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Annual Report for the Period Ending May 31, 1974

211(d) International Program in Crop Production

Agronomy Department, The Pennsylvania State University

University Park, Pennsylvania 16802

211(d) Annual Report

Date September 1, 1974

Title: Crop Production in India and Other Developing Nations

Grantee: The Pennsylvania State University, University Park, PA 16802

Director: Agronomy Department (119 Tyson Building)
Dr. Richard H. Cole, Project Leader

A. Statistical Summary:

Grant Period June 1, 1968 to May 31, 1975 Grant Amount $200,000.00
Expenditures for Report Year $24,491.67 Accumulated $177,126.98
Anticipated for Next Year $22,873.02

B. Narrative Summary:

The Agronomy Department continues to be one of the most internationally involved departments in the College of Agriculture. Over the past year, the Bahama program became the major active project, and the crop production program in Argentina was terminated. Laison has been maintained with our agronomic associates in India. Leadership in the PSU programs has been provided by our Department Heads, the 211(d) Professor, and several other Professors of Crop and Soil Science.

Good news continues to arrive from India. One former participant is completing his Ph.D. ahead of schedule. The reassignment of one professor to an area in which he received his primary training in the U.S.A. was unofficially recommended and approved. Professors formally in India and those involved with students at University Park are in close contact with their Indian counterparts and former students. Similar relationships were never developed in our Argentine program.

Two American graduate students are actively involved in international research in the Bahama program, and two students with prior international experience are working on related agronomic studies on the home campus. Support of foreign students that plan to return to specific jobs in their home nation was quite limited over the past year.

Areas of international excellence in Agronomy at PSU have been developed in forage crop breeding, management, and physiology; soil characterization and land use; and basic soil science, with emphasis in soil chemistry. While the promotion of international programs in Agronomy will be reduced when the 211(d) funds are expended in 1975, a continued interest can be expected by many of the faculty and students in the Agronomy Department.

I. GENERAL BACKGROUND AND PURPOSE OF THE GRANT

This project is one of six conducted at the universities that coordinated their work in India through CUSURDI (the Council of United States Universities for Rural Development in India). Each project was designed to encourage the employment of a full-time faculty member to conduct research, supervise graduate students, and carry out other activities to increase the university's competence in the international dimension of a chosen discipline. Inter-university and inter-disciplinary exchange of information and knowledge has been encouraged, and joint reviews of work plans and progress have been conducted by CUSURDI.

Because of the crop production needs and interests in Central India and the competence in agronomy at The Pennsylvania State University, the area of specialization ultimately selected for this project was "Crop Production." This proved to be an excellent area of specialization because it has been broad enough to gain wide faculty and student support while stimulating more specialized areas of international interest in agronomy at the University.

II. OBJECTIVES

The major objectives of the 211(d) project at The Pennsylvania State University are as follows:

1. To increase interest in and knowledge about the agricultural problems of India and other developing nations, and improve the capabilities of The Pennsylvania State University to become associated with international programs in crop production;
2. To increase the pool of scientists interested in and capable of assisting in agricultural development outside the United States;
3. To provide an opportunity for graduate students to obtain research experience in crop production involving problems relevant to India and other less developed countries;
4. To create an awareness and stimulate interest of plant and soil scientists in international assignments and careers; and;
5. To encourage youth to seek training leading to careers in international agriculture.

All of the project objectives were considered in selecting the work priorities for this past year. Agronomists were actively involved in Indian, Argentinian and Bahamian programs. Because of the termination of our university contracts in India and Argentina, a majority of the time of the 211(d) staff was utilized in supporting the program being developed in the Bahama Islands. Because of the competencies of our staff and the programs being conducted in the College of Agriculture, the international agronomic speciality area has included the production of tropical forage and grain crops as well as food grain crop production.

III. ACCOMPLISHMENTS

A. Increasing interest in and knowledge about the agricultural problems of India and other developing nations and improving the capabilities of PSU to become associated with international programs in crop production.

