soybean development when the crop is not grown on the island. He explained that this concern in no way arises from any criticism of the University's performance, as the performance is reported in annual reports. This type of grant, which carries no overhead, is commonly utilized in those situations in which there is a convergence of interests between AID and the Grantee. It may be unwise for AID to continue to encourage Puerto Rico to develop a capability specifically on soybeans when this crop is currently of no importance in the country's agriculture. Dr. Baird recognized the general interest and competence in Puerto Rico in disease and insect control of legumes and suggested that perhaps the 18-month adjustments needed to reflect this broader plant protection interest were strongly with a correspondingly reduced emphasis on soybeans per se. He also noted the wide range of activities listed in the grant document and the various entities of the University which were listed as participants. He suggested that these lists should be reviewed with the aim of revision if the experience of the two years of the grant seemed to justify. He suggested, too, the need to view the 211(d) grant in soybeans and the contracts on bean and cowpea diseases in relation to each other in order to identify complementarities.

Bill Thompson and Carl Hittle summarized the University of Illinois activities and the AID site visit. Both Uruguay and Peru are using task orders under the basic ordering agreement to procure technical assistance in soybean production.

Del Rio reported that the Department of Agriculture was looking for alternatives to sugar and coffee. Rice is being investigated. Alemany discussed the possibility of growing a crop of soybeans between crops of sugarcane. Of the 100,000 acres of cane, 25,000 are replanted each year. Both soybean meal and soybean oil are imported for the livestock and tuna canning industries, and there is a feasibility study for building a soybean processing plant. Local production would not be a necessary condition for the processing plant.

Alemany reported on the state of the University which currently is facing important fiscal problems. The University is attempting to capitalize on the advantages presented by its location, which is subtropical, but also recognizes that the island location is not quite compatible with the universality concept implied by the term "university." In an effort to escape the isolation which is associated with an island location, the University is attempting to maintain relations with state-side universities that are mutually beneficial. The tropical location is an asset in this regard. The University is also attempting to capitalize on its Spanish heritage by having significant offerings for the Spanish speaking population and in turn attracting the fruits of complementarity from association with them.

Alemany is interested in the role of legumes in a high cost energy environment and articulated the University's interest in reducing the use of chemical nitrogen fertilizer and plant protection chemicals as energy economizing measures. He also reported that a new Dean of Agriculture can be expected to be appointed soon.

Abrams commented on the future role of soybeans. In parts of Central America the Golden Yellow Mosaic is causing significant reduction in bean production, and soybeans may be a substitute. Puerto Rico imports most of the beans it consumes. Pigeon peas are much more widely grown than beans.

Although the grant to Puerto Rico is not concerned with utilization of the soybean, there was a discussion of the problem and a consensus that the status of soybean utilization in LDCs other than through industrialized products, is not well known.

Abrams presented a summary report of grant activities. He is Grant Director, paid half time by grant funds, as are Melendez, Riveros and an assistant pathologist. In addition, one field technician, one lab technician, and three graduate assistants (from Dominican Republic, Nicaragua and Puerto Rico) are employed on grant funds. Research is being carried out on atomic energy mutation, nematodes and plant pathology. The grant also provides collaboration with the University of Illinois in plant breeding, under the leadership of Hamer Paschal and graduate students, and provides graduate study for UPR staff at Illinois.

Currently in the Department of Agronomy there are options in soils and crops. The agricultural faculty has approved a third option, in plant pathology, which will be forwarded to the University Council. This option was made possible by the development of new courses in plant pathology under the 211(d) grant: Diagnosis and Control, Research Methodology, and Concepts of Phytopathology. Four research projects are underway: bacterial disease identification and control, fungus disease histology, host-parasite relations, and epidemiology and control of selected fungus diseases. A soybean disease population nursery has also been established, but so far disease incidence has been very light. Identifying the diseases that attack the soybean has been a serious problem in the international variety trials. Several agreed on the need to make more effective use of international trials for determining the occurrence and importance of diseases and insects affecting soybeans. Melendez is the plant pathologist.

Riveros reported that herbicide studies and weed population studies are being conducted in three places on the island. Attempts are being made to relate herbicide performance to soil and rainfall. Emphasis was placed on the need to develop a good working relationship with Oregon State University.

Kitchell discussed the format for presenting the revised design. A copy of the format will be sent to the University. He suggested three areas of concentration for grant activities: legumes, special problems related to tropics, and plant protection.

### Issues

The problem of plant protection was discussed rather thoroughly, emphasizing the relationship of disease, insects and weeds. Quite possibly "state of the art" efforts are needed for diseases, insect pests and weed problems of soybeans in the tropics. Both Puerto Rico and Illinois were asked to consider this in review of the 211(d) grants.

Currently little is being done in insects under the grant. The possibility of replacing the assistant plant pathologist (half-time) with an entomologist was discussed. While the idea seems to be a good one in terms of balance grant program activities, it may not be a good idea from the standpoint of the University's long-range plans. The University seems to be well supplied with entomologists in terms of its own needs. Whether it is wise to spread resources over both entomology and disease at the expense of concentrating on disease may not be in the best interests of both the University and AID. This is a case in which the convergence of interests criterion of 211(d) grants needs to be taken fully into consideration.

A second issue is the relationship between the grant and research contract on diseases of beans and cowpeas. Although the research project was not examined at all in this site visit, it is not clear that the University of Puerto Rico has a direct interest in the commodities which that contract addresses. Few beans are grown, for example, the acreage being much less than that dedicated to pigeon peas. The University may well examine the structure of its relationship with AID to see if there is an alternative way to organize activities that would be more consistent with the University's long-range aspirations without reducing the value of the product which AID expects.

.. Third issue involved weed control efforts, and the capacity to generalize knowledge gained from Puerto Rico to other countries. Weed control technology tends to be site specific. There are two alternative ways to facilitate generalization. One is to attempt to relate subject matter under some sort of formula such as the performance of Herbicide X as a function of the soil, the rainfall, the predominant weed species, and the crop species. If certain coefficients could be established for each variable in the equation, predictions in other areas may be possible. A second alternative is to experiment with various test designs to develop a simple methodology for determining site by site the most effective weed control technology. The grant redesign needs to show relationship with activities at Oregon State.

A fourth issue may be of significance. In many countries of the world soybeans are going to have to be worked into existing systems and land use patterns. In few places is land lying idle waiting for soybeans. Puerto Rico may offer an opportunity to experiment with working soybeans into farming systems.

Finally, while Puerto Rico does have some students in pathology from other countries, its own contacts with other countries and institutions is not extensive. At this time it perhaps should not be. However, the issue needs to be treated in a review of the project design.