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TO - AID/S TOAID A 1271

FROM - RIO DE JANEIRO

SUBJECT - NON-CAPITAL PROJECT PAPER (PROP)
Agricultural Education - Federal University of Viçosa
REFERENCE - 512-11-110-094.1

DATE SENT
12/30/69

COUNTRY: BRAZIL PROJECT No: 512-11-110-094.1

SUBMISSION DATE: December 1969 ORIGINAL: X

Project Title: Agricultural Education - Federal University of Viçosa (UFV)

U.S. OBLIGATION SPAN: FY 51 through FY 72

PHYSICAL IMPLEMENTATION SPAN: FY 52 through FY 72

GROSS LIFE OF PROJECT FINANCIAL REQUIREMENTS:

| | |
|---------------------------------------|------------------|
| U.S. Dollars | \$8,845,000 |
| U.S. owned local currency | 67,000 |
| Cooperating Country Cash Contribution | |
| (Trust Fund) | 253,000 |
| (CONTRAP) | 476,000 |
| TOTAL | 9,641,000 |

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Tracy

PAGE 1 OF 10 PAGES

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| DRAFTED BY ARDO: KKling <i>AKR</i> | OFFICE AFIDO | PHONE NO. 210 | DATE 12/18/69 | APPROVED BY: ADPR: H Harrison |
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I. SUMMARY

The shortage of adequately trained personnel at the university level is a major ~~limiting~~ limiting factor in the development of Brazil's agricultural sector.

The present requirement for trained agriculturists to meet the growing demands for teachers, research scientists, extension workers, economists and other technically trained personnel is far greater than the present output. The needed well-trained manpower can be supplied only with increased effort in the area of agricultural education.

The objective of this project is to strengthen the professional and technical competence and the institutional capacity of the Federal University of Viçosa to provide leadership and technical guidance in the development of the State's total agricultural resources. This involves integration of the teaching, research and extension activities of the University into a concentrated attack on the agricultural problems of the State of Minas Gerais and the Nation and the educational training of agricultural technicians to carry out development programs.

To achieve the above objective the USAID is providing training and advisory services through a contract with Purdue University. Under this contract Purdue provides full time professors plus short term consultants where needed and requested. Additionally, through the Purdue contract, the USAID provided participant training in the United States for jointly selected Brazilian professors connected with the project and limited amounts of demonstration material not readily available in Brazil.

To date, substantial progress toward reaching project goals has been made. It is expected that this project will have attained its principal objectives by 1972. For the period 1970-1972, the action to be taken and the goals which have been established may be summarized as follows:

1. Further consolidation will be made of the integration of teaching, ~~research~~ research and extension at the University, with particular emphasis on strengthening the relationship of the University with other research and extension agencies having local or regional responsibilities in Minas Gerais and with federal entities engaged in agricultural development programs.

2. The graduate level program will be further consolidated and expanded. It is expected that approximately 71 graduate courses will be offered in 1970 compared with 60 courses offered in 1969. New graduate courses to be offered in 1970 include agricultural engineering, plant physiology and agricultural microbiology. Planning will begin for development of doctoral level training in 1970. The high priority areas of the Basic Institutes which were created by the new University structure will be developed and strengthened, especially in those areas related to post-graduate training.

3. The number of graduate students in 1970 will increase 10 percent over 1969 with total enrollment reaching approximately 180. Corresponding increases will be made in 1971 and 1972.
4. The University's undergraduate program will continue to be improved and enrollment increased. The full-time University staff will be expanded by approximately 25 professors in 1970.
5. Plans will be laid to initiate an M.S. degree program in agricultural engineering and forestry.
6. During 1970 the enrollment in the School of Forestry will be expanded by about 6 percent to 120 students and the staff to 17 full-time professors.
7. The new physical facilities of the University library will be ready by the beginning of 1970 and the number of volumes will be increased by December 1970 to about 19,000 from 14,500 at the end of 1969.
8. Laboratory facilities required for carrying out the University's teaching and research program will be expanded to the extent feasible.
9. Priority agricultural research will be undertaken to demonstrate improved techniques of planning and conducting applied research to solve agricultural and rural problems. Anticipated activities include research to improve yield and quality of corn, mandioca, vegetable crops and forage crops, to improve animal nutrition, and research in agricultural policy.
10. The operation and financing of the University's experimental station and extension service will be strengthened by further coordination of research effort in priority areas, by seeking research funds outside the University and by increasing the number of extension-type short courses.
11. Approximately 10 University staff members will be prepared and sent to the United States for advanced academic training each year.
12. Professional experience of the University's staff will be further enhanced by close working relationships with the Purdue University professors. The U.S. professors will be assisting in teaching and advising on research and extension activities in the following areas: engineering, animal science, agronomy, soils, forestry and agricultural economics.