Active committees interested in problems in India and the Bahamas have been maintained in the Agronomy Department. The 211(d) professor has taken major leadership roles in both programs. The department head has served as coordinator of an Argentina crop production program and the extension head is presently a discipline coordinator in the Bahamian program.

It is hoped that the Indian involvement, terminated in 1973, will become modified and activated again within the next one or two years. The faculty continues to make frequent contact with associates in India and have been encouraged by the Indians to propose programs that may become activated in the future. Several professors continue to serve on Indian graduate theses review committees and maintain contact with past participants.

Penn State's involvement in the Bahamian program has expanded rapidly over the past fiscal year. Professional experience for applied agronomists with limited international experience has been provided through this project. The contract allows PSU to expand its interest in international forage crop-grain crop-livestock programs. The 211(d) professor first served as chairman of the project's technical committee and later as technical coordinator of the project. Professor James Eakin, Agronomy Discipline Coordinator, has been assisted by Dr. John Baylor (Tropical Forage Specialist) and Dr. Willis McClellan (Crop Production Specialist).

An estimated 40% of this years expenditures have been used to meet this objective.

B. Increasing the pool of scientists interested in and capable of assisting in agricultural development outside the United States.

During the past year the Argentine program was terminated and Dr. Daniel Knievel, International Professor of Crop Physiology, returned to the faculty at University Park. Since students were not involved on the home campus, the rewards of this program have been extremely few. The faculty that participated were all pleased to be involved but would have perferred to make a greater contribution to Argentine agriculture. Their past experience will be helpful, however, in evaluating requests for future involvement.

As indicated previously, Professors Eakin, Baylor, McClellan and Cole have played major roles in the Bahama project. Assistance has been received from the professors serving on the committees of the Ph.D. candidates involved, fellow students, and technical service employees. This help and encouragement can only be considered an extra bonus.

Word was received from Delhi that a former Indian student, trained for one year at PSU, has completed all the requirements for the Ph.D. degree three months prior to his proposed deadline date. Dr. B. B. Patil indicated that most of his classmates are not meeting their departure date and credited his success to the start on research he obtained in problem courses with Dr. McKee at PSU.

Through our efforts, another student trained to solve applied problems, has been reassigned from a basic research and teaching position to a position where he can contribute to Indian agricultural development. The response of leadership to this request was extremely gratifying.

An estimated 30% of this years expenditures were used to meet this objective.

C. Providing opportunity for graduate students to obtain research experience in crop production involving problems relevant to India and other less developed nations.

Two Ph.D. candidates are obtaining international experience in the College of Agriculture's Bahama program. Mr. J. Harold Stern is conducting a forage species - soil moisture test as a portion of his work which he plans to use for this thesis. Tropical legume management is being studied by Mr. Ronald Guyton. Upon completion of their work, both will be available for international agricultural development employment.

Of the other Americans involved in International Agronomy, Mr. A. David Wilson has completed all the requirements for the Ph.D. except for writing his thesis. Ms. Sandra Russo has prepared to start her thesis work in the quality of tropical forage grasses. Both have prior international employment experience.

The 211(d) professor continues to serve on the committees for the foreign students in Agronomy. The number of students in the Department has been reduced because PSU has been involved in very few cooperative agreements over the past year, and the departmental policy continues to be aimed at students that desire specific training for a specific job in their home nation.

Funds for training Amiercans in International Agronomy will not be readily available when the present 211(d) project closes in May of 1975. Efforts will be made to provide a limited number of openings within our existing contracts.

About 20% of the expenditures have been needed to meet this objective.

D. Creating awareness and stimulating interest of plant and soil scientists in international assignments and careers.

PSU continues to have a readily available supply of agronomists seeking international opportunities. One professor, Dr. Albert Hunter, recently involved in our Argentine program, has retired to take full-time employment in Brazil. Another professor, (Dr. Clarence Bryner), involved for two years in our Indian program, is planning early retirement and is seeking interna-

tional employment. The return of a former 211(d) student, Mr. Wayne Haag, to the home campus for a few days in 1974 proved very beneficial in stimulating interest in international careers.

