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DEVELOPMENT PROJECT**

(Contract AID/NE-C-1701)

**REPORT ON
SHORT-TERM STAFF ASSIGNMENT**

**Submitted by
PROF. HORACE PAARLBERG
Farm Director
Purdue University**

March 7 - April 5, 1985

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REPORT ON
SHORT-TERM STAFF ASSIGNMENT
AT THE
UNIVERSIDADE DE EVORA (UE)
EVORA, PORTUGAL

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REPORT ON SHORT-TERM STAFF ASSIGNMENT

Submitted by

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AREA OF CONSULTANCY

To become familiar with existing resources of land, labor, finances, and professional scientists at the University of Evora. To offer suggestions for effective organization to utilize these resources to support field research and education in outdoor laboratories by programs of these several departments of the University which will be of economic benefit to agriculture in the Alentejo region of Portugal.

To provide information about the Land-Grant System of research and education and its possible adaptation to the circumstances of the University of Evora. (See Attachment C.)

SPECIFIC OBJECTIVES OF THE ASSIGNMENT

The objectives of this short-term assignment were to learn about the resources which exist at the University of Evora, of the agricultural needs of the area it serves, and of the professional interests and ability of its staff. Specific activities to be performed included:

1. Suggestions for organization of farm operations which will most effectively meet the need for development of agricultural research in the Alentejo region.

2. Define general procedures which should be followed in planning and coordinating research projects on the university farms by the Departments of the University.

3. Describe the concept and function of the Land-Grant College Systems in the development and transmission of agricultural technology to producers.

IDENTIFICATION OF PORTUGUESE COUNTERPARTS

Due to the nature of my assignment, I was privileged to meet many more of the staff of the University of Evora than most of the previous short-term consultants who were limited to a single subject of interest. I had met the Rector Ario Lobo Azevedo in May of 1983 when he visited Purdue University and inspected several of our Regional Research Farms.

During my visit to Evora, I was particularly well served by Eng. Pedro Silveira who has had many years of experience with the staff and resources of the property of the University of Evora. He developed a very appropriate schedule of visitation with the people and to properties to be considered

In the organization of farm operations. In addition to meeting with the heads of the various departments, I was able to discuss attitudes and experiences with the operating personnel at nearly all levels.

María Helena Estudante, Eng. Jose Banza, and Prof. Mariano Felo helped me to understand what expectations the general public (producers) have from the University. Dr. Jose Avo was of special help in relating some of the local consideration in the development of research programs. Additional details of my contact with specific individuals, their interests, and opinions can be found in Attachment A (Daily Itinerary).

My hosts were extremely considerate and gave generously of their time and information. I was fortunate to have been at the University of Evora between school terms so the staff had more time than usual to respond to my questions.

ACTIVITIES WITH RESPECT TO OBJECTIVES OF THE ASSIGNMENT

The following activities and interviews were important in my assessment of needs and opportunities as viewed from the perspective of the principals involved. My schedule was as follows:

Monday 11 March

Accompanied Maria Helena Estudante and Eng. Jose Banza to Almocreva to observe a farm near Beja. Enroute, they explained farm organization, operation and rotations from each soil type. Wheat on UE farms looks better than surrounding fields. Banza explained problems of excessive moisture at seeding time and denitrification when soils are water logged during winter and spring. Banza has a test area where he plowed and scarified similar soils in an attempt to compare time, fuel cost, and consequent soil conditions. He is questioning the traditional method of deep plowing (alqueive) and believes satisfactory yields can be achieved at lower cost by a reduced form of tillage.

I was shown the Barros (heavy clay soils) with a rotation of barley harvested in July followed by fallow tillage during the remainder of the year, with sunflowers planted in the succeeding spring followed by wheat that same fall. The lighter soils are on a longer, four-year rotation with wheat sown in the fall and harvested the following June; oats are sown in the following fall. Then natural pasture is allowed to grow for one year of fallow and tilled in late summer for fall seeding of wheat. Some longer five and six year rotations are being compared in which the fallow periods are longer.

There are now about 1500 head of Branco Merino ewes on the farm. It is expected that with improved practices of forage production it is possible to maintain 2500 head. Shearing was in progress.

A very large new truck scale had just been installed which will enable the farm to keep records of yields by fields. I was impressed by the extensive inventory of large modern machinery which seemed to me to be in excess of usual needs. There are said to be 37 workers now on the property which is surely in excess of needs. This is understood and there is attention being given to reduction of labor force as circumstances permit. This is a complicated problem relating to problems of land reform and social adjustment.

Sunflowers were being planted with a 4-row planter. Sunflowers are a product from the land between March/April and September which can yield a cash income instead of being fallow. The only expenses are for seed, tillage, planting and harvesting as no fertilizer is used. A good crop of oats had a volunteer crop of vetch because the previous crop of vetch had been harvested for seed. It will be pastured or baled in 1985. A square baler is used because: (1) large amounts of wheat straw are sold to Northern Portugal and square

bales are required for hauling; and, (2) most of the hay is harvested following spring rains and weather risk is not great. There is plenty of labor. I thought the quality of the hay would be better if harvested earlier and faster with a large round baler.

I made no inquiries of olive or eucalyptus culture due to the lateness of the day. A subject of personal interest to me were some very well preserved Roman ruins in the middle of the farm. They were protected and respected but not being currently investigated.

The Almocreva unit appears to be a very well managed farm. It specializes in cereal production with sheep as a supplemental use of fallow land. Research was limited to a wheat variety trial, but the differences in the soil invite small plot comparisons of tillage methods, rotations, varieties and fertility responses. At the present time, this farm is most useful as a producer of income essential to the conduct of research at other locations.

Tuesday 12 March

Dr. Jose Avo showed me the farm office at the Herdade da Mitra and introduced me to his staff. The Mitra is located approximately 12 km. southwest of Evora and contains about 280 hectares (nearly 700 acres). It was originally the farm property of the Bishop of Evora. For a number of years it existed as an agricultural school (not a university). It provides training for students of UE and has laboratories, lecture rooms and departmental offices located there.

It has a dairy herd of about 40 head of Holstein Friesian cows, 150 head of Branco Merino ewes, 40 Alentejao beef breeding cattle, 50 Landrace and Large White brood sows, and a few Lusitanian horses. There are currently 10 research projects involving plants and eight projects involving animals. There is also a study of surface drainage and one of erosion. Students participate and gain valuable experience in production practices here.

We toured the wine research facilities and the machinery for processing olive oil as well as other facilities. In general, facilities are in good order. Some reflect design for classroom use. Machinery is more than adequate for the limited scale of operation. The productivity of the land is poor and does not lend itself to certain agronomic

experiments except on forages and natural pasture.

Dr. Avo took me to an auction of Merino Precoce rams. Their performance program is supported by the State and buyers have a subsidy to reduce the cost of their purchase by a predetermined amount.

Wednesday 13 March

Pedro Silveira and I visited the farm called Daroeira of which he is President of the Administrative Commission. The property consists of about 1240 hectares. There are about 200 ha. in eucalyptus trees, 25 ha. of dry farming area. This farm is mostly west and a little south of Beja. Mr. Garcia is resident foreman. The farm produces seed rice for sale to the State. There are three lakes on the property to provide water for the rice, which is a primary cash crop. There is a public aqueduct which crosses the property but is not used because the property has its own water supply. The buildings are extensive and essentially in good repair. There are no beef cattle on the farm although facilities exist for a great many. Some facilities are, coincidentally, well adapted to feeding trials of 6 to 8 head per lot contained over a slotted floor.

