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FROM - RIO DE JANEIRO

SUBJECT - Evaluation of LDC Research Performance and Capacity.

REFERENCE - AIDTO CIRC 1200

Following is the information on the Federal University at Viçosa and the University of São Paulo School of Agriculture at Piracicaba requested in reference circular:

I. - The Federal University of Viçosa (UFV):

1.0 Background Description.

In 1920, the State of Minas Gerais established the Escola Superior de Agricultura e Veterinária (ESAV) at Viçosa, Minas Gerais. In 1948, to facilitate administration of the expanding agricultural training program and allow for further growth, ESAV was organized as a University and became the Universidade Rural do Estado de Minas Gerais (URMG), offering work in both agriculture and home economics. The newly organized University aimed "to secure and spread knowledge relating to production and industry and to study agriculture and home economics both in connection with the technical and scientific aspects as well as with its social economic aspects".

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Mission

A National School of Forestry was established at the University in 1960 as the result of a cooperative agreement between the Federal Government, FAO, and URMG. In 1963 this School of Forestry was transferred to the State of Paraná. A new Forestry School was established on the campus in 1964 by special act of the legislature. In 1969 the became a Federal School and its name was changed to the Federal University of Viçosa (UFV). The process of federalization has resulted in a higher and more certain level of financing than that experienced under the State of Minas Gerais. Federalization will also carry with it the responsibility for work outside the area of agriculture as well as for increased research in agricultural and forestry.

PAGE 1 OF PAGES 12

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2.0 Research Program and Performance.

2.1 Focus.

Prior to the initiation of graduate work in early 1960, relatively little research had been done although some work had been completed in hybrid seed corn and more limited research conducted in areas such as citrus production, animal nutrition, bean production, agricultural economics, etc.

In 1965, the General Directorate of Experimentation and Research was established for coordinating and supervising research. In this same year, the University was also restructured to permit improvement of the administration and a more autonomous operation allowed outside the political sphere. In cooperation with state officials, the school's area of interest was expanded. The structure of the Graduate School and the Research and Extension Services were formalized to increase their functional value.

A major portion of research done at the UFV has been under the graduate training program. At the beginning of this work, conducted with the assistance of Purdue University, stress was on the training of host institution personnel. The research work undertaken reflected the basic interests of students and professors. Much work has progressed in horticulture, animal nutrition, agricultural economics and in other key areas. More recently work began in biochemistry and forestry.

Research is not characterized by the close integration of departments in which work is being conducted, mainly due to the lack of personnel and to the essential stress placed on staff training. However, the institution is aware of the need for coordination of its research programs.

2.2 Relevance and Usefulness.

Attempt is being made at the UFV to carry out high quality undergraduate and graduate level teaching programs and to conduct research relevant to significant problems of the area, and then to make information readily available within the region as a means to influence the economic and social well-being of the citizens. Research carried out by graduate students is related to significant area problems. The training of capable students, the pursuit of useful research and the participation of faculty members in extension activities has put the UFV in strategic leadership position in Brazilian agricultural higher education.

During this transitional period at UFV, the research program faces a changing internal situation in so far as financial support and staffing and selection of research priorities are concerned. A studied attempt is being made to select areas of greatest need for research. An interdepartmental project on the campus is providing assistance in generating new ideas for agricultural development in the State. Milk production, poultry, coffee, high lysine corn, selected vegetable varieties soybeans are commodities regarded as having high future potential for expanded production throughout the State.

Institutional interest also extends beyond state boundaries as evidenced by frequent contacts between members of the UFV staff and such organizations as the Brazilian Coffee Institute, the Brazilian Cocoa Institute, SUDENE (Development Agency for the Northeast) and some agricultural universities in Bahia and Goiás.

2.3 Quality

Prior to 1965 professors who wanted "fulltime" status (which provided 50% increase in pay) had to present research projects to qualify for the additional salary increments.

With the establishment of the Directorate of Research this requirement was changed. Only those with valid interests in research submitted projects. This resulted in immediate improvement in the quality of research within departmental postgraduate programs.

Beginning in late 1966 and extending to 1969, general lack of support by the State Government for University programs, with accompanying financial problems, led to loss of professors and increased teaching loads. This trend resulted in a decline in research activities at the University.