A summary description of the required life-of-project financial inputs is attached to this PROP as Annex A.

II. SETTING

Agricultural development is a prime requisite for economic growth and progress in ~~the~~ Brazil. * The country is largely dependent on agriculture for foreign exchange earnings, internal investment capital, and food and ~~the~~ fiber. However, over the past 30 years, total agricultural production has barely kept up with population growth. During this period the increase in production has been largely the result of increased area cultivated rather than increased production per acre.

Despite the high priority assigned to agriculture by the GOB in recent years, serious educational deficiencies remain as critical limiting factors for the entire agricultural scene. Some of these limiting factors are:

- a) Lack of knowledge and inadequate dissemination of existing knowledge on how to improve production.
- b) Lack of trained personnel to solve problems affecting production.
- c) Lack of educational resources to train the specialists needed to assume positions of leadership in country programs to increase agricultural production.

These limiting factors have had a stifling effect on normal development of the higher education process.

Numerous reports are available in AID/W and USAID/Brazil on the Brazilian agricultural sector and the reader is referred to them for background information. The importance of agriculture to the Brazilian economy is well documented. It is easily the most important economic activity in Brazil, employing more than one half the total ~~labor~~ labor force. The agricultural sector analysis, now being completed by USAID/Brazil, will provide a detailed analysis of this sector including a discussion of the many problems and adverse conditions which the sector faces.

The national educational scene **

The situation in higher education is unsatisfactory. The number of Brazilians receiving higher education is inadequate in view of manpower needs of the developing society and nation.

Furthermore, the institutions of higher learning that exist are not meeting the needs of modernization, with few exceptions. The curriculum is too rigid and traditional. Laboratories lack equipment and trained personnel. Libraries are small and often poorly organized. There are not enough places provided for qualified students who want to enter the institutions. A majority of teachers are part-time, spending relatively few hours at the university. Textbooks and ~~the~~ other teaching materials

are scarce.

The system fails to produce the numbers and types of skilled manpower to meet Brazil's development needs. The key problems at the higher education level are: a) there is an extremely low number of graduates; b) student distribution among specialized courses is not well oriented to Brazil's manpower needs; c) admission requirements are too demanding, resulting in unutilized facilities; and d) the curriculum is too rigid.

University enrollments for 1963 and 1964 (years for which complete data are available) indicate that the growth rate exceeded 14% each year.

However, the percentage of enrollment favored areas other than agriculture. For example, the greatest percentage of enrollment (23%) was in the Faculty of Philosophy; law enrolled 22%, followed by engineering (15%); economics 10% and medicine 10%. These five fields enrolled 80% of all students.

In 1964, the total output of agriculture and veterinary medicine graduates was 726. This number was an extremely small proportion of the number needed to improve the functioning of Brazil's agricultural economy.

The reader is referred to the Education Sector Analysis in the Brazil FY 71 Program Field Submission for additional background information.

III. STRATEGY

It was decided by USAID and Purdue University in 1958 that the development of Brazil's agricultural and rural resources could be best accomplished by the following strategy:

1) Upgrade the quality and expand the capacity of Brazilian agricultural educational institutions to provide training in the agricultural sciences in order to meet the growing demand for research scientists, extension specialists, teachers and others assuming leadership roles in rural development.

2) Select a core of Purdue university staff members to work at the selected host university (UFV) in developing graduate curriculum, laboratory techniques, research methods and improved teaching in agricultural economics, plant, animal and soil sciences and rural sociology.

3) Send UFV staff and selected students abroad for academic training to M.S. and Ph.D. levels and for orientation and special study tours in order to upgrade the teaching-research staff. As an alternative to this approach, consideration was given to concentrating simply on sending UFV staff abroad for academic training, orientation and special study tours.

One of the reasons for selecting UFV for this project was that its origin, structure and development all pointed to a favorable environment and ~~strong~~ strong potential for training and developing national leadership in agriculture. Even in 1952, when this project started, several UFV alumni were in key positions throughout Brazil in agricultural education, State Secretariats of Agriculture, the Ministry of Agriculture and private industry.

Legislative changes were achieved in the early history of the project which gave the University more autonomy. The ~~environment~~ environment at the University is generally favorable to administrative reorganization when opportunities ~~are~~ arise.