Machinery is very adequate and appears in good repair. There is special rice equipment, two D4

Caterpillar tractors and at least seven wheel tractors, two large Laverda combines and extensive tillage equipment. There are 38 workers including men and women which again is far more than can be productively employed, but adjustment seems to be difficult.

There are 300 Blanco Merino ewes which graze the fallow land. The dry land rotation is sunflower, wheat, oats and fallow. Rice has been grown in the irrigated area for 30 years. The acreage of rice is determined by the amount of water in the reservoirs in the spring. This year, 50 ha. of eucalyptus will be sold. There is a disease in them, presumably transmitted by an insect. After harvest they are expected to regrow as healthy trees.

There is no electricity at Darbeifa. It will probably cost in excess of \$20,000 to make the installation. It will be done if it can be funded. There are risks in capital expenditures until details of permanent ownership are clear.

This seems to be a well-balanced farm of cereal crops, rice, olives and eucalyptus with sheep for salvage. Opportunities for research exist in rice, cereal grains and sheep production. It is well managed and can contribute substantially to income.

Thursday 14 March

Eng. Banza, Dr. Orlando Reis, Maria Helena Estudante and I visited the Herdade do Outeiro, a property of about 600 ha. It has been the property of Prof. Mariano Feio who retains ownership of adjacent property. There is an arrangement of joint operation of the properties under the direction of Eng. Banza.

The property is unusual in several respects. It has better records of its operation than any other in the area. It is primarily devoted to cereal and rice production. With the exception of the irrigated areas, the soils are lighter than the other University farms located about 30 km. southeast. Even on more sloping and lighter soils the effects of the perched water table are detrimental to the rooting of the wheat. Prof. Feio has yearly records to demonstrate that abundant fall and winter rains result in decreased wheat yields. There have been well engineered systems for pumping water into reservoirs on higher hills for use in dry seasons.

There was much discussion about how scientific investigation can be applied to real world problems. Prof. Feio has an analytical mind and is not bound by traditional philosophy. He does not, however, believe that small plots and segmented

parts of a problem can be studied. He rather believes in the application of a total system. He is obviously biased against livestock enterprises as not profitable. His interest is always addressed to increased efficiency, reduced cost, timely operation and minimum labor. These are, of course, the same considerations which have contributed to the efficiency of American agriculture. Prof. Feio is a man with original ideas. He could be the source of many ideas worthy of testing.

Friday 15 March

Pedro Silveira, Maria do Rosario Oliverira and I traveled over the Barrocal property contiguous to the Mitra. There are three basic areas: (1) granite rocks in oak covered pastures; (2) open undulating land adapted to cereal production; and (3) many irrigated small fields for rice production. The UE had management responsibility for the property a few years ago, but it is now under the operation of a workers organization. There are good prospects that arrangements can be developed for a return of the property to the UE. It would be a great asset to a research program due to the proximity to the Mitra and the diversity of soils and appropriate enterprises. It is large

enough to be economically operated and the efficiency of existing machinery and staff at the Mitra would be much improved. Most important would be the improved efficiency of research scientists at the University who do not have time to travel to the farms in the Beja area to supervise their research.

Rosario Oliveira showed me her research plots in which she is studying the relationship of forage production to root growth. She also showed me the plant science laboratory for which she has supervisory responsibility.

I met with the Technical Executive Committee for the farms and was given an explanation of the administrative structure for their operation. It is a complex organizational structure in which the president of each operating unit reports to the group and is advised of activities and developments on each of the other properties. There is an overlapping of membership on most of the individual farm committees. The attempt is to achieve coordination of effort and consensus on issues. It is doubtful that consensus is often the result. Dr. Jose Dargent de Albuquerque, who is head of the Plant Science Department, is chairman of the committee.

Saturday 16 March

Traveled to Evora with J. Mariano Fonseca to meet his family who arrived by bus from their home in Lisbon. Sr. Fonseca is the exhibitor of rare Middle Eastern artifacts in the museum at Evora. In the afternoon, we visited Prof. Adel Sidarus, a teacher of Islamic culture in the University.

Sunday 17 March

Had lunch at the home of Ophelia Bento, an animal nutritionist at the University of Evora, whom I had met during her visit to Purdue University a couple of years ago. She and her husband, who teaches meat science, have a new and delightful home. I was served a traditional Portuguese meal and enjoyed excellent hospitality .

Monday 18 March

Met with Jose Dargent de Albuquerque who is head of the Department of Fitotecnia. I left with him copies of soil test forms, soil test reports, forms for scientists to request research on Purdue farms, samples of maps, budgets, an annual report of the Purdue Agricultural Experiment Station, and a copy of an agronomy farm field day booklet.

He explained to me his administrative duties and responsibilities and introduced me to Antonio

M. Calado who took me on a tour of the vegetable production and research areas at the Mitra. The gardens provide training for students, research for scientists and products for sale to staff and local people.

Maria Ermelinda Lourenco showed me her 10 square meter plots in natural pasture where she is studying the vegetative response to several fertilizer and micro nutrient applications. They are well replicated and appear likely to yield very useful information of a practical nature.

Met with Joao Antero Araujo who is responsible for the vineyards and fruit crops. They are important for teaching and for production in the "wine laboratory" at the Mitra. Varieties, yield, pruning systems, fertilizer and weed control are important considerations.

Dr. Albuquerque and I further discussed the production of crops in the Alentejo region.

Tuesday 19 March

Met with Dr. Nuno Potes, head of Zootecnia, and several members of his staff. We discussed animal production practices which predominate in the Alentejo region and what subjects can be studied which have application at UE. Generally, the animal industry is depressed due to the high

support for cereal grains which compete for marginal lands. Breeds and breed association attitudes were described. Nutritional substitutions and alternatives were discussed; market and carcass characteristics and demands were explained. I described operations of animal research on Purdue regional farms.

Dr. Potes and his staff are interested in how an effective extension program can be developed to serve livestock producers in the Alentejo. They have developed a radio program in which they present technical information on animal production but have had limited response to their invitations to contact them. They have had a response from a large cooperative organization at Mitra which desires assistance with some of their dairy and forage utilization problems. I suggested that response to such a request would have the dual benefit of helping the farms as well as giving some field experience to the staff.

There is disappointment among the staff in getting information from the Ministry of Agriculture which would be useful in the execution of an extension program. Most information obtained from that source is transferred from person to person but is not available through administrative procedures. Requests for joint efforts by UE and

the Ministry of Agriculture has not been responded to.

In the afternoon, I toured the animal facilities with Manuel Abreu and Jose Tirapicos Nunes inspecting dairy and beef facilities and operations. The facilities are used for teaching and research purposes.

Wednesday 20 March

I visited with Prof. Antonio Pinheiro who is head of the Department of Planning and Business Management. His small but effective staff teaches mostly theoretical economics largely because there is no reliable source of data for applied questions. They do not get useful numbers from the Ministry of Agriculture, farmers records are unavailable and the University has not provided economic information from its own operations. They are pleased with the effort of their own graduate, Maria Helena Estudante, but her data is from a single source and provides no opportunity for comparison.