2.4 Results

The results of research have been satisfactory when the major problems of lack of funds and loss of key personnel during the financial problem period are considered. Significant work is being carried out in the development of improved plant varieties. A new program, the high lysine corn project, is progressing very effectively. Results of animal feeding experiments with Opaque-2 corn and regular rations recently conducted by the UFV have demonstrated substantial increases in average gain per animal for pigs receiving high lysine corn rations.

Relevant agricultural economics research is being carried out through graduate theses. Over 20 research projects were under way in early 1970, some of which included contract research for government agencies.

Plant Science has led to the production of two outstanding tomato varieties, a new rice variety and to two soybean varieties of high % production potential for the State and region. At the UFV the new varieties of soybeans developed is a 50-60% improvement over the best variety previously available and with adequate fertilization has yielded up to 4,000 kilos per hectare .

Numerous demonstrations have been held in Minas Gerais by Purdue and UFV technicians to demonstrate the exceptional potential of the new varieties.

The Forestry School is carrying on 17 or more research projects, mostly on Eucalyptus. The four forestry departments, i.e., management, silviculture, wood technology and renewable resources (conservation, plant diseases and insects) have active research programs.

In horticulture, a number of vegetables are being studied at the University. Several disease-resistant tomato lines resulting from the breeding program are under test. A seed laboratory USAID-equipped has been established and distributes quality seeds for no less than 20 varieties of vegetables.

In animal husbandry, the Institution is taking the lead in the state and in the entire south-central region in advancing artificial insemination techniques and improved cattle feeding and management practices.

3.0 Evaluation of Capacity and Potential.

3.1 Administration and Organization.

The UFV, as a result of its recent federalization is in process of reorganization. All details of reorganization are not yet known but it is anticipated that the University will consist of five basic institutes, a school of agriculture with a number of applied science departments, a school of forestry and a school of home economics. Provision will be made for the coordination of research and extension.

At present, the UFV has a high percentage of staff with adequate training to conduct relevant research. There are approximately 165 staff members in the area of teaching, research and extension. Practically all staff work at UFV is in full time status. From 1967 to 1970 very few staff members were added to the staff at UFV because of the adverse financial situation.

The number of staff more than doubled from 1963 to 1965 at which time more than half had been at the University for two years or less. About one half were then enrolled in graduate school. The need exists for additional staff members in certain areas and in recent months new staff have been added. The administration encourages additional staff training. Financial support has been secured to assist in obtaining such training.

The percentage of staff holding the M.S. degree has generally increased. About 9% of the present staff hold the Ph.D. degree as compared to 2% in 1965. More than 75% of the staff have either advanced degrees or are working on advanced degrees.

3.4 Operational Linkage.

The National Extension Agency, ANCAR, has a regional training center on the campus. This has given opportunity for UFV staff to participate in extension training frequently. The UFV also cooperates with the State Extension Service (ACAR). Two periodicals are published by the University to report research findings. Extension materials are also published by the University. Various UFV sectors are making increased contacts with the agricultural and forestry business and industrial sectors of the national economy. As the volume of relevant research output increases, added emphasis needs to be given to the dissemination of research results.

4.0 AID Program interest.
4.1 AID Experience.

Technical assistance to the Institution began in 1952 when the U.S. State Department, Purdue University and the Brazilian Government established a cooperative project to which Purdue sent an agricultural extension agent and a home demonstration agent to Brazil. The purpose was to activate rural extension educational programs similar to those in the United States.

In 1953, Purdue University entered into a 5-year contract with the University at Viçosa (under the ICA) for further development and expansion of the University's programs. A second five-year contract was signed by the cooperating parties in 1963. Principal objective of the technical assistance was to introduce and disseminate land-grant college concepts of integrated teaching, research and extension, adapted to the needs of Brazil. AID inputs have enabled impressive results to be made in faculty improvement and in curriculum modernization on both graduate and undergraduate levels. Research and extension work of the institution have been greatly strengthened by the Purdue presence and contract support. At the peak, this program maintained approximately 15 Purdue ~~xx~~ technicians but now has been reduced in size to 8 positions.

Under Federalization the School is recovering from financial neglect. The School is now fully alive to possibilities for research and extension and is staffed by well qualified faculty members, many trained in the U.S. The existence of this generally successful AID program has resulted in increased support to the University from U.S. foundations (i.e. Ford and Rockfeller) and certain Brazilian organizations such as the Institute for Social and Economic Research (IPEA).

4.2 Evaluation of AID Programming.

The AID program at the UFV is one of the more successful U.S. University to host-university projects in Brazil. Human and financial resources have been concentrated in a limited number of areas.

