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University of Wisconsin Contract  
PIO/T - A - 11 - AA - 3 - 30224

SECOND ANNUAL REPORT

January - December, 1965

Personnel: Contract Professors and Project Associates.

The following contract professors served in the indicated areas of specialization for the periods shown.

	<u>Man-months</u> <u>in 1965</u>
Herbert R. Bird - Chief of Party	12
Hans G. Blobel - Veterinary Bacteriology, Jan.-Sept	9
Lloyd Bostian - Agr. Information & Rural Sociology	12
Rueben Buse - Agricultural Economics	12
Paul Droison - Agronomy	12
James Duncan - Extension Education	12
Roger Johnson - Agricultural Economics, July-Dec.	6
Howard Larsen - Animal Nutrition	12
John Murdock - Soils	12
Norman Rask - Agricultural Economics, Jan.-Nov.	11
Total man-months in 1965	110

The following project associates served in the indicated areas of specialization of the periods shown:

	<u>Man-months</u> <u>in 1965</u>
Bernard Erven - Agricultural Economics, Sept.-Dec.	4
Wayne Kussow - Soils, Sept.-Dec.	4
Total man-months in 1965	8

The Graduate School of the University of Wisconsin has approved the holding of Wayne Kussow's Ph.D. final examination in Brazil with a committee of at least 5 professors at least 3 of whom shall be Wisconsin professors and at least 3 of whom shall represent the field of Soils.

Personnel: Consultants

During 1965 the following Wisconsin professors served as consultants to the contract staff for the periods indicated.

R. B. Corey	Soils	1 month
Jesse Scholl	Agronomy	1 month
H. L. Shands	Agronomy	1 month
D. C. Smith	Agronomy	1 month

### Administrative Visits

In January the project was visited by Dr. R. J. Muckenhirn, Associate Director of the Wisconsin Experiment Station, and in July by Dean Glenn Pound of the Wisconsin College of Agriculture and Dr. E. E. Heizer, Associate Director of International Agricultural Programs of the College. They talked with the Reitor, the Secretary of Agriculture of Rio Grande do Sul, the Director of ASCAR and the Directors of the Faculty of Agronomy and Veterinary and the Faculty of Economic Sciences. Dean Pound and Dr. Heizer spent one week in Porto Alegre and one week in Rio attending the Contractor's Conference. The contract staff appreciated very much this opportunity to talk directly to administrators from the campus. Subsequent to these visits, the Brazilian administrators mentioned above referred a number of times to comments made by Dea. Pound, Muckenhirn, and Heizer indicating the importance they attached to the exchange of views that occurred.

### Cruzeiro Accounts

The attached tables summarize the expenditures from cruzeiro accounts made available to the Wisconsin Contract.

### Progress toward Objectives

#### 1. Post-graduate courses (Objectives 1 to 8)

The Faculty of Agronomy completed the first year and the Faculty of Economic Sciences the third year of post graduate courses. Curriculum and faculty for the 2 semesters were as follows:

#### Agricultural Economics and Rural Sociology

##### First semester

Economic Theory I - Ervino Schnarndorf and Kenneth Cann  
Statistics - Herbert Galhau  
Research Methodology - Eli de Moraes Souza and Rueben Buse  
Farm Management - Norman Rack and Jorge G. de Oliveira  
Introduction to Sociology - Fernando Oliveira, Alzemiro Sturm and Lloyd Bostian

##### Second semester

Agricultural Policy - Edgar Siam  
Techniques of Scientific Communication - Lloyd Bostian  
Extension Methods - James Duncan  
Economics only:  
Economic Theory II - Ervino Schnarndorf  
Agricultural Marketing - Edgar Siam  
Sociology only:  
Rural Sociology - Fernando Oliveira  
Social Psychology - Lloyd Bostian and Alzemiro Sturm

Soils

First semester

Soil Classification - Raymundo Leme  
Plant Physiology - Moyses Pavao and John Murdock  
Statistics - Ruben Markus  
Soils Microbiology - Jardim Freire  
Seminar  
Research

Second semester

Soil Chemistry and Fertility - John Murdock and Moacyr Pavageau  
Soil Classification - Raymundo Leme and Milton Lopes de Santos  
Soil Physics - Cicero de Moraes and Paulo Ramos  
Geology - Mariane Sena and Paulo Nogueira  
Technical Writing - Lloyd Bostian  
Seminar  
Research

Forage Crops

First semester

Forage crops - Karl Mohrdieck and Ismar Barreto  
Feeds and Feeding - Jorge Lopez and Paulo Prestes  
Plant Physiology - Moyses Pavao and John Murdock  
Statistics - Ruben Markus  
Seminar  
Research

Second semester

Plant Breeding - Paul Drolson and Ruben Markus  
Production and Management of Pastures II - Karl Mohrdieck and  
Zomar Barreto  
Feeds and Feeding - Jorge Lopez  
Soil Chemistry and Fertility - John Murdock and Moacyr Pavageau  
Technical Writing - Lloyd Bostian  
Seminar  
Research

Animal Nutrition

First semester

Animal Nutrition - H. R. Bird  
Biochemistry - Silveira Martins  
Statistics - Ruben Markus  
Research - Howard Larsen  
Seminar

Second semester

Ruminant Nutrition - Howard Larsen  
Animal Breeding - Jose Grossman  
Pasture Management - Karl Mohrdieck  
Animal Physiology - Ivan Von Posar and Antonio Mies  
Technical Writing - Lloyd Bostian  
Research and seminar

Number of students completing the two semesters were:  
Agricultural Economics and Rural Sociology  
Soils  
Forage Crops

7  
7  
7

## Animal Nutrition

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Each of these students is now working on a thesis to complete the requirements of the post-graduate program.

The special course, "Introduction to Veterinary Research" was completed. Fourteen young veterinarians of the Ministry, the Secretaria and the School of Veterinary Medicine were regular participants. In addition there were several auditors, in some sessions up to 40.

The primary objective of the course was to present modern concepts and methods of veterinary research as they could be applied to important animal disease problems in Brazil. Lectures and laboratory sessions were offered in the areas of bacteriology, immunology, tissue culture, virology, pathology, poisonous plants, parasitology and statistics. Convincing evidence was obtained that a graduate program in Veterinary Medicine at the University of Rio Grande do Sul is desirable and feasible.

The post-graduate program is the major effort toward the integration of teaching and research in the URGS. The soils laboratory is now in full use and the nutrition laboratory in partial use for teaching and research. Plans for furniture and equipment for both laboratories were drawn by Howard Larsen. The soils laboratory contains home-made automatic pipetting and multiple sampling equipment constructed by John Murdock and Richard Corey. It also contains a Beckman Model B spectrophotometer belonging to the URGS which was reconditioned and restored to use. Research in soils and nutrition is being handicapped by the long delay in arrival of laboratory equipment, just as research in other fields is hampered by non-arrival of the pre-fabricated green houses and the IBM equipment.

Students in animal nutrition, besides using the laboratory are carrying on animal experiments at the Montenegro station of the Secretaria and the Centro Agronomico of the URGS. The excellent cooperation of the Secretary of Agriculture, Sr. Adolfo Antonio Fetter, and members of the Staff of the Secretaria has been very helpful in the development of the post-graduate courses.

### 2. Undergraduate teaching. Objectives 1-3.

James Duncan and Lloyd Bostian assisted Prof. Manoel Vaz Costa in the development of the new course in Extension in the Faculdade de Agronomia. An interesting and important aspect of the course was the field study in which each student was assigned a small dairy farm of which he made an intensive case study.

### 3. The Rio Grande do Sul Livestock Production Project. Objectives 1-2.

Work on this project was begun early in 1965 under an agreement between USAID and the Secretaria da Agricultura. John Murdock is USAID representative on the conselho that administers the project. He and Drolson, Larsen, and Rask have all assisted in planning and performing the work of the project. A total of 60 research and demonstration plots covering variations in forage species and in levels of lime and fertilizer were established at Centro Agronomico, Eage, Dom Pedrito, Livramento,

Montenegro, Osorio, Vacaria, and other sites. In October and November field days were held at Bage, Dom Pedrito, Livramento, and Vacaria and the results obtainable with improved winter pasture were demonstrated to agronomos and farmers.

The Secretaria da Agricultura has had very good cooperation from the Faculdade de Agronomia, the research stations of the Ministerio de Agricultura and ASCAR.

#### 4. Research. Objectives 1, 2 and 7.

Hans Blobel's research in cooperation with veterinarians of the URGS, Secretaria, and Ministerio, led to identification of the causative organism of ovine epididymitis and the development of a serologic, diagnostic test (for laboratory use) and methods of control. This research was important not only for its contribution to control of a disease, but also for its encouragement of cooperation among the agencies mentioned.

The first year of soil calibration tests with rice was completed at 10 locations, by Murdock, Pavageau (URGS) and personnel of the Rice Institute. At 2 locations the rice plots were overseeded with grass-legume mixtures with very good residual effects of the fertilizers. The favorable attention attracted by these tests with rice has opened doors to several other cooperative studies. Murdock, Pavageau, and Kussow with the cooperation indicated have established the following field plots.

- 17 fertility and 21 fertility and variety plots with rice in cooperation with the Rice Institute.
- 15 fertility plots with corn in cooperation with the Secretaria.
- 15 fertility plots with soybeans in cooperation with the Secretaria.
- 1 fertility trial with tomatoes

They are also working with E.R.I. on lime requirements of 20 soils of Rio Grande do Sul and on effects of soil fertility on winter and summer pasture.

Paul Droisom made final observations of the National Sorghum Trial at the Centro Agronomico during May. Considerable rust developed late in the growing season, especially on the forage sorghum types. Varieties "naturalized" in Brazil were resistant while all varieties from the U.S. were susceptible. In November and December new plots were seeded for the National Sorghum Trial, including a date of planting series. A strain trial is being conducted apart from the National Trial, and experiments are being conducted on the seeding of sorghum in sod, without prior land preparation. All of these trials are being conducted by personnel of U.R.G.S.

Howard Larsen, with Droisom's help, has initiated work at the Montenegro Experiment Station of the Secretaria which, even in the early stages, has aroused great interest on the part of the Experiment Station staff. A field of corn, machine planted and treated with atrazine has

been characterized by the director as the best corn he had ever seen at the Station. It is intended to be used to fill the bunker silo which the station farm crew is building according to Larsen's specifications. The director is so well pleased with the alfalfa plots that he is planning to plant additional areas this fall. In the past it was not supposed to be feasible to grow alfalfa at Montenegro. Samples from the alfalfa fertility plots are now being analysed for soluble carbohydrates, acid detergent fiber, and lignin by one of the graduate students in animal nutrition.

Based on research in the community of Dois Irmaos, James Duncan prepared two papers entitled "A Study of agricultural and education programs in relation to farming practices, school programs and participation in communication media in Dois Irmaos" and "The School in Dois Irmaos; its programs and problems". Studies which he initiated in collaboration with staff members of U.R.C.S. are still in progress. These include an analysis of relationships between cultural factors and educational attitudes, a study of the role of agricultural technicians at the municipio level, and an analysis of dairy farming practices on small farms.

Two of Norman Rask's publications resulting from the Santa Cruz study were required reading for a special short course on land reform given by the State Institute for Land Reform with the collaboration of the Organization of American States. The titles were "Farm size and farm income - Santa Cruz do Sul; and "Minimum size for efficient organization of farm enterprises". A later report from the same study was "Income and labor utilization by farm enterprises". As a result of the study of productivity of large livestock enterprises, which was organized by Rask, two papers are being written by members of the staff of U.R.C.S.

During the latter part of the year, Rask, Erven, and Johnson conducted a questionnaire survey on availability and uses of credit and on repayment practices. The data are being analyzed.

Lloyd Boston completed a study of Communications Activities of Agricultural Technicians and prepared a first draft of the results.

Roger Johnson worked with Prof. Jorge Oliveira on the relation of farm size to farm organization, productivity and income in the Santa Rosa area. A major conclusion is that in this colonial area the large farms (149 hectares average) had higher earnings, higher labor productivity and about equal crop value produced per hectare when compared with the smaller farms (28 hectares average). Johnson also advised Oliveira on the analysis of results of a study of production of meat animals in relation to population. Neither cattle nor sheep output kept pace with population growth in Rio Grande do Sul in the last 25 years. Hog production kept pace because of increased numbers and productivity per animal.

5. Extension and Public Service. Objectives 1, 2 and 8.

The following special short courses were given during the year:

- a) A 2-day seminar on Community Development in Santa Cruz do Sul, based on 2 publications prepared by Bask from the economic and sociological studies conducted in Santa Cruz do Sul. Buse, Duncan, and Boston and members of the staff of URGS also participated.
- b) A 2-day meeting to review the results of the rice plot work and to present a short course on fertilizer use for the agronomos of the Rice Institute. Murdock and Pavageau planned and presented the course. Buse gave an economic analysis of the results of the fertilizer trials and Boston gave advice on disseminating the information to rice growers.
- c) A one-day school, presented by Pavao and Murdock for agricultural high school students on use of plant tissue tests to obtain information on soil fertility.
- d) A 3-day course on poultry feeding and feed formulation given by Bird under the sponsorship of the Secretaria de Agricultura.
- e) A five week short course for high school teachers of agriculture given by the Secretaria de Educacao with the assistance of Duncan.
- f) A 5-day meeting at Bage, for research workers and Agronomos, sponsored by the Ministerio da Agricultura, Murdock, Drolson, and Larsen presented aspects of their work.

Other especially noteworthy extension activities were:

- a) The Agricultural Teacher Training Project in Pasture and Forage Crops, started in late 1964 under an agreement among SEAV, LTA; and the State Superintendent of Vocational Agriculture. Duncan assisted in developing short course and demonstrations at one high school to be used as a center for training teachers.
- b) Development of plans, under Duncan's leadership, for a cooperative program to train agricultural teachers for high schools. Involved are the Faculty of Agronomy, the Secretaria of Educacao, and the Pedagogical Institute.

6. Assistance by Rueben Buse to programs of ARDS and Brazilian ministries. Objective 8.

Buse provided ARDS with supporting data for project proposals involving such subjects as fertilizer production and colonization, he worked with EPEA, (Office of Applied Economic Research of the Ministry of Planning) in the development of long range economic plans for Brazil and he worked with CPPA, (Commission for Planning Agricultural Production in the Ministry of Agriculture). He wrote several sections on productivity of labor and capital in agriculture and problems of unemployment in the agricultural

labor force for the diagnostic being prepared by the Ministry of Planning. A series of meetings which he planned between the chief of the agricultural sector of EPEA and the Chief of CPPA led to increased cooperation between the two agencies. This cooperation is evident in joint planning of future agricultural policy and in joint sponsorship of research on marketing of grains and livestock.

## 7. Planning and Institutional Development

During March and April all Wisconsin professors worked with their Brazilian colleagues on the preparation of long range plans for all phases of the work represented by the contract. The goal agreed upon was accomplishment of the contract objectives and termination of the contract in 1972. A schedule was prepared showing the fields to be represented by contract professors and by participant trainees from 1966 to 1972 and an attempt was made to predict the financial obligations that will need to be assumed by U.R.B.S. year by year. These plans were used as a basis for the preparation of the Project Implementation Plan.

Wisconsin professors and Brazilian professors after intensive work on the future program of the Rural Section of the Institute of Studies and Research in Economics recommended 7-10 professors in the Rural Section instead of the present 3, with additional disciplines to be offered in graduate courses in Agricultural Economics, Rural Sociology, Extension, and Agricultural Communications.

Duncan and Bostian worked with the Faculty of Agronomy in organizing a new department of Rural Social Sciences including Economics, Sociology, Extension, and Statistics.

During the year the Faculty of Agronomy voted not to move part of the teaching program to the Centre Agronomico. The Wisconsin professors were pleased at this decision.

The administration of the post-graduate program has been discussed. Administrators of the URGS are aware of the need for an administrative organization to direct this program.

## Plans for 1969

### 1. Personnel

At this writing (March) Duncan has already been replaced by Harold Matteson. Bird has been replaced by Murdock as Chief of Party. The recommendation has been made by the Wisconsin team in Porto Alegre that as soon as Kussow completes his requirements for the Ph.D. degree, he be appointed assistant professor to assist Murdock with the research and teaching in soils and to take major responsibility as representative of USAID in the expansion of the winter pasture program.

Successors for Blobel and Rask are very much needed. Bruce Muggenburg has been designated to succeed Blobel but will not be ready to go to Brazil until June or July. Rask's successor has not yet been designated.

Bostian and Buse are scheduled to return to Wisconsin in August, Drolson in October, and Larsen in December. Bostian, Drolson and Larsen will need to be replaced as promptly as possible. According to present plans there will be no Wisconsin team member at Rio after Buse's departure.

## 2. Post graduate courses

The same curriculum will be given in 1966 as in 1965. It appears that there will be professors available to teach all the courses. Space and equipment for the natural sciences will be even more of a problem than last year because the first year's crop of students will still be working on their thesis projects.

## 3. Undergraduate teaching

It is anticipated that the Wisconsin involvement in undergraduate teaching will be less than in the past year. Members of the team will be available to assist where their specialized training is needed.

## 4. The Rio Grande do Sul Livestock Production Project

The results obtained with the demonstration plots have been so outstanding and have aroused so much interest that the Faculdade de Agronomia has been encouraged to submit a project to USAID covering a 10-year development program which is an extension of the present project. From the standpoint of the Faculdade, the proposed project is especially significant because it provides for the addition of several "extension specialists" to the University staff. These specialists would provide assistance and guidance to agronomos of the Secretaria and ASCAR and this could achieve a new degree of cooperation within the extension program as well as better integration of extension with teaching and research. Paul Drolson was a member of the committee appointed by the director of the Faculdade which developed this project proposal. If the project is approved he and Kussow will be devoting considerable time to it.

## 5. Research

The projects Blobel initiated on epididymitis and Fasciola hepatica are being carried on by the staff of URCG. A request was made for Dr. A. R. Todd and four associates to come from Wisconsin to make a survey of cattle and sheep parasites in Rio Grande do Sul, assisted by Dr. Pedro Cabral Gonçalves. Dr. Todd and his group made the proposed visit in February 1966, surveyed parasite incidence in the region of Bage, Uruguaiana and Caxias, with the help of Cabral and other Brazilian veterinarians. Todd discussed problems of parasitology with groups of veterinarians at Porto Alegre, Bage and Uruguaiana. A total of more than 100 veterinarians attended. He also worked with Cabral in planning future research at U.R.A.S., and graduate training for veterinarians of R.A.S. at Wisconsin.

All of the plot work carried on by Murdock and Drolson to compare effects of fertilizers, varieties, and cultural practices on forages and other crops will continue. Results of 1965 planting will be obtained in 1966.

The bunker silo at Montenegro is to be filled with corn silage to feed to the dairy herd. Plans are being developed for a milking parlor. A larger acreage of alfalfa will be planted this year. Plans have been drawn for a small nutrition barn to house animals on digestion trials near the nutrition laboratory of the Faculdade de Agronomia.

Present studies of farm management on large and small farms will be continued. There will be increased emphasis on study of credit. Leonard Erver will do his thesis research on repayment policies in Rio Grande do Sul and Santa Catarina.

Planning has been started for a research project on leadership in agricultural and community development. Involved in this planning are ASCAR, the frontier development agency, the URGS, and the Wisconsin group.

#### 6. Extension and Public Service

There will be continuing emphasis on extension in the URGS, hopefully with the possibility of adding some extension specialists to the Faculdade de Agronomia as a part of the enlargement of the winter pasture demonstration program.

Wisconsin Contract Expenditures  
(Cruzeiro Funds)

<u>Line Item</u>	Fr: 1/1/65
	To: 12/31/65
Salaries	Cr\$ 16,387,478
Equipment	3,574,733
Furniture	9,382,166
Supplies	5,124,759
Travel	21,034,296
Portuguese inst. & trans.	3,604,382
Publications	70,000
<b>Total</b>	<b>Cr\$ 59,177,814</b>

Expenditures on Projects  
(Cruzeiro Funds)

<u>Line Item</u>	Fr: 1/1/65
	To: 12/31/65
Salaries	Cr\$ 33,392,974
Supplies	17,017,947
Equipment	18,682,793
Travel	16,663,207
Portuguese inst. & trans.	324,000
Mapping	2,870,000
Exp. Animals	108,000
<b>Total</b>	<b>Cr\$ 89,058,921</b>

Expenditures of AID Funds  
Administered by the  
University of Wisconsin

<u>Line Item No.</u>	Actual Expenditures and/or Funds Committed
	Fr: 1/1/65
	To: 12/31/65
1. Salaries	\$162,118.52
2. Travel, Per Diem, Education, Housing, Packing and Shipping	47,120.65
3. Overhead	21,092.06
4. Full time participants	1,584.00
5. Research, Teaching Supplies	16,615.18
6. Vehicles, Equipment	43,230.72
7. Direct Cost	10,048.79
<b>Total</b>	<b>\$301,809.92</b>