The functions of the Department are largely of a service nature to agronomists and animal scientists. They are proud that the students they have served are now advising younger students of the need for training in economics. They believe that segmented sections and comparisons need to be

made wherein practices for production can be compared. There is limited value in a long-term complex study of rotation which will be obsolete by the time the results are known.

In discussions with Professor Pinheiro about Portugal's entry into the Common Market, he stated that he believes that Portugal's entry is essential but there will be short-run shocks to agriculture. Victor Dordio showed me some comparisons of Portuguese and Spanish agricultural development in recent years. They believe that their department is in a situation where they can develop helpful analyses if they can get reliable data to apply to their theoretical disciplines.

Met with Jose Ribeiro who is a very capable and ambitious young man. He recently returned from six months of training at Purdue University. He admits that many of the staff of agriculture lack practical farm experience and understanding which would be a severe limitation in an extension program. He believes farmers should be more proud of their profession, as should specialists who work in agricultural teaching and research.

Pedro Silveira and I visited a dairy farm a short distance west of Evora which he manages for a German owner who now lives in Los Angeles (Altafomas). Much of the farm is planted in subterranean clover. The stands were excellent.

There are about 80 head of Fresian cows which have been developed since 1969. Pedro expects to convert the enterprise to milking sheep as entry into the Common Market will be detrimental to dairy production in Portugal.

Thursday 21 March

I gave a seminar at Mitra on "The Relationship Between the Departments and Research Farms at Purdue University" (see Attachment B). It was attended by about 30 people from 10:00 - 11:30 a.m. As part of the seminar, I showed slides of Purdue farm research activities and explained their application to research investigation.

During the afternoon, I was a guest of Maria Helena Estudante. She also hosted Professor Feio and Eng. Banza. After a tour of Helena's home and a fine lunch, we discussed prospects for the management and operation of farms in the Alentejo. Professor Feio continued to seek answers to practical production problems. He is impatient with the unwillingness or inability of professional scientists to address real world problems. Banza also has an attitude of action as contrasted to theory. They both believe that the credibility of the University is vulnerable if it cannot relate to practical problems. They are concerned that many

of the staff members have never had experience in production agriculture. I can relate to their concerns from my own background, but I have developed the view that scientific problems are too complex to be solved without indepth professional investigation.

Friday 22 March

I visited with a student (a teacher of an English class), mostly to improve his ability in language for a forthcoming visit to the U.S.A.

Pedro and I met with Rector Ario Lobo Azevedo. He asked if I had needs of any kind, which I did not. He explained long-term plans for student involvement in activities of the research farms. His agreement to have a trained superintendent at each of the farms will be important in organizational suggestions. He explained some of the complexities of ownership of the farms. A computer system is now being installed at the University and he expects each farm to eventually have a terminal for that system.

Dr. Azevedo expressed the hope that appropriate research ideas developed elsewhere can be adapted to local needs. There is a need for data, both physical and economic, which measures the unique characteristics of agriculture in southern Portugal.

Dr. Azevedo believes that vocational schools are necessary and that it is necessary to train people to be good observers and objective analysts. Banza and Avo are good examples of that training. He is also pleased that education for rural people has been increased to be equal to urban education. Nine years of education is now required.

Dr. Azevedo reports that the current Minister of Agriculture is smart, sincere and hard-working. He believes there will be an improvement in the relationships between the University and the Ministry of Agriculture.

I visited with Dr. Herbert Albrecht, the German representative for coordination of planning studies with the University of Evora. He has a great deal of experience in such activities. He believes that opportunity for service to the cooperative group of farmers at Mitra can be of mutual benefit to them and UE. This could be a kind of pilot experience in University service in adult education. It would give UE staff insight into questions requiring research and perhaps get some numbers for Pinheiro to work with.

Alfredo Ferreira showed me an erosion study at Mitra and explained its design. Sedimentation rates are measured under equal slopes but with different ground cover. He then showed me long

terraces designed to intercept surface water but also to remove ground water seepage. We also visited with Hans Bless, a German graduate student who was doing some sophisticated evaluation of rooting patterns, following very deep subsoiling with a trembling chisel. This was on wheat and oats/vetch and under two tillage systems.

Alfredo and I toured the Agricultural Engineering laboratory in the University. Although room was limited and equipment modest, I was very impressed by the creative development done there by the staff. They have made their limited resources accomplish more for the cost than any I have seen elsewhere. It seemed to me that Alfredo Ferreira was one of the most ambitious and able young scientists I have met at the University of Evora.

Saturday 23 March

Pedro Silveira and I visited the Palace of Carlos I and the Castle at Vila Vicosa. We also visited the Pousada at Estremoz and then returned to Evora via Evora Monte. We had dinner at Pedro's home with his friend Antonio Francisco Avillez and his wife. Sr. Avillez has sheep farms, but his business is that of representative for the Hueblein Company in the production of "Lancer" wine which is sold in the U.S. A pleasant and informative day.

Sunday 24 March

Pedro Silveira and Maria do Carmo took me to the Algarve. We went west to the oil refineries at Sines. Then south along the Atlantic Coast to Sagres which is the southwest tip of Portugal. We traveled east along the coast to see the rapid resort development in progress. Costs are attractive and prospects for development seem bright. There is considerable greenhouse production a short distance inland and orange groves are numerous. We returned north from Armacoa de Pera.

Monday 25 March

Met with Technical Executive Commission to exchange questions and answers that might have been overlooked. I was asked for a brief statement of my views on the administrative structure of the farms of the University of Evora and spent some time explaining how the Purdue system of administration worked. I suggested that greater effort needs to be made by research specialists to relate to the practical operational problems of the farms and that the managers of the farms need to develop a much greater understanding and appreciation of the analytical approach to

problems. I also suggested increased delegation of responsibility and that decision-making authority should be vested in a person who had the respect of people from both the production and the research point of view. I concluded that reaction was "mixed."

Tuesday 26 March

Worked on draft of end-of-tour report and prepared for seminar to be given the next day.

Wednesday 27 March

Presented seminar "How to Manage Research Farms" with two hours of discussion and thirty-five people attending, mostly University staff with a few interested local citizens. Some had difficulty in comprehending the need for "segmented studies" in the resolution of complex problems. Visited Rector Azevedo at noon and a good discussion with Dr. Jose Albuquerque in the evening.

Thursday 28 March

Most of the day we spent in Evora and at the University as a part of the program to host Queen Elizabeth II of England. Preparation of final report p.m. and evening.

Friday 29 March

My only exposure to actual marketing was by attendance at a "Fair." This experience was valuable as an insight into the difficulties of quality control, standardization, and the need for structure or system in the sale of agricultural commodities.

Saturday and Sunday 30 and 31 March

Toured historic sites in south Portugal with American friends Muska and Sara Mosston all day Saturday and Sunday a.m. Lunch on Sunday with Silveira family and Dr. Albuquerque. In p.m. they took me to Monsaraz Castle near the Guadiana River.

Monday 1 April

Prepared final report during the day. In the evening visited again the home of Maria Helena Estudante. Professor Feio and Eng. Banza asked many questions about American agriculture and how it compares to conditions in Portugal.

Tuesday 2 April

Prepared report in a.m. and Maria do Carmo assisted me with shopping in Evora.