4.3 Opportunity.

The U.S. Contractor, Purdue University, in mutual cooperation with the host institution, has carried out a major portion of the "institution building" job at the UFV. Opportunity for even greater achievement through this program now exists.

Cooperation of a well-trained staff, many young and dynamic, is assured at the UFV. This staff needs help: a) in marshalling resources to attack problems; b) in obtaining the active cooperation of research institutions outside the UFV; c) in planning and executing research and d) seeking more effective means to place research results in the hands of those who wish to use it. The time is right and the opportunity is great for this new direction in the AID program at the UFV.

In addition to this emphasis on research and extension there exists the need and the opportunity to begin programs at the Ph.D. level in plant sciences, animal sciences and agricultural economics; and to begin M.S. programs in forestry, agricultural economics, home economics and possibly food technology and statistics. Such programs are, of course, complementary to a strong research program. During the development of these additional areas of graduate training there will be a great need for a fairly large participant training program with provision for training both within the country and in the US and other countries.

The assistance of the UFV already is being sought by schools of agriculture in Ceará, Bahia, Goiás and Lavras (in Minas Gerais). An expanded program oriented along the lines discussed above has a potential of far reaching influence in Brazilian agriculture in two respects: (1) in discovering and developing technology to increase the efficiency not only of agriculture in the state of Minas Gerais but in the surrounding states of Mato Grosso, Goiás, Espirito Santo, Bahia and other northern states, and (2) by increasing the outreach of the UFV in assisting in improvement of the research and teaching capacities of the Ministry of Agriculture stations and by increasing the research and teaching capacities of a number of other agricultural colleges.

II - The Escola Superior "Luiz de Queiroz", University of São Paulo, S.P.

1.0 Background Description.

The Escola "Luiz de Queiroz" (ESALQ) is a State College of Agriculture of the University of São Paulo located in Piracicaba, São Paulo. The School was established in 1901 and became a component of the University of São Paulo in 1935. The Institution is essentially an Agricultural College. The undergraduate program has been reorganized to give students more opportunity for specialization in areas of interest. In 1969, the undergraduate enrollment in Agricultural Sciences was 1027 and 38 in Home Economics. 20 under-

GRADUATES WERE FROM OUTSIDE BRAZIL. IN 1963 THE TOTAL ENROLLMENT AT ESALQ WAS 600. A TOTAL OF 172 STUDENTS ARE NOW IN TRAINING AT THE M.S. LEVEL. 14 GRADUATE STUDENTS ARE FROM OUTSIDE BRAZIL. ESALQ IS COOPERATING WITH THE SÃO PAULO SECRETARIAT OF EDUCATION TO DEVELOP A PROGRAM TO TRAIN ENGENHEIRO-AGRONOMOS AS QUALIFIED STAFF PERSONS FOR TEACHER TRAINING INSTITUTIONS AND TO ADMINISTER PROGRAMS OF AGRICULTURAL EDUCATION IN THE GINÁSIO AND COLÉGIO DIVISIONS OF THE BRAZILIAN EDUCATIONAL SYSTEM.

IN 1969 ESALQ UNDERWENT REORGANIZATION. TWO INSTITUTES ARE NOW MAINTAINED: A) GENETICS; AND B) SUGAR AND ALCOHOL TECHNOLOGY. IN ADDITION, TWO CENTERS, THE CENTER FOR NUCLEAR ENERGY IN AGRICULTURE AND THE CENTER FOR TROPICAL SOILS STUDIES HAVE BEEN ESTABLISHED. THESE INSTITUTES AND CENTERS ARE AFFILIATED WITH THE 15 DEPARTMENTS NOW IN OPERATION AT ESALQ.

SINCE 1960 ESALQ HAS HAD IN OPERATION A TYPE 1132 IBM ELECTRONIC CALCULATOR WITH 4 MEMORY BANKS AND STANDARD ACCESSORIES. THIS EQUIPMENT IS USED FOR RESEARCH AND FOR ALL INTERNAL STATISTICAL REQUIREMENTS AT THE SCHOOL.

