

On October 23, 1963 a three-way partnership in technical assistance was formalized by the University of Arizona, the Federal University of Ceara (Brazil) and the U.S. Agency for International Development (USAID).

### *How It All Started*

In the early 1960's a request was made by the Brazilian government to the USAID Mission in Brazil for assistance in agricultural development. Particularly noted was the need for improved college level agricultural education.

Brazil is too large and diverse for any one U.S. university to provide technical assistance for the entire country, so it was divided rather arbitrarily into four geographical areas — the arid northeast was one of them. Because of similarities between Arizona and Northeast Brazil in climate, vegetation, and cultivated crops, the University of Arizona was contacted as a possible contractor to work in developing an as yet unselected Brazilian college of agriculture.

A three-man survey team from the College of Agriculture composed of Dr. Jimmie S. Hillman, Head, Department of Agricultural Economics; Dr. Andrew McComb, Head, Department of Watershed Management, and Dr. Darrel S. Metcalfe, Director of Resident Instruction, went to Brazil in 1962 and spent about two months visiting various colleges of agriculture, conferring with administrators and faculty and with government officials. As a result of their survey and conferences a tentative agreement was reached between the School of Agriculture of the Federal University of Ceara, the Agency for International Development and the University of Arizona for a cooperative program of institution building. The University of Arizona College of Agriculture faculty voted unanimously to enter into the proposed agreement which was finally approved by all parties.

### *Ceara, Its Agriculture and School of Agriculture*

The Brazilian State of Ceara is located on the northeast coast of Brazil, near the eastern-most point of the country. (Above) It is about half the size of Arizona (60,000 square miles) and has a population of almost 4 million. Topographical relief is low; the highest point in the state is about 800 meters (2600 feet); and the slope is generally toward the coast with some isolated mountain ranges. The School of Agriculture is located in the capital city of Fortaleza.



The climate is the tropical wet-dry type — 5 to 6 month rainy season from January through June followed by 6 to 7 months of dry weather.

Average rainfall seems adequate but distribution both time and space is poor. Severe droughts are common.

Agriculture in Ceara is characterized by low productivity per worker. Subsistence farms make up the majority of farm units although there are some very large, inefficiently operated farms. Among the principal cultivated crops are cotton, corn, beans and bananas. Some citrus is grown. Livestock production is predominantly beef cattle, but includes goats, sheep and poultry. Dairy farms are found near the big cities.

The School of Agriculture, founded as a private institution in 1918, had 30 members in its first graduating class. On May 7, 1935 the School was federalized under the jurisdiction of the Ministry of Agriculture. Then in 1954, when the Federal University of Ceara was created, the School of Agriculture became a part of that institution.

It was organized in the pattern of European universities with 23 independent chair professors, each operating rather autonomously in his own special area. All students followed the same curriculum with no opportunity for specialization. No graduate study was available; in fact, none of the faculty held advanced degrees in 1963 when the contract was initiated. Most faculty were part time employees and came to the campus only to teach their courses.

### *Description of the Contract*

Under the terms of the contract the University of Arizona College of Agriculture provides technical advice and assistance to the USAID Mission and to Brazil for

\*Campus Coordinator, Brazil Program



Director of the School of Agronomy (Escola de Agronomia) of the University of Ceara, is Dr. Otavio Braga, above. He is assisted by University of Arizona College of Agriculture personnel shown on page 16.

the purpose of improving agricultural productivity, increasing efficiency in the utilization of agricultural resources and achieving higher standards of living for the rural population. These improvements are sought through development of a "land-grant college" type of philosophy in education, research and extension at the School of Agriculture of the Federal University of Ceara.

The College of Agriculture is attempting to meet these objectives by providing 1) faculty and staff members in Brazil to give advice and assistance for improved methods in teaching, research, and extension in various agricultural fields; 2) training programs in the United States and Brazil for School of Agriculture faculty members and technicians; 3) assistance in teaching regular and special courses, in developing surveys of educational needs and in improving courses, curricula and teaching methods; 4) assistance in organizing, administering and conducting research projects; 5) advice to the administrators of the School of Agriculture, and 6) equipment, books and supplies needed in the teaching, research and extension programs.