Wednesday 3 April

Met with Rector Azevedo at 10:00 a.m. Lunched at Silveira home. Left at 1:00 p.m. to go to Lisbon with Jose Avo and Tirapicos Nunes and wives to meet with Jose Luis Pinheiro at the AID Mission Office in the U.S. Embassy. I took Avo and Tirapicos with me. I believe this was helpful in sponsoring improved communications among various agencies with common purposes. Dinner with my hosts and their wives in Lisbon. Stayed at Fenix Hotel.

Thursday 4 April

Bus tour of Lisbon. Visited with Sr. and Mrs. Fonseca who are residents of Lisbon whom I had met as we each stayed at the Mitra.

Friday 5 April

Met Pedro Silveira at Airport. Left Lisbon at 11:45 a.m. by Flight Tap 316 to Kennedy N.Y.C. arrived 3:15. Pedro flew to San Francisco to visit research facilities at Davis and Hopland research stations of the University of California and at Corvallis, Oregon. Pedro is scheduled to visit Purdue University for about three weeks in May.

I left Kennedy Airport via TWA Flight 322 at 4:50 p.m. and arrived at Indianapolis at 7:00 p.m.

IDENTIFICATION OF PROBLEMS ENCOUNTERED

Some of the problems encountered were unique to the circumstances in the Alentejo region. Others were typical of problems I have been associated with in my own experience of managing research farms. As a generalist experienced in agriculture rather than a specialist with extensive knowledge in a specific subject area, I seek to understand the interrelationships of physical and people problems. This report may reflect an inability to properly diagnose which is which.

I am inexperienced in the peculiarities of the Mediterranean climate. My hosts did an exceptional job of trying to educate me about characteristics of the seasons, the soils, the economics, and the traditions of the area. It is not possible to learn enough in one month about these circumstances to prescribe appropriate solutions.

Farmers seem to have a more common bond than might be found in other professions. Growing crops and animals give them a mutual understanding even though the conditions are very different. I found that helpful in my discussions with the people at Evora.

It seems to me that farmers in Portugal should have a greater pride in their vocation. I mention this because it influences the attitude with which they approach the subject of science in agriculture. It probably originates in an educational system which presumes that scientists are educated and farmers are not. One of the primary problems in the organization of University farm operations is the need to develop the scientists' appreciation for the producers and the producers' for the scientists. The high proportion of research specialists who do not have a basic farm orientation makes that problem more difficult. It is further aggravated by the worldwide trend in academic circles to professionally reward basic science more than applied science. It is possible, even likely, that certain basic scientists may make great contributions to the welfare of agriculture but never have an understanding of the operating conditions in which it exists. This condition bears heavily upon the nature of the work a young scientist may undertake and the reception he receives from practical people who are expected to assist him with his work.

"Tradition" is a stronger word than "Innovation" in Portugal. Input/output relationships are not as commonly recognized as in most societies. The Portuguese people have a

"gathering" rather than a "producing" philosophy. They harvest cork from the oak, turpentine from the pines, pulp from the Eucalyptus, olives from the tree, and fish from the sea. The sheep graze natural vegetation and fruit from the evergreen oak. There does not seem to be an economic assessment of "land charge" as we know it. Consequently, costs for land improvement do not come easily.

The generally held view of the people I visited with is that problems of social adjustment are moving in a positive direction. However, they still limit investment in property where ownership is insecure. The off-farm migration invites improvement in the application of machinery, but insecurity and high interest costs temper adoption of a policy of substituting capital for labor. There is no consideration of capital to be invested for drainage.

There is a problem of prestige or status or position. It is apparently more important to have a distinguished identity than material possessions or productive accomplishment. These identifications pose some problem in the development of an appropriate operating plan for the University farms. If only workers do the work and they are regarded as not capable of

understanding the research purpose, who is to be responsible for supervising and accomplishing the tasks? It is at this point that real opportunity exists for someone to fill this gap. Is there a method of reward available to compensate such people for their useful service? The "engineers" are the most important connection between people who design the work and those who actually do the work. Engineers should have credibility from both scientist and worker. A house is not built by an architect but by carpenters, plumbers, and masons who execute a well-designed plan. Someone has to supervise construction.

Farm practices are thought of in the long-run. People believe in a "rotation". Consideration of costs and returns are over the period of the rotation. The rotation is longer for the livestock man. Some rotations are so long that the "right" or "wrong" of them will not be known during the lifetime of the operator. Producers seem unwilling to undertake small plot studies of various rotations with a number of variables which would reduce the time necessary for conclusions; or which could be incorporated into a modeling system for longer term evaluations.

As a net importer of most agricultural products, and with prices established by the State, there is little concern for price fluctuations of a

free market. Marketing is not a primary concern here. This reduces the interest of most producers in understanding basic economic principles. There is a significant amount of land growing wheat which would be put to other uses if wheat prices were not supported. Maybe marginal costs of production are being considered, but they are certainly distorted.

The agricultural economists continue to seek sources of data on production costs. With enough such numbers they could develop some linear program models which would explore alternatives. They believe that producing farmers have some intuition about operational decisions but have no way to document the facts. Biased opinions are closely held and compromise seems to be regarded as a sign of weakness.

I do not know if there is a public agency or service to diagnose plant diseases. I was told if you have a disease in your wheat, you go to the commercial applicator who will not only prescribe, but also apply a treatment. It would seem likely that the producer's image of the professional scientist would be improved if there were some instances where the scientist had been of direct assistance with a special problem.

The greatest problem I foresee, in the establishment of a well coordinated field research

effort is the strict adherence to status differentials. It might be assumed that such a structure would make organization easier because the order of authority would be more clearly understood. To the contrary, however, the need for a "team effort" in the accomplishment of research requires that competency, initiative, and voluntary involvement must be present at all levels. There does not seem to prevail, at this time, an attitude of common purpose. Most people sincerely believe that their own "conventional wisdom", born of years of experience and tradition, should be applied to all questions in which they have experience. In scientific investigation the contrary is often true.

There is some problem at the UE in that many of the people on staff are long-term natives of the area. While this qualifies them to understand local problems and conditions, it at the same time limits the scope of their experience and imagination. Short-term consultants do little to improve this situation. It would seem that the acquisition of some permanent staff from other countries with similar climate and conditions, but different experience, would be a helpful addition.

RECOMMENDATION FOR SOLVING PROBLEMS

General

Agricultural universities in the United States have each developed different administrative structures for the operation of their research farms. Their individual success is testimony that no single system is best or appropriate for all situations. However, in discussing research farm operations with my counterparts from other universities, I find a great similarity of problems. I will try to keep these common problems in mind as I propose an operating system for the University of Evora.

It must be remembered that the University of Evora expects the farms to generate income as well as to accomplish research. These are competitive goals. The balance may be expected to change as the development of income, physical resources, available scientists, and public interest may change. The administrative structure of operations must remain flexible to accommodate these changes.

There must be a common attitude within the system that the basic reasons for having the farms is to do research and education. The generation of income should be regarded as a means to enable the University to do research for public benefit.

Competition with private farmers in the production of conventional crops in conventional ways is an invitation to antagonism. Local citizens must perceive that the university exists for their benefit.

Income-producing effort and research effort must be clearly separated in the minds of the administration. Research effort must have priority of site selection, timeliness of attention, machinery needs, and skilled labor. To execute research poorly is much worse than making no attempt at all. Poorly done research not only wastes resources, but often results in wrong answers.