2.0 RESEARCH PROGRAM AND PERFORMANCE.

2.1 FOCUS.

THE PURPOSE OF THE POST GRADUATE PROGRAM IS TO CONTRIBUTE TO THE DEVELOPMENT OF THE STATE BY ASSISTING IN THE TRAINING OF HIGHLY SKILLED AGRICULTURE TECHNICIANS, AND ASSISTING THE STATE SECRETARIAT OF AGRICULTURE IN THE PLANNING AND IMPLEMENTATION OF AGRICULTURAL ACTIVITIES IN THE STATE. THE PROGRAM ALSO ASSISTS PRIVATE SECTOR INSTITUTIONS. THIS IS ACCOMPLISHED BY RESEARCH CONDUCTED IN THE POST GRADUATE PROGRAM AS WELL AS THROUGH SPECIAL AGREEMENTS BETWEEN ESALQ AND OUTSIDE ENTITIES. FOR EXAMPLE, PROGRAMS ARE BEING CONDUCTED WITH THE BIOLOGICAL INSTITUTE OF SÃO PAULO, THE BRAZILIAN COFFEE INSTITUTE AND THE INTER AMERICAN INSTITUTE OF AGRICULTURAL SCIENCES. SOME OF THE RESULTS OF THE RESEARCH PARTICULARLY IN PLANT SCIENCES AND SOILS HAVE LED TO INCREASING THE AGRICULTURE PRODUCTIVITY WITHIN THE STATE. RESEARCH IS ALSO UNDERWAY IN AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY.

2.2 RELEVANCE AND USEFULNESS.

OVER THE PAST DECADES, THE ESALQ HAS BEEN WELL KNOWN FOR ITS RESEARCH ACTIVITIES. FROM 1957 TO 1963 A ROCKFELLER FOUNDATION GRANT STIMULATED RESEARCH AT ESALQ. GRANT FUNDS WENT FOR RELEVANT RESEARCH IN ANIMAL SCIENCE, CHEMISTRY AND SOILS, PHYSICS AND MATHEMATICS AND AGRICULTURAL ENGINEERING. FOR THIS 6 YEAR PERIOD A TOTAL OF 1[illegible] PAPERS WERE PUBLISHED AND 26 M.S. THESES APPROVED AT THE ESALQ, ALL TIED INTO IMPLEMENTATION OF THE ROCKFELLER GRANT PROGRAM ALONE.

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FOLLOWING 1964, THE GRADUATE PROGRAM AND IMPROVED FACULTY TRAINING CREATED INCREASED INSTITUTIONAL AWARENESS OF THE IMPORTANCE OF MAKING RESEARCH PROBLEM ORIENTED. INTEREST ALSO EXTENDS INTO BOUNDARIES BEYOND STATE OF SÃO PAULO LINES AS INDICATED BY CONTRACTS BETWEEN THE STAFF AT ESALQ AND NUMEROUS FEDERAL AND INTERNATIONAL AGENCIES AND GROUPS. IN SOME AREAS SUCH AS CORN BREEDING, VEGETABLE CROPS BREEDING, ANIMAL NUTRITION, PLANT PATHOLOGY, PLANT NUTRITION AND SOILS ARE FOCUSING UPON DEFINITE PROBLEMS OF GREAT IMPORTANCE NOT ONLY TO THE STATE OF SÃO PAULO BUT TO THE AGRICULTURAL DEVELOPMENT OF BRAZIL.

IN 1969, THE STATE EXTENSION AGENCY OPENED AN OFFICE ON THE CAMPUS OF ESALQ, THUS INCREASING OPPORTUNITY FOR STAFF MEMBERS TO COOPERATE WITH EXTENSION ACTIVITIES. THE COLLEGE ALSO SUPPORTS AN INFORMATION CENTER WHICH ASSISTS WITH PUBLICATION AND DISTRIBUTION OF RESEARCH RESULTS TO FARMERS AND OTHER STATE CLIENTELE.

SOME SIGNIFICANT WORK IS BEING UNDERTAKEN IN ANIMAL HUSBANDRY. A COOPERATIVE PROJECT HAS BEEN ESTABLISHED BETWEEN ESALQ AND THE SECRETARIAT OF AGRICULTURE DEPARTMENT OF ANIMAL PRODUCTION THROUGH THE ANIMAL RESEARCH CENTER AT NOVA ODESSA. POULTRY RESEARCH AND THE STUDY OF RABBITS HAVE BEEN ACCELERATED.