The Agronomy Department has now incorporated a strong international aspect into three of its major areas of graduate training: Forage Breeding, Management and Physiology; Soil Characterization and Land Use; Basic Soil Science (with major emphasis in Soil Chemistry). As these areas of excellence become known internationally, both foreign and American students will benefit and awareness and interest in international assignments and careers will increase.

Only 5% of this years expenditures have been utilized to meet this objective in 1973-74.

E. Encouraging youth to seek training leading to careers in international agriculture.

The number of students interested in international employment continues to exceed the demand. The student is still informed that more is needed than desire for international work. One needs an applied background, experience and a speciality. Interim employment for on-the-job experience may be required.

Because of the need for over-seas experience, students may be encouraged to seek their first international employment in volunteer organizations. The 211(d) professor was continuously available for student advisement. A major problem is the need for a clearing house to list international opportunities and the lack of a continuous, consistant manpower need. Five per cent of this years expenditures were used to meet this objective.

IV. IMPACT OF GRANT ON THE UNIVERSITY

The major impact of the grant has been felt within the Agronomy Department. It has drastically improved our international teaching and advising capabilities. Undergraduates are exposed to many international crops and soils problems. International agronomy graduate students are assigned appropriate applied problems.

Research specialists are available for a wide range of international assignments and consulting jobs. This has not been confined to the area of grain and forage crop production. Specialists have also worked in corn and alfalfa improvement, soil resources and land use management, soil analysis and fertility, crop quality analysis, weed control, crop ecology and physiology, and soil and water management.

The need for cooperation with other U.S. institutions has been realized in our College of Agriculture projects in India, Argentina, Uruguay, and the Bahamas. The greater the number of institutions involved, the greater the number of productive new ideas. Recruitment of specialists from associated institutions is not difficult as they are already familiar with the program being conducted.

The active participation of agronomists in international programs also has a stimulating effect on other disciplines within the College. Very few problems can be solved by an agronomist alone. The willingness to take the leadership role and work with associates in other departments, will likely encourage cooperation on domestic projects in the future.

The flexibility of programs cannot be overlooked. The India and Argentina contracts have been terminated. New involvement must always be under consideration if we are to maintain continuous international programs. Diverse funding would be desirable. The stability of programs should receive greater importance when considering future projects.

Student training should be part of the Universities active projects. Problems conducted in a foreign nation must not be a project of interest only to the student and his major professors. Local country support is essential. It is doubtful if international training can be designed without some risk of the work being suspended, but when conducted within a viable University program, problems should be minimized.

The experience gained through the work promoted by this grant has been very valuable. The 211(d) professor and students have been called upon to do many tasks that could not have been considered without this type of support. The placement of these funds within the Department of Agronomy has had an effect on all College programs. When this support is removed at the end of this year, its value should become quite evident.

V. UTILIZATION OF INSTITUTIONAL RESOURCES IN DEVELOPMENT

Because of the expertise developed within the Department through international assignments and study made possible by the grant, the Agronomy Department has been in a position to assume major roles in three of five of the College of Agriculture's recent international contracts. Crop production was the major subject matter area in the Indian and Argentinian contracts. Forage and grain production, along with soil and water management are vital to our Bahamian program.

The activities supported by this grant, i.e. seminars, student advisement, graduate study, etc., have helped to promote an interest in international development throughout the College. U. S. graduates are making major contributions in Rockefeller and Ford Foundation Projects. Extensive use has been made of our soil and forage quality facilities. Departmental facilities often supplement those of the USDA Regional Pasture Laboratory located at University Park.

In the future, contributions to international programs within the agronomic area could be increased because of the continued interest within the Department. This must not be at the expense of domestic programs. The international involvement should be self-supporting when possible.