The research to be undertaken should address practical, contemporary, local questions. There are enough of these at the present time to consume all of the resources available. Ideas for approaches to these questions can be borrowed from scientists in other places who have done similar work under their conditions. It will be largely a matter of adapting a proven method of investigation to Alentejo conditions. Exotic studies of esoteric questions should, for the present time, be left to others with greater resources and with less need for immediate application.

Effort should be made to coordinate university research with studies in progress by the Ministry

of Agriculture. It is not in the interest of either agency to have costs duplicated or conclusions contradicted. Such liaison may result in funding improvement, intellectual stimulation, a faster rate of improvement and surely better cost/benefit ratios.

It is acknowledged that the administrative policies of the total University have control of all resources. It is expected that the farm operations will conform to and operate within the system of controls and general procedures of university administration. In many universities, an inappropriate administrative structure for farm operations is dictated by the necessity to comply with inflexible general policies. At the University of Evora, I have not heard complaints from people currently conducting farm operations. This may be because this University is not large and has a great commitment to the agricultural program. I am, therefore, not suggesting any procedural changes in administration above the operational level.

There are complex policies of the State regarding employment of farm labor, as well as, limitations upon the number of employees which an agency or institution can employ. These rules are very inflexible at a given time, but also seem to

change over time. There seems to be a general attitude that progress toward flexibility for improved labor efficiency is going to be made. The plan of operation which I propose does not consider the specifics of these regulations, but assumes that they will be complied with as they exist and as they are modified. It is significant that the aptitude of workers involved in the execution of research needs to be substantially above the average.

For purposes of the report it is assumed that the University of Evora will acquire for its use the substantial land resources of Herdade do Barrocal adjacent to the existing teaching and laboratory facilities on the Herdade da Mitra. Due to its proximity and the variety of research opportunities there, and due to the limited time that research scientists have available, this property is essential to effective research operations. As research investigations are accomplished at Barrocal and the Mitra, replicated comparisons can be done on the differing soils and circumstances at the University property near Beja.

It is expected that renovation and repair to existing facilities near Beja can be accomplished which will enable the university to develop an intern program there. This form of training and experience seems more important in the program at

Evora than in the United States because of the limited farm production experience of many of the students. It is important that "hands on" training be included in the curriculum. There will be greater interrelationships between research and teaching at the University of Evora than is common to American universities. The proposed plan presumes to encourage that coordination.

Suggested Structure for Farm Organization/Operation

In view of the above considerations, and with an awareness of problems common to all Universities which do field research, and with special consideration of conditions at the University of Evora, I offer the following narrative description of a suggested structure for farm organization and operation.

I propose three levels of administrative responsibility:

(1) A Director of Farms, (2) Two Administrative Assistants (these will have different duties and responsibilities which will be described), and (3) a residential Superintendent on each farm.

Director of Farms

Description of Job Requirements: This must be a person who commands the respect of both the

scientific and the conventional production communities. It is fortunate that among the current staff there are a few people who have demonstrated their qualifications as scientists and at the same time have experience with the practical operation of income producing properties in the Alentejo region. The person in this position must understand the unique research needs of scientists, the special needs of the region and the practical operation of land for maximum generation of income.

In addition to commanding the respect of the people with whom he works, this person should have the capability of relating to other agencies of government or industry which could contribute to the support of research work at the University. He should be identified by the public as the person who represents the farm. He may wish to establish local groups of prominent producers to advise him.

The Director of Farms must be objective in the allocation of resources among the departments within the University; giving priority consideration to proposed projects which directly affect the benefits to agriculture in the Alentejo. The Director must know the physical and fiscal resources of the farms, as well as the scientific capability within the staff of each department. It is likely that teaching duties at the University will have precedence over a research assignment.

The Director of Farms should take care not to detract from the teaching mission, but should encourage research efforts as a growth opportunity for staff members.

Description of Duties: There is currently in place a Technical Executive Committee for the farms in addition to a committee of three persons for each farm. The purpose of these committees is to coordinate efforts and keep each other advised. The exchange of current information is essential and such communications should continue. However, it is very unlikely that consensus on debatable issues will often occur. The Director of Farms should use the information and opinions generated in meetings of this group, but be authorized to be decisive in promptly resolving questions as they develop. In many instances the opportunity for an appropriate decision will be foreclosed while awaiting concurrence of the group. The Director of Farms should be the executive officer of this group and be responsible for decisive action. It is hoped that this will result in less time wasted in resolution of small issues or philosophical debate.

The Director of Farms will have little time for personal professional achievement in his special field of interest. However, whatever resources he uses, the Director must be

particularly careful to avoid the indictment of using his position for preferential advantage.

It would be inappropriate to be totally absorbed in the details of administration. Some trips to the farms are necessary in order to be familiar with the current situation and personnel at each of them. However, he will be extremely dependent upon regular reports from his two Administrative Assistants who would make frequent trips to the properties.

The Director of Farms would have fiscal control of the operating accounts; subordinate only to the Rector of the University and established University policies. He would establish budgets, authorize purchases and sales, develop policies and compensation terms for labor, supervise clerical activities and resolve disputes among farm personnel or staff. He should try to resolve all problems at the operational level and seek instructions and advice of the Rector only on matters substantive enough to warrant the Rector's special attention. His only and immediate superior would be the Rector.

With the considerable authority described above, the most fundamental point is that this person must never lose sight that his position exists to serve the staff rather than expecting the staff to serve him. It is important that the image

of the farm operations be positive rather than negative. The staff should approach the Director with an attitude of seeking advice and help rather than with demands of specific service or need.

Two Administrative Assistants

These two positions, while both subordinate to the Director of Farms, would each operate in a different area both functionally and geographically.

Administrative Assistant No. 1:

Description of Job Requirements: This person would assist the Director of Farms with operations at the Mitra and Barrocal. At least at present, it would be the site of the most active research program.

The administrator must be a coordinator, be mature in judgment, have had experience in the management of farms, and have an attitude of service to research participants. He needs to be well acquainted with available resources and how to incorporate them into research accomplishment. He must be certain that he, the technicians and the workers understand the purpose and design of each research effort. He must be willing to compromise his own "conventional wisdom" in favor of executing research as specifically designed.

Description of Duties: This person will work with a greater number of people than anyone else in the system. He will be in frequent personal contact with the research staff and serve as their agent for transmitting their needs into physical accomplishment. He will establish priorities, schedule activities, and assign duties to the superintendents, technicians, and workers at the Mitra and Barrocal operations.

He will be responsible for ensuring that an appropriate balance of teaching, research, and production for profit is kept. He must be sure that equipment is maintained or repaired. While he will have the benefit of experienced personnel in existing herdsmen, shepherds, mechanics, and orchardists, he will maintain a mobility of operations in order to direct the thrust of effort to the proper place at the proper time.

This individual will probably have his office in proximity to the Director of Farms which will permit some efficiencies in office procedure. The Director may be able to execute some of the record-keeping duties. However, the opposite risk also exists. The records required will depend, to some extent, upon the amount of detail required by the Director.

Administrative Assistant No. 2

Description of Job Requirements:

Administrator No. 2 will assist the Director of Farms with all of the land in the Beja area. At the present time, a greater proportion of the effort would be directed at production of income than for research. It is expected that as research is proven at the Mitra it can be replicated on the soils near Beja. In the future, there may be an effort to provide experience and training for students on the properties near Beja. For these reasons this person must have a practical, action-oriented philosophy. Previous experience in effective operation of income producing farms is essential.