Technical assistance has been provided by College of Agriculture professors on two-year or longer tours of duty and faculty members on short term assignments. The original group under the leadership of Dr. W. J. Pistor began arriving in Fortaleza in March 1964. At the present time six faculty members are in Fortaleza with Dr. LeMoyne Hogan as Chief of Party. Dr. D. F. McAlister and Dr. T. M. Stubblefield have also served in this capacity.

USAID provides the financing for the contract and important supportive or backstopping activities mainly through the missions located in Recife and Rio de Janeiro. The Federal University of Ceara provides office space for the University of Arizona staff and supports local project activities in many other ways. Cooperation with other units of the Federal University of Ceara and Brazilian government agencies is emphasized in carrying out the objectives of the contract.

#### *Progress Since 1963*

Naturally some of the changes which have occurred

at the School of Agriculture would have occurred without the contract; many can be definitely linked to the contract; and still others were probably assisted in becoming a reality by the catalytic action of the Arizona group.

There are some positive indicators of progress. Table I summarizes the results of the Brazilian faculty training to date. As indicated previously, no faculty members held advanced degrees in 1963; today almost 50 percent of the 87 faculty members do.

Table I Faculty Training Program

<i>Location of Training</i>	<i>Degree</i>	<i>In Training 1970</i>	<i>Completed</i>
U.S.	B.S.	0	4
	M.S.	13	16
	Ph.D.	4	0
	Non-degree	0	15
Brazil	M.S.	2	23
	Short Courses	0	13
Chile	M.S.	1	0

The School of Agriculture has been completely reorganized. Two research institutes, previously independent, have been brought under the leadership of the Director of the School of Agriculture. The autonomous chair professor system was eliminated and five departments — Plant Science, Animal Science, Agricultural Economics, Agricultural Engineering and Agricultural Technology — were organized. Departments select one of their members to serve as department head each year. Eighty percent of the faculty are now on full time appointments.

All courses have been revised, using updated material and adding laboratory exercises. Several laboratories for teaching and research have been established and equipped. The curriculum now offers the students an opportunity to specialize in one of the five departments and eliminates duplication of courses offered in other branches of the University. Master of Science programs with majors in Agricultural Economics, Plant Science and Animal Science are ready to start.

The library at the School of Agriculture is considered the best at the University of Ceara. Many new books, periodicals and journals have been acquired and catalogued. Since Portuguese language textbooks are not readily available for the students, a large number of textbooks for some courses were obtained and are made available for students' use in the library. Individual study areas are provided and this new arrangement permits professors, for the first time, to make library assignments.

The importance of faculty research is stressed and about 60 projects were funded this year from various sources including the Bank of Northeast Brazil and the Ford Foundation. University of Arizona faculty members do not conduct independent research, recognizing that such efforts would have no lasting effect. In the Curu River Valley, sixty miles west of Fortaleza, several small farms were purchased and combined to create an experiment station for graduate student and faculty research. Extensive land leveling, canal lining and drainage projects

# 7 Years in Brazil

(from previous page)

are underway. Significant research has been conducted on beans, corn, sorghum, alfalfa, cattle feeding, range management and hydrology, among other projects.

A sweet potato variety trial has had impact throughout the Curu Valley. Cuttings of several improved sweet potato varieties were brought from the United States and tested at the experiment station. One variety showed a 60 percent increase in yield over the native sweet potato and also was less stringy and more palatable. The adoption of this variety started with the workers at the station, who carried cuttings to their home gardens, and it is now being grown throughout the valley.

The experiment station also serves as a training center. Several of the short courses and in-service training programs conducted for personnel from various governmental agencies have been held at the stations.

Graduates from the Federal University of Ceara's School of Agriculture are now found throughout Brazil. They are working in the Amazon basin, in the interior of the country and in the southernmost Brazilian state, Rio Grande do Sul. Table II compares information about the School of Agriculture in 1963 and in 1970.