In spite of these favorable indicators for success of the project, progress has not been so rapid as planned because progress is closely linked to financial support and the UFV as a State University, prior to 1969, was fundamentally dependent upon state funds for the majority of its support. Beginning in 1966, becoming more serious in 1967 and continuing in 1968, the amount of actual state support received by the UFV was far short of what was required. In addition, the funds that were received usually were late in arrival.

In an effort to resolve the financial difficulties of the University, the President of Brazil in October 1967 appointed a special interministerial committee to study the procedures that would permit the transfer of the UFV from the status of a state to a federal institution and in 1969 the University was officially brought into the federal ~~item~~ item. It is hoped that this will alleviate some of the more serious financial problems which the University has faced.

In spite of its financial difficulties the UFV is a growing and progressive institution and is gaining stature as a leader in agricultural research and training of highly qualified graduates.

This project is related to several other USAID activities. It is of the same pattern as three other USAID financed university to university institution building projects all of which are directed at strengthening the Brazilian agriculture educational system,

It is also related to the USAID agricultural research project. Through a contract with the IRI Research Institute, USAID is providing assistance to the research department of the Ministry of Agriculture. This department has an ~~office~~ office which coordinates ~~research~~ research undertaken by various institutions outside the Ministry of Agriculture, including rural universities. Beyond the coordinating effort, there is also an exchange of technical personnel as needed in conducting field days, special seminars, or in the evaluation and selection of ~~a~~ candidates for special training.

Under this same contract, IRI has provided technical advisory services to the national extension service (~~ABCAR~~ ABCAR). The targets of the UFV project include the strengthening ~~of~~ of the concept and functioning of the extension service in the State of Minas Gerais. This service is affiliated with the national system, and improvement of the functioning of the system in that state is reflected in a better overall extension service in Brazil.

Support for research and construction at the University by both Brazilian and international sources is at an all time high with the following being some of the main areas of support:

(a) Ford Foundation is in the fifth year of its 5-year grant of \$1,000,000 for construction and staff improvement.

(b) Ford Foundation is making a new grant of approximately \$250,000 (for 2 years) to the UFV's Institute of Agricultural Economics for research and teaching.

(c) Rockefeller Foundation has made grants of about \$50,000 for book purchase and short-term U.S. staff assistance over the next two years.

(d) The University and the Veterinary School at Belo Horizonte will be the joint recipients of an annual \$95,000 grant covering five years from OAS for training veterinary students from all of Latin America.

(e) The Interamerican Development Bank has approved a \$1,000,000 loan to Brazil for construction at the UFV covering a three-year period.

IV. PLANNED TARGETS AND COURSE OF ACTION

The following targets have been established for 1972, the planned phase-out date for USAID assistance to the project. The course of action designed to accomplish each target is briefly outlined.

A. Upgrade the level of professional training and skills of the staff at the University through formal academic training programs for a minimum of 100 staff members and through special short-term training programs.

The University, through non-USAID sources of scholarships and its graduate school, is independently assuming an increasing responsibility for the upgrading of its staff. Currently, there are twice as many University staff in the U.S. studying for advanced degrees on non-USAID scholarships as on the USAID participant training program. Over 50 percent of the staff presently being trained at the M.S. level will be accomplished through the University's graduate school. The USAID participant training schedule for M.S. degrees in the U.S. is in specific subject matter areas where training is not available at the University or elsewhere in Brazil.

The Purdue University staff will make a major contribution to attaining this target by providing support and orientation to newly trained University staff, enabling them to put their newly acquired knowledge to maximum use.

While emphasis is being placed on academic training programs, short-term training programs will also be utilized when the need and opportunity arises.

B. Expand and develop the Graduate School at the University, specifically in the Institutes of Agricultural Economics, Animal Sciences and Plant Sciences.

The above three institutes were the first to offer an M.S. degree at the University and are the most advanced in the development of curricula. However, these institutes have a high proportion of young and relatively inexperienced staff.

By July 1971, the level of training for students in these institutes should be on a standard equivalent to that in U.S. universities. The number of new students enrolling in the graduate program annually will be between 80 and 100 with approximately 50 degrees being completed each year.

Purdue will maintain at least one staff member in each of these institutes through the end of the project to assist in course planning, organization and presentation where needed and to reach the goal of having all graduate courses taught by the UFV staff. The UFV staff is involved in ~~most~~ teaching 49 of the 53 courses currently offered in the graduate school, (forty-three are taught solely by Brazilian staff) but there is need for course expansion in all institutes. Such gaps can be temporarily filled by either U.S. professors or by Brazilian professors contracted to teach a specific course, but eventually these courses must be the full responsibility of ~~the~~ UFV staff. Its ability to assume this responsibility will depend upon the successful achievement of ~~K~~ Target A.

Purdue staff will also assist in the planning and orientation of graduate thesis research projects.

The Director of the Graduate School is scheduled to make a study tour to observe changes in organization of graduate schools in the U.S. which have occurred in recent years.

The estimated Purdue contract inputs for this ~~g~~ target include 5 full-time staff, 10 short-term consultants and purchase of limited amounts of ~~the~~ laboratory instruments, field ~~and~~ equipment and supplies, plus training of 28 participants. In addition to staff salaries and purchase of equipment, the UFV is training 32 of its staff members at the university itself.

C. Revise the undergraduate curriculum and initiate an M.S. degree program and a separate research program in the Institute of Agricultural Engineering. A minimum of three courses will be offered in mathematics and engineering theory, ten students will be enrolled in the M.S. program, and five research projects will be underway.

It is anticipated that the Institute should be able to attain the above ~~g~~ targets before July 1971. Planned inputs for these targets include two short-term Purdue staff, the purchase of laboratory equipment, mainly for a teaching and research hydraulics laboratory, and two participant trainees for an M.S. degree. The minimum self-help anticipated will be the provision of funds for the ~~minimum~~ construction of the above mentioned hydraulics laboratory.

D. Develop a School of Forestry that will have the capability to independently carry on an undergraduate program equivalent to those in US universities and to conduct limited practical research projects. Enrollment will approach 125 students ~~per~~ per year with 30 receiving the B.S. degree and with seven research projects underway.

This target will be achieved through the continuation of a Purdue staff member in the School of Forestry through June 1971 to assist with the teaching program and work directly with the staff and director of the school to further develop the courses and curriculum. Two participants have recently returned after completing their M.S. training in the U.S. to assist in this aspect of the program. Additional emphasis will be placed on working with the University staff in the School of Forestry in selecting priority research areas and in the planning, conducting and analyzing of projects.

Planned ~~ix~~ inputs, in addition to that of a full time Purdue staff member, include ~~xxx~~ selected short-term consultants, training of four participants, and the purchase of limited amounts of equipment for research and teaching.

E. Develop and coordinate research programs within the University which will result in a specific budget allotted for research to be administered by the Director of Research and Experimentation, thus elevating the concept and prestige of research in the university system.

A new Director of Research and Experimentation who had recently completed his Ph.D. in the U.S. was appointed in late 1967. The University, like most Brazilian universities, has historically placed more emphasis on teaching than on research. The research carried out was usually done on an individual basis. It is no simple or easy task for any university to mold a cooperative attitude and approach toward research. The new director sees the value of such a system and, through the assistance of the Project Research Committee, is rapidly and effectively organizing between and within the Institutes towards this end. The University staff is relatively young and inexperienced and still in need of assistance in planning and organizing ~~xxxx~~ individual research projects.

The ~~KK~~ ~~CNPAP~~ funding for research at the UFV is helpful to the new director in developing a coordinated research program. Each year the in-country support from such groups as the Brazilian National Research Council (CNPq), National Development Bank (BNDE), the Coffee Institute (IEC) and private industry is increasing. By 1971, the research program at the University should be able to move forward on its own.

F. Strengthen the concept and functioning of extension as an interpretive agent of research results and its responsibility and duty to publish and disseminate information with the end result of transferring research results into application in the field.

While the University has a long record of sponsoring extension programs (it has held a one-week farmer short course for 40 years), the ~~xxx~~ concept of an extension specialist and his relation to the University, research, the state extension agency, individual farmers and private industry is still new and inadequately developed. The extension branch of the University being the newest, has also suffered most during the recent financial crisis. Because of its newness, it has not been considered by its employees as having a promising future for a ~~xxxxxx~~ career comparable to that ~~xxx~~ of teaching of research and consequently extension specialist staff ~~xxxxxx~~ members are often quick to accept other employment.

The Director of Extension, who has organized the staff at the University, ~~has~~ has been on loan from the state ACAR staff. Progress, when working with an inexperienced staff in an ~~inadequate~~ environment where there is not always strong support for the ~~concept~~ concept of extension and the reality of working with limited budgets is bound to be slow. However the ~~good~~ groundwork has been laid and the goal can be achieved with continued effort.