It is likely that this person will be a role model for the young superintendents of the separate farms and later to the students of the intern program. A character which inspires confidence and a natural talent of leadership is required.

While the traits of self-reliance are essential to do an effective job, this person must continually remember that he is a part of a team and subordinate to the Director of Farms and University policies. He must have a sympathetic attitude toward the purposes of research and be willing to subordinate himself to research efforts.

Description of Duties: The administrator

would be a manager of a more conventional type. While he must have the ability to make decisions, he must delegate as much responsibility as his subordinates can assume.

His duties would be to implement management plans approved by the Director through the efforts of young resident superintendents. He would support the superintendents as they encountered situations in which they had not had previous experience. He would also support them in their relationships with the older farm employees.

He would prepare, or help superintendents to prepare, operating budgets, requisitions for supplies, reports of crop and weather conditions, records of sales, animal performance and feed records, yield by fields, records of cultural practices, and whatever additional reports the Director of Farms deems necessary.

He would have authority to move equipment and supplies between farms in order to make optimum use of resources. He would assist the Superintendent in acquiring any data that would be useful to the Department of Economics for the development of input/output relationships.

Superintendents

It is suggested that there be two kinds of Superintendents. (1) The enterprise superintendents as they now exist at the Mitra and, (2) The individual farm superintendents for the properties near Beja.

Superintendents at the Mitra and Barrocal:

Description of Job Requirements: The people necessary for this phase of the operation are already in place. They seem to be well trained and capable of performing their jobs. However, as the demands in the execution of research projects increase, they will need to develop different attitudes and capabilities. They will have to dedicate themselves to the discipline of executing research specifically as designed and learn to instill the same dedication in their subordinates. The success of the entire research program is dependent upon their commitment to thoroughness in research procedure. They must be made aware of that important responsibility. They will have to make a greater concession of "conventional wisdom" than most other people in the system.

Description of Duties: It is within the jurisdiction of the Director of Farms and his Assistant at the Mitra to specifically describe the

duties of the Superintendent of each individual enterprise and the interrelationships among them. However, it is expected that (1) the scope of the work will increase substantially when Barrocal is added to the operations, and (2) there will be a need for considerably more data collection and recordkeeping.

It will be the duty of each Superintendent to personally keep records of his own area or to be certain that his workers properly maintain such records. The Superintendents should participate in more of the physical accomplishment of the work. This demonstrates the need for thorough execution to the workers. Participation generates increased interest. The research specialists must be satisfied that the Superintendent is as interested in the work as he is. There is opportunity here for the Superintendent to develop professional credentials of his own. There is no real substitution for personal involvement.

Superintendents of Farms at Beja

Description of Job Requirements: The residential Superintendents of farms away from campus are expected to be recent graduates of the University. They should be individually chosen because they have a combination of aptitudes for

academic understanding and practical farm operation. Their only handicap will be their age and limited experience. It is in this regard that the Administrative Assistant for farms in the Beja region will find need for his mature judgment, practical management experience, and leadership ability. The Administrative Assistant should have input into the selection of Superintendents.

The young superintendents will more readily adapt to the necessity of recordkeeping. They will be eager to learn and open-minded in the investigation of new ideas. One of the problems they will find most difficult will be their responsibility for an existent group of workers who have personal knowledge of that particular farm, years of experience, and little sympathy for university training. This will be a hard job and not for a person who lacks the commitment to hard work and the assumption of responsibility. The primary purpose of substituting youth for experience here is to break the chain of tradition which exists among people who do not have academic interests. The clever superintendent will be able to draw from the best part of his training and the experience of his employees.

Description of Duties: It is not expected that these young men will be able to do all of the operational duties as well as the experienced employees can do them. They are however, expected to demonstrate an attitude of willing participation in physical work. They must understand the problems of each task and capably synchronize them into an efficient operation. They must make judgments of the relative importance of competitive daily activities. The Superintendents must be the primary communication and information clearing center. They must know when to seek the help of the Administrative Assistant to the Director of Farms, and be certain of good support.

The Superintendents will be responsible for records. They must educate their employees to understand the necessity for the records. Planning activities a week or a month ahead will be more their duty than the duty of any other person. They must be good observers and assign duties employees as they demonstrate different abilities and interests.

The Superintendents and the Administrative Assistant (their supervisor) must develop mutual trust and confidence in each other. There is risk in the situation that the farm employees might try to

circumvent the Superintendents and go directly to their superiors with questions or suggestions that should be the jurisdiction of the resident superintendent. Everyone must be attentive to this risk. The Superintendents are responsible to the Director of Farms, but through the area Administrative Assistant. The superintendents must be just as sensitive to the error of bypassing their immediate supervisors as they are their subordinates trying to bypass them.

This is an opportunity for growth for young men interested in technology and production agriculture. The duties of the job can be expected to evolve as such superintendent develops personally and as the scope of the work and proportion of effort devoted to research increases. Superintendents will vary in their rate of progress and ultimate success. They may find other opportunities as they benefit from their experience. The position should not be regarded as a terminal or life-long occupations at the same locations.

ATTACHMENT A

Itinerary

Horace Paarlberg

March 7 - April 5, 1985

Horace Paarlberg

March 7 to April 5, 1985

March 7 - Left Indianapolis, at 12:04 p.m. for Cincinnati to change to TW 426 at 12:01 p.m. for Kennedy (My Pan Am Flt was canceled due to a strike). Arrived at Kennedy at 3:45 p.m., left New York at 7:20 p.m. on Flt TAP 311; arrived Lisbon at 7:00 a.m. on March 8, 1985.

March 8 - Met at Airport by Eng. Pedro Silveira, tour of Lisbon and then on to Evora and housed at the Hotel Planicia.

March 9 - Visited historic sites at Evora in a.m., lunch at Pedro Silveira's home with his family. To Herdade da Mitra to see property and facilities, return to Hotel Planicia.

March 10 - Historic sites at Evora, studied reports of Portugal and Alentejo Region.

March 11 - Moved to the Mitra. Maria Helena Estudante, Eng. Banza and I visited property of the University near Beja. A day of introduction into characteristics of soils, climates, agricultural practices and production methods in the Alentejo area.

March 12 - Dr. Jose Avo gave me a tour of facilities and introduced me to the staff at the Mitra; showed me existent research activities and explained operations. In p.m. attended a sale of Merino Precoce Rams in Evora.

March 13 - Accompanied Pedro Silveira to the Daroeira property of which he is President of the Administrative Commission. Additional information regarding rice production in the south Alentejo, as well as cereal grains, olives, cork, eucalyptus and sheep production.

March 14 - Eng. Banza, Maria Helena Estudante, Dr. Orlando Reis went to the Outeiro property where we met Dr. Feio who had owned the property and retains ownership of adjacent property.

March 15 - Inspected Barrocal property contiguous to the Mitra.

March 16 - To Evora with J. Mariano Fonseca to meet his family who arrived from Lisbon. In p.m. had lunch with family of Prof. Adel Sidarus, a teacher of Islamic culture at the University.

March 17 - Lunch at the home of Ophelia Bento, an Animal Nutritionist at the University whom I had met during her visit to Purdue a couple of years ago.

March 18 - Met Dr. Jose Albuquerque, Head of Fitotecnia. Toured crop research projects on the Mitra and met many staff members involved in research.

March 19 - Met Dr. Nuno Potes, Head of Zootecnia, and several members of his staff. In p.m. inspected animal facilities at the Mitra and was shown research in progress by Manuel d' Abreu and Jose Tirapicos Nunes.

March 20 - Visited Prof. Antonio Pinheiro, who is Head of Planning and Business Management, and Victor Dordio and Jose Ribeiro of his staff. In p.m. Pedro Silveria took me to a dairy farm (Altafomas) near Evora. Saw subterranean clover used as basis of forage production.

March 21 - Gave a two-hour seminar at the Mitra on the "Relationship between the Departments and the Research Farms at Purdue University". (See Attachment B) In p.m. I was the guest of Maria Helena Estudante, Prof. Feio, and Eng. Banza.

March 22 - In p.m. Alfredo Ferreira showed me studies of erosion and water management on the Mitra and Barrocal. Also saw studies of Hans Bless, a German graduate student, on rooting patterns of two crops under various methods of deep tillage. Toured the Ag Eng. Lab with Alfredo.

March 23 - Pedro Silveira took me to the Palace of King Carols I and the Castle at Vila Vicosa and visited Estromoz. Evening meal with Pedro's friend Antonio Francisco Avillez who represents the Hueblein Company in wine exports from Portugal.

March 24 - Pedro and Maria do Carmo took me to the Algarve region via Sines, the Atlantic Coast, Sagres, and east to Aramaco de Pera.

March 25 - Met with Technical Executive Commission to exchange information and answer my questions.

March 26 - Did preparation of my report and prepared for seminar to be given Wednesday.

March 27 - Presented a seminar on "How to Manage Research Farms" (See Attachment D). Visited Rector Azevedo at noon and Dr. Jose Albuquerque until late in the evening.

March 28 - Visited horse show and University of Evora as a part of the program to host Queen Elizabeth II of England. Prepared report in evening.

March 29 - Visited a "fair" (market) of mules, horses, sheep, goats, rabbits and chickens. Worked on report in p.m.

March 30 - With friends Muska Mosston and wife Sara, who are from Trenton, New Jersey and conducting seminars on new methods of teaching. Visited Evora Monte, Estvemoz, and Vila Vicosa.

March 31 - Visited Evora historic sites with Muska Mosston in a.m. Eng. Silveira and Dr. Albuquerque took me to the town and castle at Monsaraz near the Guadiana River.

April 1 - Prepared report in a.m.; during p.m. and evening spent at home of Maria Helena Estudante visiting with Prof. Feio and Eng. Banza about American and Portuguese agriculture.

April 2 - Prepared report in a.m. Spent p.m. in Evora shopping with Maria do Carmo. Report in evening.

April 3 - Met with Rector Azevedo at 10:00 a.m. Lunched at Silveira home. At 1:00 p.m. Jose Avo, Jose Tirapicos Nunes took me to Lisbon for 4:00 p.m. appointment with Jose Luis Pinheiro at the AID Mission Office in the U.S. Embassy. Took Avo and Tirapicos with me. Dinner in Lisbon. Stayed at Fenix Hotel.

April 4 - Bus tour of Lisbon in a.m.; in p.m. visited Sr. Fonseca whom I had met at the Mitra.

April 5 - Left hotel 8:00 a.m. to airport. Met
Pedro Silveira at airport and together took Flt TAP
316 to Kennedy at 11:45 a.m., arrived Kennedy 3:15
p.m. Transferred to TWA Flt 311 departed 4:50 p.m.
- arrived in Indianapolis at 7:00 p.m.

ATTACHMENT B

Seminar Presented at University of Evora

March 21, 1985

General Procedures Which Should Be Followed In
Planning and Coordinating Research Project
In Farm Operations (Outside Laboratories)

The management of farms which are devoted to the accomplishment of research must, most of all, cultivate an administrative attitude that they exist as an agency for service. Satisfaction must be derived from the success of the specialists it serves. To have administrative goals which are not compatible with that view is an invitation to dissatisfaction; not only to the research specialist, but to the farm management staff itself.

Decisions which must be made before commitment are:

1. Do appropriate resources and facilities exist?
2. If other resources are needed, can they be obtained? By whom and at whose cost?
3. Are the separate responsibilities and routine duties of the specialist and the farm operation well defined and understood?
4. Are there serious conflicts of space, time, equipment, and materials with previous commitments?

5. What is the time frame of commitment? It is likely to become a long-term project in which the requirements may greatly exceed initial commitments?
6. Is the research specialist dedicated to doing all of the things essential to the success of the project? Will he be available when needed?
7. Is the project professionally designed? Who can advise on this?
8. Does the specialist have the endorsement of his Department Head? Especially if the department is expected to make substantial inputs.
9. Are there detailed and documented descriptions of agreement for separate responsibilities?

It is not advisable to have a program that is too structured if the essential considerations above can be met. The old rule that "circumstances alter cases" is more appropriate. It is a common benefit to conduct research work in an atmosphere of mutual satisfaction and joint effort. To establish detailed but arbitrary rules for admission and service is to invite rule-making by everyone involved. It is not possible to anticipate all conditions and prescribe appropriate actions. Even the natural rule of "first come,

first served" may have to be challenged occasionally.

Successful coordination of research projects, as in any effort which involves a team approach, depends upon good communications. When a specialist knows that he will be unable to inspect his project frequently, some predetermined schedule of observation and reporting must be agreed upon. It is to everyone's interest if the specialist is informed immediately. If unusual developments occur or if mistakes or errors occur in the execution of routine responsibility, it is essential that the specialist be promptly informed. Remedy or alternative adjustment to the situation is his decision.

Specialists must understand that operational decisions are the prerogative of the farm superintendent. Safety, soil conditions, assignment of labor, use of equipment, allocation of supplies, overtime or abuse of men or machines are all under the manager's control. The manager may have to make some hard decisions as to which specialist has prior claim to resources at a time of common need. Diplomacy and communication are necessary to maintain the environment of common purpose.

The farm manager should offer suggestions for changes which would improve the timeliness efficiency, or accuracy of an operation. However if the study has constraints which preclude the adoption of such a suggestion the specialist has final authority.

In general, it is true that if the farm staff understands the research needs and the research specialist appreciates the assistance he is given there are relatively few problems.

ATTACHMENT C

The Adaptation of the Land Grant Concepts of the
Extension System of Adult Education to Current
Conditions at the University of Evora.

The Adaptation of the Land Grant Concepts of the
Extension System of Adult Education to Current
Conditions at the University of Evora

One Assignment of the consultancy was to provide information regarding the interrelationships of agricultural research to its use in extended public education. This is a far broader assignment than I was qualified to address. Competent scholars have written extensively on the subject.

It seems to me that the unusual success of the extension system in the United States was, in large degree, a fortunate coincidence of time, place and dedicated effort. I have been attentive to current conditions in Portugal. They seem very different from the situation which existed in the United States at the time the Extension Service began. It is, therefore, appropriate to consider how some modification of an adult education program can be most effective for the present and prospective conditions in Portugal.

The government already has in place, and funded by the Ministry of Agriculture, a system of agricultural research which can generate applicable production information. There does not seem to be much public expectation for service in production

education from this agency; no "mission attitude" exists within the agency itself. Until some public demand develops, it is unlikely that this will change much.