FOOD TECHNOLOGY BEGAN STUDIES AS EARLY AS 1964 THAT SHOWED PROMISE OF IMPORTANT FINDINGS BUT WAS BEEN HANDICAPPED BY LACK OF ADEQUATE LABORATORY EQUIPMENT. THE INSTITUTE OF GENETICS IS ONE OF THE MOST CAPABLE AND EXPERIENCED RESEARCH UNITS AT THE ESALQ. IN 1969 THE INSTITUTE HAD 63 RESEARCH PROJECTS UNDERWAY. SOME STUDIES INCLUDED INVESTIGATIONS ON THE CHROMOSOMES OF CORN, MUTATIONS OF RICE, CORN HYBRIDS, FRUIT IRRADIATION METHODOLOGY AND RESULTS AND ANALYSES OF HIGH LYSINE IN CORN.

2.3 QUALITY.

THE TECHNICAL AREAS CITED ABOVE ARE OF GOOD TO EXCELLENT QUALITY. OTHER AREAS APPEAR TO BE OF MEDIOCRE QUALITY AT PRESENT BUT SHOULD IMPROVE UNDER THE REORGANIZATION NOW IN EFFECT. SOME INDIVIDUALS IN THESE AREAS HAVE GOOD RESEARCH UNDERWAY. THE GRADUATE PROGRAM HAS STIMULATED THE DEVELOPMENT AND IMPROVEMENT OF RESEARCH IN THOSE AREAS OFFERING M.S. OR PH.D. PROGRAMS. WITHIN ESALQ, THE IMPROVEMENT OF THE LIBRARY, THE MODERNIZATION OF LABORATORIES, IN GENERAL, AND THE CONTINUING UPGRADING OF STAFF ARE INCREASING INSTITUTIONAL CAPABILITY FOR RESEARCH.

4. Results

Significant plant improvement research was accomplished in 1969 and is continuing. For example:

a) The fertility requirements of the coffee plant have been under investigation for a number of years and the results have been applied as they become available.

b) The "synthetic" varieties of corn developed at ESALQ with yields equal to the hybrids available for Brazil are being used by the Ministry of Agriculture, especially for use in the States of Goiás and Pará. The seed can be saved from the crop grown each year rather than the purchase of high cost hybrid seed each year - an advantage for the small farmer with little capital.

c) The Center for Nuclear Energy in Agriculture, which is associated with the Physics Department has excellent facilities, equipment and a competent staff. This staff works cooperatively with any department which desires to use isotopes in the solution of research problems. These techniques have been especially useful in fertilizer studies.

d) Research conducted in Entomology has been especially productive. Under the U.S. technician assigned to the OSU contract, the parasite "neodusmetia sangwani" introduced to control Antonina Graminis or Rhodesgrass Scale in Brazil's pasturelands, has achieved striking results. Over 60,000 parasites are now being bred at the Ministry of Agriculture IPEAL station. Colonies of parasites are being made available to farmers at very low cost. It is estimated that if all pasturelands are treated with the parasites at cost of $ 300,000 livestock production for affected areas could increase 30% representing a gain of several hundred million dollars.

ESALQ has demonstrated competence in plant science, soils and forestry research. Good work has been done in animal science. Ph.D. programs are now being planned for introduction in 1970 or 1971.

5.0 Evaluation of Capacity and Potential.

5.1 Administration and Organization.

The organizational structure for research is adequate when the present stage of reorganization at ESALQ is considered. Most of the administration of available research grants is handled by ESALQ's Committee of Grants and scholarships. Ability to carry out competent research at the Institution varies from department to department. Facilities and the incidence of trained people vary also. Leading into the present period the School has been under the guidance of a very able administrator who keeps careful control over the faculty and the research effort. He believes the institution to be "a very sophisticated agricultural college with an extremely high calibre faculty". He has eagerly supported worthy research activities at the school. It would seem that

funding for the ESALQ postgraduate program, which is only a small part of the greater University of São Paulo has been strengthened because of the present Director's high placement in the University's administrative and planning circles. He has been a member of the University of São Paulo Planning Council for a major part of his tenure as Director of ESALQ. It is not anticipated that, as the reorganized program becomes completely implemented at ESALQ, barriers to useful research will exist. On the contrary great improvement of the research apparatus is predicted.

3.2 Funding.

The individual professional worker at ESALQ may receive funds for research depending on his proven own capability to undertake research and the planning he does in order to successfully carry out the work. This assessment is the responsibility of the Committee on Research, which screens applications for funding.

The institution has no appropriation for research from the State budget. Funds are available for research from FAPESP (Foundation for Aid to Research, State of São Paulo) and from various national organizations as well as from private companies, cooperatives, etc. Funds from these sources are always available for a well designed project.

In 1969 ESALQ had more than 15 supplementary formal agreements with various state and federal groups under which funds were made available for research. Also more than 25 private groups made direct donations to the ESALQ to help it carry out research activities.

3.3 Staffing.

The Institution has a teaching body of 189 professors and 23 "catedrático" professors, all in full-time teaching and research status.

In most Departments the staff numbers are adequate. Some staff members will retire soon and hopefully can be replaced by younger individuals with better training and greater potential.

The local M.S. programs in 8 areas and Ph.D. programs in 3 areas provide an opportunity for advanced study on the campus. About forty staff members have been or are now involved in the USAID academic training program. Twenty more are being programmed for 1970-71 departures for academic study programs in the U.S.A.

ESALQ is also the site of M.S. training for many staff members from the Research Institutes and Extension Service of the State of São Paulo and from Schools and Institutes from other states of Brazil and other Latin American countries.

3.4 Operational Linkage.

ESALQ cooperates actively with the Research Institutes of the Secretary of Agriculture of the State of São Paulo. Also several Departments cooperate actively with subject matter specialists of the State Extension Service and with county agents of the Service in various municipios of the state.

Many Departments cooperate with industry in their area of interest - for example, Soils Department provides consultant services to the fertilizer industry. One of the professors from the Nutrition area provides services to the feed industry.

Many staff members are affiliated with international scientific organizations. The Center for Nuclear Energy in Agriculture (CENA) receives support from the International Atomic Energy Commission in the conduct of its research program.

4.0 AID Program Interest.

4.1 AID Experience.

The contract between AID and the Ohio State University (OSU) providing for technical assistance in agricultural education to ESALQ was signed on March 16, 1964. Principal focus of the work was on establishing a postgraduate agricultural training program leading to the M.S. degree at the ESALQ, and adapting teaching, research and extension type activities at the ESALQ to the pattern of the land grant college concept in meeting the agricultural needs of the State of São Paulo and Nation. The contract is an "institution building" effort; it is scheduled to end in 1971.

4.2 Evaluation of AID Programming.

The AID Contractor early recognized the importance of strengthening instructional and research efforts at ESALQ through the upgrading of staff members capabilities. At the beginning of contract work, the traditional system of examinations and titles did not encourage professors to commit themselves to overseas M.S. or Ph.D. training programs. However, with the incidence of university reform demands in Brazil (1967 to present), a new system of faculty advancement has created a demand for the AID participant training program at ESALQ. The leadership at ESALQ considers the participant program to be the most significant input of the AID contract.

Other parts of the contractor's efforts have not been as strong as their scholarship training program.

The Mission has recognized the weakness of the contract group at ESALQ and sought continuously to provide it with guidance and support. In July 1969, an AID group of evaluators assessed the group effort at ESALQ. Among the evaluator's findings were:

a) staff members were focusing on their teaching and research duties with little guidance or coordination.

b) the language preparation of incoming staff members was inadequate.

c) an absence of strong leadership within the group permitted the contract program to drift without adequate planning.

d) the visits of administrators from the home campus (OSU) were not fully productive because of the visitors' failure to acquire adequate local orientation.

e) American professors were not involved in the planning processes at ESALQ and were largely not aware of the content of development goals and objectives.

The Mission has also requested executive visits from the contractor's campus office for discussion of project needs and problems. In general, the Contractor's visiting administrators have indicated their awareness of weaknesses inherent to their implementation of the contract. To date, however, specific improvement has been slight.

In the most recent discussion on contract progress and directions the Director of ESALQ expressed his understanding of the Mission's concern and indicated that some good work had been done by some of the contractor's technicians, but in other cases the contribution had been mediocre. He praised the work that had been carried out in the particular training field. He stated, "ESALQ is a very sophisticated agricultural college with an extremely high calibre faculty. Therefore we need the best American technicians to help us and work on a par with our own professors".

4.3 Opportunity.

ESALQ in its present stage of development is an excellent agent for carrying out significant research of benefit to Brazil's agricultural development.

An adequate technical assistance contractor is required to assure that maximum results will be realized from the investment already made at ESALQ. The host institution has a) financial stability, b) well trained personnel (many in the U.S. at M.S. and Ph.D. levels), c) excellent facilities, d) plans developed to integrate teaching, research and extension along the mold of the land-grant college concept and e) a responsible administration. With so much in its favor for potential growth the ESALQ could be expected to respond effectively to the efforts of a competent AID contractor in carrying out activities to achieve AID goals established for the contract.

BOOINSTRA