G. Develop and expand the Institute of ~~Food~~ Food ~~Technology~~ Technology.

There are ~~serious~~ losses of ~~food~~ food because of inadequate care and preservation after harvest. Present plans currently call for one short-term staff member from Purdue in food preservation, one participant in fruit and vegetable processing (M.S.), and purchase of limited amounts of food processing equipment. At one time, two full-time Purdue staff members (4 man years) were programmed for this institute and if the potential of the institute develops more rapidly in the future, this could once again be given top priority.

H. Create a functioning system for purchase and ~~procurement~~ procurement of periodicals by the University library.

Recognition of the necessity of a first class library has been gaining support within the University administration. A qualified, trained librarian is now in charge of the library. Ford Foundation has partially supported the construction of a library building (to be completed with IDB support). Rockefeller Foundation and BDNF have been supporting the purchase of books and subscriptions to periodicals have been provided through the Purdue contract. The transfer of the latter to the responsibility of the University was ~~pre~~ programmed in 1967 but was not put into effect because of the financial crisis. It is anticipated now that the University will be able to assume this full responsibility before July 1971.

I. Further the operations of the teaching-research-extension trilogy within the University as a method of problem solving and agricultural development in the State of Minas Gerais and Brazil.

Achieving the targets listed above will assure the achievement of this one. In addition, ~~administrative~~ administrative visits of Purdue Directors and department ~~heads~~ heads plus short-term study tours of UFV administrators to the U.S. will aid greatly in the further development and understanding of this process.

~~XXXXXXXX~~

BELTON

NONCAPITAL PROJECT FUNDING (Obligations in \$000)

ANNEX "A"

Table 1
Page 1 of 2 pages
COUNTRY: BRAZIL

PROP Date: 12/69
ORIGINAL: X
Rev. N9:

Project Title: Agricultural Education - University of
Viçosa (UFV)

Project N9: 512-11-110-094.1

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| Fiscal Years | Ap | L/G | Total | Cont ^{1/} | <u>Personnel Serv.</u> | | | <u>Participants</u> | | <u>Commodities</u> | | <u>Other Costs</u> | |
|----------------------------|----|-----|-------|--------------------|------------------------|-------------|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|------|
| | | | | | <u>AID</u> | <u>PASA</u> | <u>Cont</u> | <u>U.S.</u> <u>Agen.</u> | <u>Cont</u> | <u>U.S.</u> <u>Agen.</u> | <u>Cont</u> | <u>U.S.</u> <u>Agen.</u> | |
| Prior thru Actual FY 69 | AG | G | 7407 | 5096 | 1524 | 7 | 3333 | 454 | 524 | 6 | 447 | 320 | 792 |
| Operational FY 70 | AG | G | 677 | 656 | 21 | - | 282 | - | 220 | - | 25 | - | 120 |
| Budget FY 71 | AG | G | 512 | 490 | 22 | - | 249 | - | 106 | - | 25 | - | 110 |
| B + 1 FY 72 | AG | G | 249 | 228 | 21 | - | 115 | - | 53 | - | 10 | - | 50 |
| B + 2 FY 73 | | | - | | | | | | | | | | |
| B + 3 FY 74 | | | - | | | | | | | | | | |
| All Subs Yrs | | | - | | | | | | | | | | |
| Total Life | AG | G | 8845 | 6470 | 1588 | 7 | 3979 | 454 | 912 | 6 | 507 | 320 | 1072 |

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^{1/} Memorandum (nonadd) column

| Fiscal Years | AID-controlled Local Currency | | Other Cash Contribution Cooperating Country | Other Donor Funds (\$ Equiv.) | Food for Freedom Commodities | | |
|----------------------------|----------------------------------|-------------------|--|-------------------------------------|------------------------------|-----------------------------------|-----------------------------|
| | U.S. owned | Country owned | | | Metric Tons (000) | CCC Value & Freight (\$000) | World Market Price (000) |
| Prior thru Actual FY 69 | 67 | 74 | 372 | | | | |
| Operational FY 70 | | 63 | 58 | | | | |
| Budget FY 71 | | 58 | 46 | | | | |
| B + 1 FY 72 | | 58 | | | | | |
| B + 2 FY 73 | | | | | | | |
| B + 3 FY 74 | | | | | | | |
| All Subs Yrs | | | | | | | |
| 12/71 Total Life | 67 ^{1/} | 253 ^{2/} | 476 | | | | |

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12/71

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^{1/} NCr\$290,000 - PL-480 Sec 104 (f).
^{2/} Trust Fund.

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