The University of Evora , with its limited funds and limited staff, cannot itself undertake to develop a complete system of extension education of the kind which exists in the United States. However, there are two things the University could do which would be of substantial value to production agriculture in the region.

1. It could develop courses in Extension Education which would qualify specialists to communicate with producers. There seems to be a substantial distance between people who are scientifically trained and users of scientific information. Special training in the use of radio, printed media, TV, and personal contact is necessary in order to establish credibility between people who teach adults and that audience.

2. As research is accomplished on the University farms, the results should be made available to the local public in terms of field days, farm visits, data review and dialog. Some demonstrations, which are only demonstrations and are not completely designed and statistically valid experiments, could be undertaken for the single purpose of developing an interested constituency. An interested public

is necessary not only for the development of financial support, but as a source of stimulation for investigation of new ideas. Scientists who do not experience appreciation for their efforts will soon lose initiative. Patience is essential in the development of such a program, but there are reasons for some optimism. The level of education of elementary students in rural areas is being substantially increased, which is essential to the communications described above. Training of agricultural scientists cannot wait until the public educational level has been raised. It must be developed coincidentally with the improved public education.

The Ministry of Agriculture can be expected to increase its service of adult education as the level of elementary education is improved. Specialists trained by the University in the teaching of agricultural technology to adults will surely find their way to the resources of that agency and will influence policy there. There must be people trained and qualified to execute such a program.

Invitations for service to the public from the University have not had much response. This is understandable because the public has not had experience with service that has been offered which

did not imply some control or authority. It is basic to the success of an extension program that both teachers and users understand that the purpose of the program is to offer help and not subordination.

In the case of a cooperative near Mira who recently responded, it seems appropriate for the University to try and assist this group as a pilot effort. There will be problems such as a staff already busy, limited funds and minimal experience with practical production problems. However, this activity would probably be of help to the cooperative, which has indicated interest. Likewise, it would surely help the University to develop a feeling for the problems encountered.

It is unrealistic to expect to develop a program of adult education that follows closely the current organization of Agricultural Extension in the United States. Differences in educational level, media exposure, political environment, and scientific resources dictate that the program be "tailor made" for Portugal. However, the time to begin is at hand.

ATTACHMENT D

Remarks for Seminar at Mitra
Univeridade de Evora
March 27, 1985

Remarks for the Seminar at Mitra
Universidade de Evora
10:00 AM Wednesday, March 27, 1985

Subject: "How to Manage Research Farms;
Considering the Purposes for Which They
Exist."

The management of research farms must consider the same basic components as management of any farm property. These are: (1) land, (2) labor, and (3) capital.

The purposes for which research farms exist, however, have important influence upon how these resources are mixed. I will try to describe some of the considerations which require exceptional attention.

Land, Labor, and Capital

Land

Always dictates some limitations.

Know the history of the plot area.

Have soil tested; be sure soils are equal in fertility.

Layout plot area well in advance.

Land (con't)

Seek uniformity--a primary consideration.

Must have the same soils, slope, drainage, and history.

Do not make plots larger than necessary.

Be sure that plots are designed for the machinery to be used.

Leave a border for machine travel and service.

Avoid border effect--harvest center of plot.

Do all operations the same, except for the variable.

Do all operations at the same time so conditions are uniform.

Do not follow one trial immediately with another, but use a common crop to equalize the area for future research.

Replicate as many times as statistically required. Research livestock projects must also be treated uniformly; open space, feeding facilities.

Small groups replicated are better than fewer larger groups.

Keep feed quality the same for each group.

Grazing studies are hard to control.

Get periodic measurements (weights) so when the differences occur it will be known.

Labor

Remember it is a team effort.

Everyone is dependent upon someone else.

Assign people to things they do best.

Delegate - This means to give and to assume responsibility.

Communicate - At all levels. Be sure participants understand what is important; a reckless tractor or machine operator can spoil all efforts.

All employees must remember that research is not based upon "conventional wisdom". This is a difficult concept for people who have not been trained in research. Be sure that all participants understand what is important.

Records, Records, Records - Only people keep records - Only people make mistakes - If mistakes are made - advise the concerned person immediately.

Be sure that research is executed as designed - If something is wrong, discuss with the specialist before changing anything.

Be attentive - Something will probably be learned. Listen to subordinates - welcome their interest, influence their attitude.

Capital

Research is expensive

Efficiency is as important in research as in regular operations.

All farms are not equal in their ability to produce income nor are they equally well-adapted to research opportunity and need.

Research specialists are often not good managers.

Capital (con't)

Budget an operation (research) before you begin.

Know who is going to provide support for:

- (1) Seed, fertilizer, chemicals
- (2) Equipment, specialized equipment
- (3) Specialized labor, a technician

Machinery is moved between farms to increase efficiency. This takes planning and scheduling, but reduces cost.

There are short-term projects and long-term projects.

Remember that a long-term project requires long-term capital commitment.

Make it clear to research people that their work must be done as economically as possible - or it probably cannot be done.

Organizational Structure

There are two kinds of decisions: (1) policy and (2) operational.

Advisory Committees for each farm make policy suggestions.

The Director of the Agricultural Experiment Station makes policy decisions.

The Farm Director communicates policy decisions to the Superintendent of the farm and helps the superintendent make major operational and management decisions.

The Farm Director is the representative for each of the farms to the University administration in business operation (i.e. purchasing, sales, wage rates).

Organizational Structure (con't)

The Superintendent makes regular operational, daily and seasonal operational decisions.

The Superintendent is responsible for the execution of research projects as designed and directed by the research specialist.

The Superintendent is in charge of all labor, equipment and repairs. He manages financial matters of his farm within prescribed limits.

The Superintendent represents the University to the local community and hosts visitors.

My Job

Everyone is subordinate to someone.

The Farm Director works for the Director of the Experiment Station (AES).

My job is to get as much research done for the least cost possible.

I try not to bother him with problems which I should solve myself.

I seek his advice when policy questions develop.

Develop budgets, wage rates, purchasing of major items (i.e. machinery, fertilizer, seed, feed, chemicals).

Keep records of expense and income according to the University system. We are part of the University and must do business their way.

Be sure that the research people are served well.

Consult with University Administration on major capital (land) decisions.

My Job (con't)

Represent the Ag Experiment Station in public matters (with the help of our superintendents)

Make major management and policy decisions, with approval of the Director of the Ag Experiment Station.

Superintendents

Live on the farm.

Make regular operational decisions (daily and seasonal).

Are in Charge of all labor, equipment, repairs.

Make financial decisions within limits (miscellaneous supplies, repairs).

Are in charge of both production and research decisions (operational).

Provide my office with accounting, inventory, accident reports, etc.

Try to communicate, plan, understand, and execute designed research plans.

Serve the needs of research specialists.

A research specialist must participate in all important planting, data measurements, and harvesting.

We provide all basic equipment - tractors, plows, etc.

Our superintendents keep records on: field activities - both for income and research activities.

Weather records

Help to host visitors

Conduct Field Days

My personal view is that research farms should develop slowly. If land is available, we should not deny use of it for research. Labor can be acquired as the program demands. Again, capital is always limited.

If property can generate income in the early stages, it can develop its research activities at a rate that fits available money.

Most important; this is a team effort. The product is research. If the specialist succeeds, we succeed.

Most specialists appreciate our help. If they acquire special success, they know that they could not have done it without us. We know that too and we are glad to be part of the team.