VI. OTHER RESOURCES FOR GRANT-RELATED ACTIVITIES

The Pennsylvania State University continues to supply the facilities as well as supervisory, technical, clerical and accounting services required by the project. It has encouraged faculty and students not assigned to this project or paid from other international contracts to contribute time freely to international projects.

The Agronomy Department at PSU has been assisted by the contributions of professional associates in other nations or that of cooperating institutions. As Bahamian-American associations are actively developed, it is hoped that the Indian-American associations can be maintained.

VII. BUDGET AND EXPENDITURES

The seven-year budget and expenditures for the project are reported in Table 1. About 12% of the total budget was spent during the past year. Six-year expenditures were slightly less than 89% of the total available funds.

More than 75% of the salary of the 211(d) professor, Dr. Richard H. Cole, was paid from this program, the remainder coming from the Bahamian program. Included in this line item was the assistantship support of Mr. J. Harold Stern. Other American international students, A. David L. Wilson, Ronald F. Guyton, and Sandra Russo were supported from other departmental funds. Wages were paid under graduate students for part-time direct assistance of the 211(d) professor and students.

Most of the other expenses were minimal with a few exceptions. Much of the travel expense reported were from charges of previous trips of 211(d) staff to India. Two grain harvest mowers manufactured in Minneapolis, Minnesota by Jari were purchased from C. J. Shawlder & Sons in Pittsburgh (an expense of $747.60). A grain head for one of the mowers was constructed by a local machine shop (Shearer) at a cost of $120.00.

Expenditures over the past year were less than expected, as students that were unlikely to receive support from other sources after 74-75 could not be encouraged to start international advanced degree work.

VIII. PLAN OF WORK AND BUDGET FOR 1974-75

The proposed budget for the final year of the project is $22,873.02 (Table 2), or about 11% of the original total budget. This includes a major portion of the salary of the 211(d) professor, Dr. Richard Cole, and one graduate assistant, Ms. Sandy Russo. The 211(d) professor will continue to promote the international program established in the Bahamas, maintain liaison with his agronomic associates in India, and promote other programs already established in the international areas of excellence within the Agronomy Department. The one graduate assistant in the project will continue her work on the quality of tropical forage grasses.

Travel expenses to Central and South America will be requested for two international members of our Soil Characterization and Land Use Team, Dr. Robert Cunningham and Dr. Roger Pennock, as they attempt to expand the services of our state laboratory to accomodate international samples. Both will also request trips to Andros (Bahamas) to review the work of the agronomy students involved in that project. Travel expenses for an Andros trip will also be requested for Dr. John B. Washko, thesis advisor of one student and committee member of another student on the Bahamian project. If funds are available other study trips will be considered as requested.

No major equipment or supply requests are expected in 1974-75.

It must be expected that international program promotion by the 211(d) professor will be drastically reduced after June 30, 1975. While primarily assigned to domestic projects, a continued interest can be expected by many of the faculty in the Agronomy Department.

Table 1. Budget and expenditures for the 211(d) International Agronomy Project at The Pennsylvania State University.

Category	Seven-Year Budget	Expenditures 6/1/73-5/31/74	Total Expenditures Through 5/31/74
Salary and Wages	$146,000.00	$19,608.50	$127,157.13
Travel and Transportation	21,000.00	961.03	30,120.46
Equipment and Supplies	22,000.00	1,735.68	13,727.61
Other Direct Costs	11,000.00	2,186.46	6,121.78
Totals	$200,000.00	$24,491.67	$177,126.98

Table 2. Initial and revised seven-year budgets and 74-75 budget for the 211(d) International Agronomy Project at The Pennsylvania State University.

Category	Seven-Year Budget	1974-75 Budget	Seven-Year Budget Revised
Salary and Wages	$146,000.00	$16,900.00	$144,057.13
Travel and Transportation	21,000.00	4,200.00	34,320.46
Equipment and Supplies	22,000.00	1,100.00	14,827.61
Other Direct Costs	11,000.00	673.02	6,794.80
Totals	$200,000.00	$22,873.02	$200,000.00