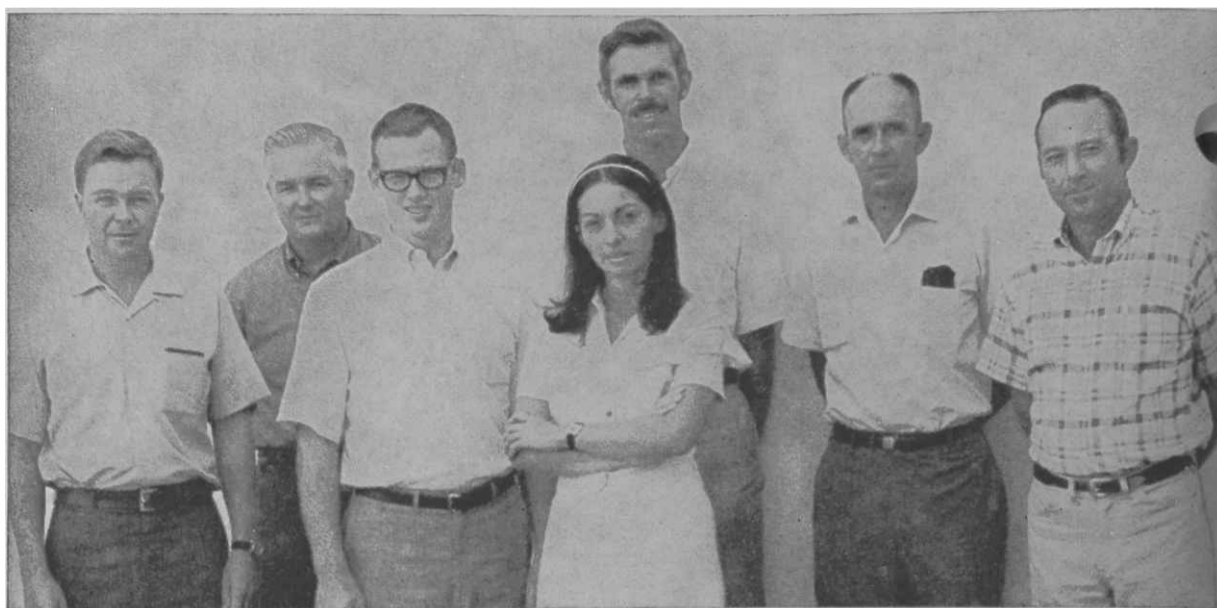
Table II Statistical Comparison

	1963	1970
Student body	264	612
Annual Graduates	58	140 (est.)
Full time faculty	34	70

## University of Arizona Benefits, Too

Not all the benefits from the contract have gone to Brazil. University of Arizona faculty members who live and work in Brazil gain knowledge about international agriculture in general and Northeast Brazil in particular, and experience in working in a less-developed area adds a new dimension to their professional competence.

This information and experience is brought back and made a part of the teaching, research and extension activities at the University of Arizona



U. of A.'s personnel from College of Agriculture are from left: Drs. Jack Stroehlein, Agricultural Chemistry and Soils; LeMoyne Hogan, Horticulturist and Chief of Party in Brazil; Ralph Price, Food Technology; Miss Conceicao Cavalcante, Secretary to party; Drs. Roger Fox, Agricultural Economist; Charles Haines, Animal Nutritionist; and Mr. Roy Nelson, Agricultural Experiment Station.

to the benefit of both students and the residents of Arizona. To maintain the interest and enthusiasm of Arizona faculty members who have been in Brazil, a "Brazil Alumni" group was formed. The group meets frequently for social affairs and briefing on contract activities.

International agriculture is important to Arizona and to the entire United States. Arizona's share of the agricultural export market in 1970 was estimated at almost 62 million dollars, representing about 10 percent of the state's total agricultural output. Arizona producers benefit from a market greatly enlarged by foreign purchases.

## What About the Future?

Building an institution in Brazil

that will endure as a center of excellence is a task that cannot be completed in seven years, or even twice that. Great strides have been made and all parties to the contract agree that it should continue on its present basis for a few more years. Exchanges of professors between Fortaleza and Tucson will play an increasingly important role in the program. The year-to-year funding necessary for contracts with the Agency for International Development makes long range planning difficult, but the University of Arizona College of Agriculture hopes to be able to continue working with the Federal University of Ceara in building its School of Agriculture and finish the task started in 1963.

PROGRESSIVE  
AGRICULTURE  
IN ARIZONA

Official Publication of the  
College of Agriculture and  
School of Home Economics  
The University of Arizona

*Harold E. Myers* Dean

to: