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FOURTH ANNUAL REPORT

**Review of Activities
July 1, 1970 through June 30, 1971**

**Prepared for the
AGENCY FOR INTERNATIONAL DEVELOPMENT
AID/csd-1588
Technical Assistance in
Food Grain Drying, Storage, Handling and Transportation
at the
FOOD AND FEED GRAIN INSTITUTE
KANSAS STATE UNIVERSITY
MANHATTAN, KANSAS 66502**

**Dr. William J. Hoover, Director
Dr. Leonard W. Schruben, Associate Director
Dr. Richard Phillips, Agricultural Economist
Dr. Harry B. Pfost, Agricultural Engineer
John R. Pedersen, Entomologist**

TABLE OF CONTENTS

Scope of Work.	1
Review of Activities	
Foreign Travel Assistance	
Colombia	2
West Africa.	3
Bolivia.	8
Guatemala.	9
Foreign Non-Travel Activities	
Potential Areas for Technical Assistance	
West Pakistan	10
Indonesia	10
Honduras.	11
Nigeria	11
Latin American Countries.	11
Vietnam	12
Follow-up on Previous Overseas Assignments	
Guatemala	13
Bolivia	13
Correspondence with Non-AID Foreign Individuals and Organizations	
FAO	13
Bolivia	14
Domestic Activities	
Travel and Conferences	14
Activities at Kansas State University	
Grain Storage and Marketing Short Course - 1970	15
Grain Storage and Marketing Short Course - 1971	20
AID/USDA - Land-Grant Colleges and University	
Cooperative Short Courses	20
Visitors under USAID Sponsorship.	23
Non-AID Sponsored Visitors.	25
Continuing Programs	26
Food Grain Drying, Storage, Handling, and Transportation Reports.	27

FOURTH ANNUAL REPORT**TECHNICAL ASSISTANCE IN FOOD GRAIN DRYING,
STORAGE, HANDLING AND TRANSPORTATION**

AID/csd-1588

**FOOD AND FEED GRAIN INSTITUTE
KANSAS STATE UNIVERSITY, MANHATTAN, KANSAS**

On July 1, 1967, an agreement was entered into between Kansas State University and the Agency for International Development under which Kansas State University agreed to provide technical assistance to the Agency for International Development and its missions in developing countries in the solution of problems involving the drying, storage, handling, and transportation of grain or grain products.

The Food and Feed Grain Institute was charged with carrying out the University's responsibilities under the contract as requested and authorized by AID.

SCOPE OF WORK

It was agreed that technical assistance would include:

1. Assistance and consultation in review and evaluation of technical assistance projects related to post-harvest grain handling practices.
2. Advise and assist in the planning, organization, or reorganization and implementation of grain marketing* programs and facilities.
3. Identification and analysis of problems in grain drying, storage, handling, and transportation and recommendations of means for solution.
4. Advise on planning, design, and construction of physical facilities required for grain marketing* programs.
5. Planning and execution of grain drying, storage, handling, and transportation training seminars, courses, and/or conferences.
6. Functioning as an information center for questions and inquiries relating to grain marketing* programs and technology.
7. Preparation, editing, and reproduction of written and illustrated instructional, informational, and reference publications on various aspects of grain marketing* for use by AID.
8. Development of methodology and design criteria through research and review to minimize problems attendant to grain marketing* programs.
9. Such other technical assistance as may be mutually agreed on by AID and Kansas State University.

*Grain marketing includes all operations of drying, storing, handling, and transporting of grains from time of harvest until consumed.

REVIEW OF ACTIVITIES
July 1, 1970 - June 30, 1971

The following review outlines activities during the fourth year of our contract, AID/csd-1588, to provide technical assistance in food grain drying, storage, handling, and transportation to developing countries. This report is divided into three major sections as follows:

- I. Foreign Travel Assistance
- II. Foreign Non-Travel Assistance
- III. Domestic Activities

Each activity is discussed briefly, indicating the problem, personnel involved, summary of the activity and reports submitted.

I. Foreign Travel Assistance

A. COLOMBIA - November 1970

The Colombian request for assistance came from USAID/Bogota in January 1970. Assistance was requested in making a preliminary survey of grain marketing facilities and practices in order to develop a program of technical assistance in grain marketing in Colombia.

Kansas State University originally agreed to provide the services of Dr. Harry B. Pfost, agricultural engineer, and Dr. Richard Phillips, agricultural economist, for a period of two weeks in April 1970. Due to unavoidable delays because of elections in the host country, the team of Pfost and Phillips did not travel to Colombia until November 2 through 21, 1970.

The team spent three weeks in Colombia to study the design and operation of the modern grain silos, to make suggestions for improvement, and to conduct a seminar for those involved in the operation and management of the silos. At the end of their tour, the team was requested to prepare a written report of observations and recommendations for improving grain storage and marketing in Colombia.

In general, the grain storage physical facilities are adequate and, upon completion in 1973 of the building program under the BID loan, will provide a network of modern grain elevators for the country as a whole. Additional receiving capacity is recommended at some of the silos, and more buying stations are recommended in areas of predominately small traditional farms. Additional research is needed to determine the requirements for safe storage under the humid tropical conditions at the lower elevations.

Inadequate utilization of the facilities is a major problem. The solution is not a simple one and probably will require (1) elimination of bottlenecks and reduction of waiting times for unloading at harvest time, (2) development of accurate and timely crop and market reports,

(3) development of a public grain warehousing system, (4) checking and certification of weighing and grading equipment, (5) shift to handling on a comingle basis of grain accepted for custom conditioning, handling, and storage, (6) development of a system for integrating grain merchandising and custom storage at the silos, and (7) application of systems analysis for optimizing grain inventories and distribution patterns through the entire silo network.

The selection, development, and training of management personnel for the rapidly expanding number of modern grain silos is a major task. Accomplishment of the task will require (1) taking full advantage of the technical services and training authorized by the BID loan, (2) short-run recruiting from other industries, (3) an expanded pre-service training program, (4) carefully planned on-the-job training, perhaps under the leadership of two or three qualified foreign silo managers, and (5) a comprehensive program of in-service training, including regular managers' conferences, intensive short courses, and other activities.

Kansas State University's contact with Colombia began when a group of nine Colombian grain storage and marketing executives from government and private organizations visited Kansas State University in November of 1969. Mr. Robin Henning, USDA/PASA/Colombia, accompanied this group and through his efforts and those of Eldon Brooks, USDA/PASA/Colombia, KSU has continued to play an active role in the development of the grain economy in Colombia. In this effort, five Colombians attended the first annual Grain Storage and Marketing Short Course held at Kansas State University in July 1970. Arrangements are also under way to have four Colombian engineers receive extended training in elevator operation and maintenance at Kansas State University.

In view of our past association with Colombia, we expect further involvement.

The results of the study made by Drs. Pfoest and Phillips were reported in Food Grain Drying, Storage, Handling and Transportation Report No. 20, December 1970, entitled "Observations and Recommendations for Improving Grain Storage and Marketing in Colombia".

Report distribution was as follows:

USAID/Bogota - 20 copies
 USAID/Washington
 Mr. Donald Fiester, Bureau for Latin America - 20 copies
 Mr. Carrol Deyoe, Agriculture and Fisheries - 10 copies
 AID Central Retrieval System - 10 copies

2. WEST AFRICA (Mali, Upper Volta, Senegal) - December 1970

The Food and Feed Grain Institute at Kansas State University was requested by USAID/Washington to conduct a study and propose a plan for regional grain supply and price stabilization in West Africa with the end goal in mind of attaining regional self sufficiency in grain food

supplies. Detailed studies were requested for Mali, Upper Volta, and Senegal. Niger is included in the West African Region; however, a Canadian team was making a similar study in that country. To prevent duplication of effort, the KSU team did not study Niger.

To provide the assistance requested, a team under the leadership of Mr. Alden A. Ackels was used. In addition to Mr. Ackels, who is a grain management specialist, the team included Dr. Donald E. Anderson, an economist from North Dakota State Univ., and Dr. George Brinkman and Dr. L. Orlo Sorenson, both agricultural economists from Kansas State University. The team was in West Africa between October 18 and December 19, 1970.

The goal of the team's efforts was to provide a plan for cereal grain food stabilization for the specific countries of Senegal, Upper Volta, and Mali that could and should be integrated into a consortium of Central and West African countries organized for that purpose at a later date. Such an international consortium is visualized as a means to cooperation in the movement of food grains from surplus to deficit areas without political and financial barriers.

The principal findings and recommendations of the KSU team were as follows:

Regional

(1) West Africa has a latent potential to produce much more grain than its grain food needs. Agricultural development offers the major opportunity within the countries studied for successful economic development. Nominal modernization of agriculture and infrastructure servicing agriculture are requisites to success. When supplies above food needs are attained, alternative uses for grains, including livestock production, poultry production, dairy products, industrial uses, and export markets, need to be developed concurrently. Such marketing potentials exist. Technical aid and financing will be needed to attain such results. In the countries studied in detail, the problems and opportunities are remarkably similar.

(2) A regional grain stabilization consortium may be essential and certainly is recommended for rational implementation of marketing activities, both within and between the nations of West Africa.

(a) Such an organization should provide coordination assistance to member nations on pricing, supply location, reduction of international trade barriers, and routine, essential information from international sources.

(b) An organizational structure for such a regional office was suggested and technical aid needs estimated.

(c) Pricing policy is an important element for successful implementation, and an objective base is probably essential to success in West Africa. This study recommends world prices as the objective starting price basis for West African stabilization policy.

(d) Technical aid will be highly desirable in the establishment and implementation of such an office. An estimate of \$748,000 for the cost of such aid is provided over a five-year period, exclusive of the national costs mentioned later in this summary.

(e) The sale of 200,000 metric tons (nominal quantity) of PL480 Title II grain agreed upon, delivered over five years according to annual needs, appears to be a quantity that will provide a major portion of the relief needs and a large portion of the capital needs of the National Grain Stabilization Offices in Mali, Senegal, Upper Volta, and Niger.

Mali

(1) Mali has a cropland potential with nominal modernization to produce perhaps a minimum of 28 times its present cereal harvest without disturbing the proportional allocation of land to other crops. Improved tillage and fertilizer are the required inputs for continuous cropping. Illiteracy, lack of roads and rolling stock, a shortage of trained extension workers and financing are the major constraints to agricultural development. Agricultural and agri-business development is the only apparent major avenue open to Mali for successful economic development. Grain supplies generated above human food needs have apparent potential markets in export, animal production, poultry production, dairy products, and industrial uses before supplies should become burdensome, provided these alternative uses are developed concurrently with grain production. Technical aid and financing assistance will be needed to implement plans for attainment of the potentials.

(2) Mali has a functioning grain stabilization office. It is inefficient. Its pricing policies are not productive. It is presently monopolistic. It is undercapitalized. It does not presently need major fixed asset investments. Its goals and form of organization are rational.

This team has recommended that this office:

(a) Rationalize its pricing policies, based upon world prices and including its costs of doing business when establishing consumer prices.

(b) Streamline its operations to reduce its costs of doing business.

(c) Seek technical aid assistance to improve its total operations. The technical aid specifically recommended for Mali is estimated to cost \$350,000 for the grain stabilization office, plus \$22,000 for a special agricultural study of the "Office du Niger" project.

(d) The Mali grain stabilization office appears to need in the magnitude of 2.4 billion Mali Francs (\$4,348,000) more working capital. The sale of 50,000 MT of PL480 grain over five years should net the agency not less than 1.055 billion MF (\$1,911,000). The balance should be funded over a period of years by a component in the selling price.

(e) The private sector should be brought back into grain marketing, under controls, in order to reduce the physical size and financial requirements of the national office.

Upper Volta

(1) Upper Volta has a cropland potential, under nominal modernization, to produce perhaps a minimum of 13 times its present cereal harvest without disturbing the present proportional allocation of land to other crops. The same constraints, needs, and opportunities exist in Upper Volta as discussed in the Mali agriculture summary.

(2) Upper Volta is in the process of starting a grain stabilization agency. Legislation was drafted but had not been approved at the time of the study. Multi-purpose, existing "Organization(s) for Regional Development" are scheduled to become the field arms of the National Office of Cereals.

This team has recommended as follows:

(a) That this office be activated as soon as possible in order to distribute relief supplies and to get started on internal stabilization procedures in 1971.

(b) There are some 299 existing structures of unknown quality throughout the country available for grain storage. They total 15,000 MT in capacity. They should be inspected and repaired if otherwise suitable for use. If most of that space is found to be useful, preliminary estimates indicate a need for additional space to house 45,000 MT of grain.

(c) Preliminary estimates of the equity capital needs of the national office are 1,348,500,000 CFA Francs (\$4,886,000). The entire equity capital needs of the office may logically be funded by the sale of 50,000 MT of PL480 grain over five years' time.

(d) The private sector should be retained in grain marketing, under controls, in order to keep the National Office as small as possible in physical and financial size.

(e) Technical aid will be needed to effectively activate the National Office. Such aid is estimated to cost \$350,000.

Senegal

(1) Senegal has a cropland potential, with nominal modernization, to produce perhaps a minimum of 3.7 times its present cereal harvest, without disturbing the proportional allocation of land to other crops. The needs, constraints, and opportunities for agricultural and agri-business development in Senegal parallel those described for Mali, herein before stated. Rice production, rice milling, and rice imports are severe problems in Senegal requiring specialized attention.

(2) Senegal was not ready to fully cooperate with the KSU team looking toward the development of national and regional grain stabilization; therefore, this team was unable to fully evaluate the situation in Senegal and propose a specific plan for an internal organization. Financial data, in particular, was denied to the team.

Subject to confirmation, after full disclosure of needed information, this team recommends:

(a) A National Grain Stabilization Office is an obvious need in Senegal and should be activated.

(b) Pricing, as in all the nations studied, may logically be based on world market prices.

(c) There is an unknown amount of money presently used in cereal activities in two government enterprises that may logically be used to partially fund a National Office of Cereals.

(d) No one has full knowledge of the space available for grain storage. Dock warehouse space of 40,000 MT is used for imported rice and should continue to be available. Probably no less than 35,000 MT additional space will be required.

(e) Private dealers presently intervene in grain marketing as speculators in a deleterious way. It is recommended that they be retained as an important factor, but under controls that will insure that they make a contribution to orderly marketing in exchange for the license to do such a business.

(f) Very tentative estimates of equity capital needed by such a national office total 3,461,000,000 CFA francs (\$12,540,000). Donations of 50,000 MT of PL480 grain over five years' time should provide not less than 944,000,000 CFA francs (\$3,420,000). The balance would need to be made up from existing funds and a selling price component over a period of time.

(g) Since Senegal has not decided whether it wishes to cooperate toward internal and regional grain stabilization, any donations made in PL480 grain should be made with the proceeds of sale held in escrow, subject to USA withdrawal, until such a time as the GOS determines its course of action.

(h) Technical aid would be needed to implement a grain stabilization plan in Senegal. The cost of such aid is estimated to be \$350,000.

Niger

A Canadian team is completing a similar study for the nation of Niger. It is believed, from discussions, that similar conditions will be found to prevail in Niger as were found in the three countries studied by the

KSU team. It is believed that the recommendations of the Canadian team for Niger will be compatible with the findings of the KSU team for the other countries. It is believed that Niger can and should logically participate in a regional grain stabilization consortium. It is believed that the USAID offer to contribute 50,000 MT of PL480 grain over five years will make a most useful contribution to the required financing of the Niger office. A grain stabilization office has been opened recently in Niamey, Niger, but no operations had been activated as of the time of the KSU team's visit. Those to be in charge of this office appeared to have an excellent grasp of the problems and possible solutions that they will experience.

The KSU team's observations and recommendations were reported in detail in Food Grain Drying, Storage, Handling and Transportation Report No. 21, December 1970, entitled "A Study and Plan for Regional Grain Stabilization in West Africa". This report, which consisted of 224 pages and included 117 charts, maps, and tables, was intended to provide background information of the kind necessary to comply with Manual Order 1221.2 "Feasibility Studies, Economic and Technical Soundness Analysis, Capital Projects". This report does not, however, provide the depth of detail and verification required by that order.

Printed reports were distributed as follows:

USAID/Washington

Dr. L. Stanley Paek, AFR/CWR - 100 copies

Mr. Carol Doyce, Agriculture and Fisheries - 10 copies

USAID Central Retrieval System - 10 copies

C. BOLIVIA - May 1971

The Minister of Rural Affairs and Agriculture requested USAID assistance in determining storage and related requirements for the development of the wheat, rice, corn, and soybean industries in Bolivia. The Mission requested that such a study be conducted by Kansas State University under Contract AID/csd-1588. Funds for the study were programmed in Project 364.5 Cereals, PIO/T#511-364.5-3-00029, Utah State University Contract AID/LA-319.

Kansas State University agreed to provide a two-man team of Dr. Floyd F. Niernberger, agricultural economist, and Dr. Harry B. Pfost, agricultural engineer, to make an evaluation of the present situation and make recommendations for improving grain storage and marketing in Bolivia.

The team spent two weeks, May 17-29, 1971, in Bolivia to evaluate storage and related marketing requirements for the development of the wheat, rice, corn, and soybean industries. Priority was placed on the wheat sector because of emphasis on increasing domestic production by the Ministry of Rural Affairs and Agriculture and USAID/RDD/USU.

Generally, environment for storage of grains without quality deterioration in Bolivia is very good. Both the production areas and population

centers are located at higher altitudes with accompanying cool, dry weather much of the year. Samples of grain observed in storage and in market places did not appear to have been subjected to either insect or mold damage. The conditions described prevail in the areas of La Paz, Potosí, Sucre, and Cochabamba. In these areas, it should not be necessary to design storage facilities with more than minimal grain drying and aeration capacity. However, storage should be designed and operated so that insect control by fumigation can be easily performed if found to be required. Buildings should be designed to keep rats and mice from entering. Good housekeeping should be exercised regularly inside the warehouses to prohibit breeding and hiding places.

In the Santa Cruz area, climatic conditions are less favorable for storage. Relative humidity data indicates eight months of average humidity at or above 70 percent. Grain in this area which is harvested over 14 percent moisture should be dried before storing for periods exceeding several weeks. An experiment has been proposed on corn storage to determine if mold will be as much of a grain-quality deterioration problem as the relative humidity data suggests. If the tests reveal that mold is a potential problem, three suggestions are proposed: (1) grain intended for long-term or eventual out-migration should be moved to a higher altitude, which has a cool, dry climate; (2) grain showing signs of heating or molding should be redried; and (3) grain stored in bulk showing signs of heating or molding can be aerated for cooling and drying whenever relative humidity is below 70 percent.

A lack of storage facilities at producer assembly points is evident. In addition, a marketing network to move supplies and seeds in and grain out of these assembly points to population and secondary storage centers is required.

Facilitating marketing functions are lacking in grain marketing. It was recommended that the Government provide these services as grain production increases.

The present regulations on wheat purchases do not provide incentives for private investment in storage facilities. An increasing price level throughout the storage season, coupled with small producer loan payments, is proposed.

Report distribution is to be as follows:

USAID/Washington

Mr. James Urano, Agriculture and Fisheries - 100 copies
Utah State University - 20 copies

D. GUATEMALA - May 1971

Enroute from an assignment in Bolivia, Dr. Floyd F. Niernberger stopped in Guatemala City, May 31-June 2, to meet with the resident grain marketing specialist, Dr. John A. Shellenberger. The purpose of this meeting was to determine the backstopping technical assistance that would be required in Guatemala and the probable specialties and sequence to be followed.

Kansas State University, under Contract AID/csd-1588, had previously agreed to supply technical assistance on request from the grain marketing specialist and USAID/Guatemala.

A request for marketing information assistance was pending (see II Foreign Non-travel Assistance, page 13), the next probable request being for a specialist in government storage operations (warehouse receipts, non-recourse loans, bonding, inspection, licensing, etc.).

No formal report of this visit was made; however, Dr. Niernberger's observations and comments were reported internally by letter.

II. Foreign Non-Travel Activities

A. Potential Areas for Technical Assistance

1. West Pakistan. As reported in last year's annual report, Kansas State University had been called on to assist the Bureau for Near East South Asia in obtaining the services of a three-man agricultural marketing team to work on Project 291-295 Agricultural Marketing in West Pakistan.

As of July 16, 1970, Kansas State University was advised that the team visit should be postponed until the Government of Pakistan, USAID/Washington, USAID/Pakistan, and Kansas State University have had time to analyze Canadian, IBRD, and FAO/Swedish Grain Study reports.

As of June 30, 1971, copies of the Canadian and IBRD reports had not been received. It now appears doubtful that the Mission will follow through on this particular request.

2. Indonesia. On August 15, 1970, USAID/Djakarta requested technical assistance from Kansas State University under Contract AID/csd-1588 as an interim measure while certain contractual difficulties were resolved. One or two advisors for up to two months were requested with skills in rice storage and distribution to:

- a. recommend best types of storage facilities; general design size and location; including possible use of local construction materials and equipment for key rice-producing areas.
- b. determine cost differential, local versus imported facilities and handling equipment.
- c. provide USAID and GOI guidelines for developing statistical and other information needed to expedite a long-term study.

The KSU study was further required to:

- a. provide some help to GOI in estimating immediate short-term grain storage and marketing requirements.
- b. initiate some investigations required for long-term grain storage and marketing studies.
- c. partially relieve pressure on GOI program.
- d. partially compensate for delays caused by factors beyond GOI control.

After the above request was received, the contractual difficulties were at least partially resolved and the immediate need for KSU assistance delayed. It is anticipated that once Weitz-Hettelsater completes their final report draft, KSU will be called on to review the report. In addition, KSU may be called on to help implement recommendations presented in the report with short-term assignments. This point may be clarified further with an expected visit by William Janssen, USAID/Djakarta, to Kansas State University in July of 1971.

3. Honduras. On May 20, 1971, Mr. Herbert C. Fledderjohn of Agricultural Cooperative Development International (ACDI) indicated that at the suggestion of Mr. Carrol Deyoe he was asking USAID/Honduras to request assistance under the KSU Contract AID/csd-1588. The nature of the request was to provide technical assistance to the National Federation of Agricultural Cooperatives (FECOAGROH) in the design, development, and evaluation of Rural and Central grain handling and storage facilities.

Kansas State University has responded to this request by making the services of an agricultural engineer available. He has 24 years experience in grain conditioning and handling, including drying of cereal grains such as corn, rice, sorghum, and peanuts, as well as development of grain storage, handling, and conditioning facilities.

Mr. Elwyn S. Holmes has tentatively made arrangements to proceed to Tegucigalpa on or about July 15, 1971.

4. Nigeria. Dr. Embert H. Coles, Chief of Party, KSU/AID Project, Ahmadu Bello University, Zaria, Nigeria, requested the services of Dr. William J. Hoover through Mr. W. H. Johnson, Food and Agricultural Officer, USAID/Lagos (July 25, 1970) to discuss the possibility of developing a food grain section within ABU.

Dr. Glenn H. Beck, Provost for Agriculture and Veterinary Medicine, Ahmadu Bello University, Zaria, Nigeria, in a letter to Dr. William J. Hoover, Director, Food and Feed Grain Institute at Kansas State University, pointed out that the major food problems of the six northern states in Nigeria (that area served by Ahmadu Bello University) relate to the harvesting, handling, processing, and storage of grain crops, including groundnuts. It was estimated that at least one-third of the grain produced in the north is lost because of inadequate storage facilities.

Although initial plans for Dr. Hoover to go to Nigeria in November 1970 did not materialize, it is thought possible that USAID/Nigeria may later request the short-term assistance of KSU under Contract AID/csd-1588.

5. Latin American Countries. On November 24, 1970, Mr. Donald Fiester, Bureau for Latin America, distributed LA/DR/RD STATEMENT ON TECHNICAL ASSISTANCE FOR THE IMPROVEMENT OF INTERNAL AGRICULTURAL MARKETING IN LATIN AMERICAN COUNTRIES. The intent of the policy outlined in this statement was (1) to increase AID mission and bureau focus on the needs and opportunities in agricultural marketing and (2) to provide a guide to the principle marketing support institutions as to the technical expertise for which the Bureau will call upon each to provide in support of field programs.

The support institutions referred to in the report as technical resources are (1) the Latin American Market Planning Center (LAMP) at Michigan State University (AID ter-786 and la-364), (2) the Food and Feed Grain Institute at Kansas State University (AID/csd-1588), and (3) the USDA through a PASA agreement with AID/TAB.

This policy involves drawing upon the particular expertise of each of the technical resources. The specialized expertise of Kansas State University will be called upon in the planning, evaluation, and development of programs of grain storage and handling.

Each of the resources, according to the statement, will also be requested to provide short-term technical inputs as regional personnel assigned to USAID Missions and LA/DR/RD in conducting agricultural sector analyses. In addition, they will be asked to assist various regional institutions in providing training programs and workshops in agricultural and food marketing.

The Food and Feed Grain Institute, Kansas State University, has responded favorably to this proposal. Specific comments regarding the Food and Feed Grain Institute's role in this venture were sent to Mr. Donald Fiester in a letter from Dr. William J. Hoover, dated January 20, 1971.

We anticipate requests for KSU technical assistance under this proposal will not materialize to any great extent before January 1972.

6. Vietnam. In December 1970, the Food and Feed Grain Institute received a letter from Mr. Thomas L. Wilson, Feed Grain Marketing Advisor, Crops Production Branch, Domestic Production, USAID/Vietnam. He indicated that the development of a grain marketing program, with resulting systems in the private sector, was being explored by the Ministry of Land Reform, Agriculture, and Fishery Development. This interest had been stimulated by (1) the Grain Storage and Marketing Study made by Wildman Agricultural Research, Inc., and (2) the Feed Grain Production Program.

In his letter, Mr. Wilson outlined many of the problems and the direction being taken in approaching the various problems. He also indicated a planned visit to KSU to discuss the problems and possible Kansas State University involvement under Contract AID/csd-1588.

Mr. Wilson did visit Kansas State University on January 4-7, 1971, at which time the ways in which technical assistance under the contract might best be utilized were discussed. Some of the ways in which KSU could assist immediately were (1) provide an objective review of the Wildman Grain Storage and Marketing Study, (2) evaluate proposed installations within the Feed Grain Production Program, (3) offer training for personnel by means of the Grain Storage and Marketing Short Course, and (4) long-range training of personnel in feed grain processing.

Although there have been no formal requests for assistance during the period reported here, we anticipate involvement under the programs discussed.

B. Follow-up on Previous Overseas Assignments

1. Guatemala. As a follow-up to work done in Guatemala in July 1969 by Dr. L. Orlo Sorenson, a consultant versed in all aspects of grain marketing, quality, storage, etc., was requested by USAID/Guatemala. This consultant was to be back-stopped with technical assistance in specialized areas by KSU under Contract AID/csd-1588.

A candidate for the one-year consulting position, Dr. John A. Shellenberger, was proposed by Kansas State University. After direct negotiations between Dr. Shellenberger and USAID, a contract was signed in November 1970.

In conjunction with KSU's agreement to supply technical backstopping, a request for specialized technical assistance in the area of market reporting was received; however, after candidates were proposed for this assignment, it was found more expedient for USAID/Guatemala to get the candidate under a USDA agreement.

Indications are that the next request for technical assistance will be in the area of government storage operations (warehousing, bonding, licensing, inspection, etc.) or possibly an agricultural engineer for equipment and facilities design.

2. Bolivia. On return from their assignment in Bolivia, Drs. Pfost and Niernberger indicated additional information on grain fumigation with aluminum phosphide (Phostoxin) was requested by Dr. B. Austin Haws, USAID/La Paz.

Several pieces of literature on fumigation with Phostoxin were assembled and sent to Dr. Haws, along with a letter which included additional information on Phostoxin use.

C. Correspondence with Non-AID Foreign Individuals and Organizations.

1. FAO. On November 10, 1970, Dr. Omer J. Kelley, Director, Office of Agriculture and Fisheries, Technical Assistance Bureau, indicated arrangements had been made for an exchange of agricultural technical assistance and research information between AID/TA/AGF Contractor Liaison Officers and members of FAO staff working in related fields. On April 1, 1971, we were informed that the FAO Liaison Officer assigned to our project (AID/csd-1588) was:

Mr. G. G. Corbett
Agricultural Engineering Service
Agriculture Department
FAO Viale delle Terme di Caracalla
Rome, Italy 00100

On May 20, 1971, in accordance with this arrangement, copies of each of our reports which were available were sent to Mr. Corbett. Receipt of the reports has been acknowledged. Mr. Corbett has indicated a full list of all comparable FAO reports is being prepared and will be sent to Kansas State University as soon as possible.

2. Bolivia. On January 19, 1971, Mr. Gerald Bendix, a Peace Corp Volunteer working in Cochabamba, Bolivia, wrote to the Food and Feed Grain Institute requesting specific information on certain aspects of grain storage. He indicated as part of the Bolivian government's effort to increase wheat production, the National Wheat Institute planned to establish warehousing services in some of the areas of small grain production.

A five-page reply was drafted to Mr. Bendix's letter. His questions were answered under five main headings: (1) Storage, Moisture, and Rodents; (2) Grain Inspection; (3) Seed Selection; (4) Amortization-Depreciation; and (5) Mill Feasibility Study.

In addition to answering Mr. Bendix's questions, equipment catalogs and other printed literature dealing with his questions were mailed to him.

He was also informed that we had received a request for assistance from the Mission in La Paz for technical assistance under our contract. He was later informed as to when our team would be in Bolivia so that a personal contact could be made.

III. Domestic Activities

A. Travel and Conferences

1. American Society of Agricultural Engineers -- 1970 Winter Meeting. Dr. Harry B. Pfost, project agricultural engineer, attended the 1970 Winter Meeting of ASAE, held in Chicago, Illinois, December 8-11, 1970.

Among the sessions of value to our grain drying, storage, handling, and transportation project were:

- a. Committee Workshop on Moisture Measurement Standards. This was a four-hour workshop conducted by the Physical Properties of Agricultural Products Committee.
- b. Physical Properties of Grains. Included seven papers on subjects such as "Density and Porosity of Shelled Corn During Drying", "Thin Layer Drying Characteristics of White Corn", and others.
- c. Influence of Environment on Food Product Quality. Included six papers on subjects such as "Performance of Controlled Atmospheres in the Short-Term Storage of Freshly Harvested Uncured Peanuts", "Mechanical Damage to Wheat in Pneumatic Conveying", and others.
- d. Bioengineering. Included paper on "Heating and Drying Peanuts with Radiofrequency Energy".
- e. New Developments in Grain Quality Control. Included seven papers on subjects such as "Temporary Storage of High-Moisture Shelled Corn Using Continuous Aeration", "Low-Temperature Drying of Shelled Corn", and others. Dr. Pfost was chairman of this session.
- f. Peanut and Cotton Processing. Included a paper on "Shelling and Storing Peanuts at Elevated Moistures".

2. American Feed Manufacturers Association Meeting. This meeting was held in Chicago, Illinois, June 6-9, 1971, and was attended by Dr. Harry B. Pfost.

Of special interest at this meeting was a special session on Dust Control. Several presentations dealing with the various aspects of dust control in grain and grain product handling were included.

B. Activities at Kansas State University

1. Grain Storage and Marketing Short Course - 1970. The first of what is hoped will be an annual Grain Storage and Marketing Short Course was held at Kansas State University July 12-31, 1970. This Short Course was presented as a part of Kansas State University Contract AID/csd-1588 to provide technical assistance in food grain drying, storage, handling, and transportation to developing countries.

A prospectus and outline of material to be covered in the Short Course was presented in last year's Annual Report, 1969-1970, Food Grain Drying, Storage, Handling, and Transportation Report No. 18.

Enrollment in the Short Course was limited to twenty participants and was directed at the elevator or warehouse operator level. We initially had indications that nineteen participants would attend: Colombia - 6, Dominican Republic - 4, El Salvador - 1, Guatemala - 1, Honduras - 2, and Nicaragua - 5. At the last minute, one participant from Colombia cancelled.

One of the main reasons this Short Course was a success was the enthusiasm and support we received from Mr. Donald Fiester, Bureau for Latin America. The Short Course was presented in English with simultaneous translation in Spanish because of the all-Latin American enrollment. A graduation banquet was held at the completion of the Short Course with Mr. Donald Fiester as guest speaker. The eighteen participants that attended the Short Course and were awarded Certificates at the banquet were:

Colombia

Rodrigo Salazar G.
Luis Jose Lizarazo M.
Enrique Mulford O.
Edgardo Rodriguez C.
Gonzalo Montano Montano

Republica Dominicana

Carlos Juan A. Diaz
Jose M. Gonzalez
Gustavo Rene Hernandez
Carlos B. Manzano

El Salvador

Federico Escalon Valdes

Honduras

Guillermo Enrique Pena
Agr. Salustio Castro Ruiz

Nicaragua

Julio O. D'Trinidad B.
Guillermo Correa Vanegas
William Regalado Blandon
Br. Armando Jose Bendana Roa
Ing. Cristobal Ubeda Vargas

Guatemala

Ing. Arturo Lopez Galvez

Special materials prepared for the Short Course included a "Participant Country Information Summary" and lecture notes and outlines for subjects covered during the Short Course.

The "Participant Country Information Summary" was prepared for the purpose of guiding participants in assembling data on their countries' grain storage and marketing systems prior to attending the Short Course. As part of the Short Course, participants were required to make a one-hour presentation on grain storage and marketing in their countries. In addition to being used in conjunction with the Short Course, the "Information Summary" will be used as a guide by KSU staff on overseas assignments in gathering pertinent data on a specific country's grain economy. The "Information Summary" is a product, and also a tool, of the research KSU is doing in developing marketing guidelines for developing countries. With further use and revision, the "Information Summary" will be issued as a manual for distribution to Missions as an aid in self evaluation of their host country's grain economy.

Lecture notes, laboratory outlines, and other Short Course materials were prepared and assembled in two 2½" thick plastic notebook binders. Lecture and laboratory outlines were printed in both English and Spanish. The translation into Spanish was done by graduate students and other Latin Americans at Kansas State University. With some revision and expansion, it is hoped that various lecture outlines may be expanded into special manuals for distribution to USAID Missions.

A Short Course Evaluation was conducted at the end of the three-week intensive training period by having each participant complete a written questionnaire and take part in a verbal critique of the Short Course content and conduct. The response to various questions asked during the evaluation were as follows:

GRAIN STORAGE AND MARKETING
SHORT COURSE EVALUATIONS QUESTIONNAIRE

To help us evaluate the grain storage and marketing short course in which you have just participated, we ask that you complete this questionnaire honestly and objectively.

Short Course Content

How was time devoted to course material?	<u>Too Much</u>	<u>Too Little</u>	<u>OK</u>
1. Structure of Cereal Grains (3)*	—	<u>9</u>	<u>9</u>
2. Chemical, Nutritive, and Physical Changes in Storage (4)	—	<u>11</u>	<u>7</u>
3. Grain Sampling (4)	—	<u>3</u>	<u>15</u>
4. Grain Standards (2)	<u>1</u>	<u>7</u>	<u>10</u>
5. Grain Grading (6)	—	<u>7</u>	<u>11</u>
6. Moisture Measurement (3)	<u>2</u>	<u>5</u>	<u>11</u>
7. Grain Handling Equipment (2)	<u>1</u>	<u>3</u>	<u>14</u>

*Numbers in parentheses indicate number of classroom hours.

	<u>Too Much</u>	<u>Too Little</u>	<u>OK</u>
8. Methods of Grain Conditioning (2)	<u> </u>	<u> 8 </u>	<u> 10 </u>
9. Types of Storage Structures (2)	<u> 2 </u>	<u> 4 </u>	<u> 12 </u>
10. Aeration of Grain (4)	<u> 1 </u>	<u> 5 </u>	<u> 12 </u>
11. Grain Drying (6)	<u> 1 </u>	<u> 7 </u>	<u> 10 </u>
12. Mold-Moisture Relationships (4)	<u> 1 </u>	<u> 4 </u>	<u> 13 </u>
13. Sanitation, Inspection, and Housekeeping (2)	<u> 3 </u>	<u> 4 </u>	<u> 11 </u>
14. Physical and Mechanical Methods of Pest Control (1)	<u> 1 </u>	<u> 10 </u>	<u> 7 </u>
15. Rodent and Bird Control (1)	<u> </u>	<u> 6 </u>	<u> 12 </u>
16. Insect Identification and Biology (4)	<u> 3 </u>	<u> 8 </u>	<u> 7 </u>
17. Fumigation (5)	<u> </u>	<u> 6 </u>	<u> 12 </u>
18. Insecticides (1)	<u> 1 </u>	<u> 6 </u>	<u> 11 </u>
19. Fumigation Safety (1)	<u> </u>	<u> 7 </u>	<u> 11 </u>
20. Storage Methods and Procedures (4)	<u> </u>	<u> 6 </u>	<u> 12 </u>
21. Storage Costs and Alternatives (2)	<u> </u>	<u> 7 </u>	<u> 11 </u>
22. Principles of Management (4)	<u> 1 </u>	<u> 3 </u>	<u> 14 </u>
23. Principles of Operation (4)	<u> </u>	<u> 3 </u>	<u> 15 </u>
24. Organization of the Grain Business (8)	<u> </u>	<u> 5 </u>	<u> 12 </u>
25. Bookkeeping, Accounting and Inventory Control (8)	<u> 4 </u>	<u> 5 </u>	<u> 9 </u>
26. Transportation (2)	<u> 1 </u>	<u> 4 </u>	<u> 13 </u>
27. Government and Marketing (4)	<u> 1 </u>	<u> 7 </u>	<u> 10 </u>
28. Facilitating Operations (6)	<u> 1 </u>	<u> 3 </u>	<u> 14 </u>

Field Trips

1. How would you evaluate the stops made on field trips to Emporia and Hutchinson, Kansas?

<u>Emporia Trip</u>	<u>Valuable</u>	<u>OK</u>	<u>No Value</u>
Aeroglide Company	<u> 11 </u>	<u> 5 </u>	<u> 2 </u>
Iowa Meat Packing	<u> 12 </u>	<u> 6 </u>	<u> </u>
Crowfoot Feedlot	<u> 10 </u>	<u> 8 </u>	<u> </u>
Kansas Soya Co.	<u> 7 </u>	<u> 2 </u>	<u> </u>
 <u>Hutchinson Trip</u>			
Farmarco Talk	<u> 17 </u>	<u> 1 </u>	<u> </u>
State Grain Inspection Lab	<u> 13 </u>	<u> 5 </u>	<u> </u>
Kansas Wheat Commission	<u> 14 </u>	<u> 3 </u>	<u> </u>
Farmarco Elevator	<u> 17 </u>	<u> 1 </u>	<u> </u>
Farmarco Bulgur Plant	<u> 14 </u>	<u> 3 </u>	<u> </u>
Farmarco Laboratory	<u> 13 </u>	<u> 5 </u>	<u> </u>
Lindsborg Grain Company	<u> 9 </u>	<u> 8 </u>	<u> </u>

2. Were Field Trips in Manhattan:	<u>Valuable</u>	<u>OK</u>	<u>No Value</u>
Manhattan Milling Co. (Sampling)	<u>12</u>	<u>5</u>	<u>1</u>
Farmers Co-op	<u>7</u>	<u>9</u>	<u>1</u>
Agronomy Farm (Fumigation)	<u>15</u>	<u>3</u>	<u> </u>
3. With respect to field trips would you prefer:	<u>More</u>	<u>Same</u>	<u>Fewer</u>
Local Trips (Manhattan)	<u>4</u>	<u>9</u>	<u>4</u>
Long Trips (Emporia, Hutchinson)	<u>9</u>	<u>9</u>	<u> </u>

Discussion Groups

1. Knowledge gained at discussion groups was (more - less) valuable than that gained in lectures. More-1; Less-11; Same-1
2. Would you prefer (more - fewer) discussion sessions in another Short Course? More-9; Fewer-2; Same-2

Student Participation

1. How would you rate the work sessions and presentations made by participants?

<u>Valuable</u>	<u>OK</u>	<u>No Value</u>
<u>11</u>	<u>7</u>	<u> </u>

Instruction

Please rate the following:	<u>Good</u>	<u>Average</u>	<u>Poor</u>
1. Quality of Instruction	<u>18</u>	<u> </u>	<u> </u>
2. Methods of Instruction	<u>18</u>	<u> </u>	<u> </u>
3. Answers to Questions	<u>15</u>	<u>3</u>	<u> </u>
4. Use of Visual Aids	<u>18</u>	<u> </u>	<u> </u>
5. Use of Examples	<u>17</u>	<u>1</u>	<u> </u>
6. Demonstrations	<u>18</u>	<u> </u>	<u> </u>
7. Lectures	<u>18</u>	<u> </u>	<u> </u>
8. Laboratory Sessions	<u>15</u>	<u>3</u>	<u> </u>

General

1. Would you recommend this Short Course to others in your country? Yes - 18 No - 0
2. Do you think the Short Course was:

Too Long	<u> </u>
Too Short	<u>12</u>
Proper Length	<u>6</u>
3. Was the Short Course:

Difficult	<u> </u>
Easy	<u>3</u>
Proper Level	<u>15</u>

In the remarks section of the evaluation, participants were asked to indicate any additional comments they wanted to make, especially with respect to improving the Short Course for future presentation. Remarks were as follows:

"The discussions were valuable, but the classes were better. I have rated most of the questions (on the questionnaire) as 'Too Little' because the time has been too short. One more week of classes would have helped to improve the course."

"I have learned a lot in this course, and I hope to apply what I have learned in the development of my country. I hope this course will be repeated again. I feel highly pleased with the kind attention that I received from the professors."

"Too much in too short time."

"1. The authorities in many countries didn't know that more than one student can be sent.

2. This course should last at least 3 months. Our countries need more knowledge of this type, and that can be reached with a longer course."

"As far as I'm concerned, I believe that this is the type of course that we need for our countries. The methods of instruction are excellent. I'm very grateful."

"The quality and methods of instruction were good. The course didn't have the proper length. Courses of this type in the future should last at least 60 days, in order to learn well and cover more material."

"Short Course would be improved by: practical classification in the lab of different grains; wider coverage about pests that attack stored grains; deeper study of standards for classification of the different grains; field trip to corn processing plant; study fertilizers and their application; cover harvesting equipment for different grains."

"Very useful to apply this knowledge in my country. Should be taught to association co-ops and farmers. After the diplomatic mission lets us know the conditions (of per diem), those conditions should not be changed like it happens over here."

"The success of a course not only depends on good instructors but also on the students. A better selection should be carried out, so a more homogeneous group will be obtained. Due to the heterogeneity of the group, the course was easy for some and difficult for others."

"I believe that a better intellectual selection should be practiced. If there is a more homogeneous group, there will be a more even learning process."

"This course has been very useful and valuable. We hope that similar courses will be offered in the future."

In view of the comments on the questionnaires and personal communication with participants, we considered the Short Course a success. In planning

for our next Short Course, we will use the evaluation to modify the content, length, and other aspects of the Course to better meet the needs of the participants.

2. Grain Storage and Marketing Short Course - 1971. Considerable effort was devoted to preparation for the second Grain Storage and Marketing Short Course.

Taking into consideration comments and suggestions made by participants during the first Short Course, the second Short Course was initially scheduled for five weeks, June 21, 1971, through July 24, 1971, this to give participants the opportunity to observe the wheat harvest and initial movement of grain which occurs in late June and early July. The Short Course schedule was lengthened to five weeks to allow for more field observations and more practical and laboratory experience for participants.

Following a meeting with our Project Monitor, Mr. Carrol Deyoe, at Kansas State University on March 3, it was decided to increase the number of participants from 20 to 25 and notify Missions worldwide of the Short Course.

The prospectus and announcement of intent to conduct this Short Course were drafted and sent to USAID/Washington on March 5. An airgram for distribution to Missions was drafted the following week; however, according to information received here, the airgram was not dispatched to the Missions for another six to seven weeks. Missions did not have time to process potential participants and, as a result, it was necessary to postpone the Short Course until August and to shorten the course to four weeks. It also necessitated remaking arrangements for housing, meals, and conduct of the Short Course. It is felt that the shortening and rescheduling of the Short Course for August 2-31, 1971, will probably make its effectiveness less than originally anticipated.

Mr. David Mateyka, Program Specialist, Foreign Economic Development Service, USDA, has worked closely with Kansas State University on this and the past Short Course. He has scheduled an orientation in Washington prior to the Short Course and an additional two weeks in corn and rice producing areas following the four weeks at KSU.

The "Participant Country Information Summary" has been revised and printed in Spanish and English combined. Two copies each of the Summary were sent to USAID Missions in the Dominican Republic, Guyana, Indonesia, Philippines, and Uruguay (countries indicating intentions to send participants to the Short Course).

The conduct of the Short Course will be covered in next year's Annual Report.

3. AID/USDA - Land-Grant Colleges and University Cooperative Short Courses. As a land-grant university, Kansas State University has cooperated with AID in hosting groups of individuals from developing nations during their participation in various types of touring short courses.

Although the visits are coordinated through the International Agricultural Programs office at Kansas State, much of the lecture, discussion, and laboratory instruction given the participants comes from various departments (economics, engineering, entomology, grain science) and the Food and Feed Grain Institute within the University. A great majority of the persons who provide instruction for the participants have had overseas assignments either through the USAID contract to provide technical assistance in food grain drying, storage, handling, and transportation or through other foreign assistance programs at the University.

Two such groups were hosted during the period reported here:

a. "Grain Storage and Marketing" TC #100-31, August 30 through October 3, 1970. This was a mixed group of seven participants from the Philippines, Pakistan, Korea, and Liberia. The primary objectives of the group were to develop an understanding of farm and off-farm handling, storing, and marketing of grains with the aim of improving these operations in participants' countries, thereby reducing losses of food and increasing farm income. Specifically, their aims were to:

- (1) be introduced to the basic economic principles and market structure of the cereal and feed grain industry.
- (2) become familiar with different kinds of storage bins and equipment.
- (3) observe on-the-farm handling and storage of several different grain crops.
- (4) learn how to control various physical problems of storage to include insects, rodents, and moisture.
- (5) become familiar with programs and services that government agencies and institutions furnish the grain farmer and the grain industry. Some of these are standardization, grading, and inspection; price support and incentive programs; credit and finance; research; and market news and crop production information.

It should be pointed out that a detailed outline of the specific training to be obtained at Kansas State University incorporated in the Proposed Program and Itinerary for Grain Storage and Marketing, TC #100-31, was the same as that of our Grain Storage and Marketing Short Course held in July of this same year. In our opinion, these participants should have been programmed into one of the formal Grain Storage and Marketing Short Courses held in conjunction with Contract AID/csd-1588.

Dr. Richard Phillips, Dr. Harry B. Pfost, and John R. Pedersen took part in instruction sessions September 1 through September 29, 1970. Other KSU faculty from the Departments of Entomology, Economics, Agronomy, and Grain Science also participated in the instruction.

Members of the group were:

Md. Shamsul Huda
 District Marketing Officer
 Chittagong
 Government of East Pakistan
 Dacca, Pakistan

Aurelio M. Melaverde
 Mechanical Engineer
 Rice and Corn Administration
 Quezon City, Philippines

Ernesto E. Idos
 Civil Engineering Aide II
 Rice and Corn Administration
 Quezon City, Phillipines

Henry C. Browne
 Corperative Marketing Specialist
 Department of Agriculture
 Monrovia, Liberia

Soon Pyo Chyum
 Senior Agricultural Technician
 National Institute for Agricultural Materials Inspection
 Ministry of Agriculture and Forestry
 Seoul, Korea

Technical leader:
 Dwight S. Tolle
 Salina, Kansas

b. Brazilian Technical and Administrative (Seed) Team,
 October 5, 1970. Mississippi State University has a team working in Brazil on seed processing and storage under an AID contract. Mississippi State had arranged for a fourteen-man group to tour the United States to observe seed processing, storage, and related aspects. Kansas State University was asked to host the group for one day with special emphasis given to grain storage facilities, grain technology, and our AID contract.

A program was developed which involved all members of the technical assistance team under Contract AID/csd-1588.

Members of the Brazilian group were:

Luiz Humberto F. Bicca, Acting Chief
 Department of Seeds and Seedlings
 Agricultural Experiment Station
 Ministry of Agriculture
 Rio Grande do Sul, Brasil

Nestor Luiz Brenner, Head
 Department of Seeds and Seedlings Multiplication
 State Secretariat of Agriculture
 Curitiba, Parana, Brasil

Adelson de Barros Freire, Head
 Department of Seeds and Seedlings
 Agricultural Experiment Station
 Ministry of Agriculture
 Minas Gerais, Brasil

Olivar Jose da Silva Moraes Labota, Head
 Department of Seed Testing Laboratory
 State Directory of the Ministry of Agriculture
 Goiania, Goias, Brasil

Jose Virginio de Araujo Lyra, Head
 Department of Seed Testing Laboratory
 Plant Production
 Ministry of Agriculture
 Brasilia, Brasil

Euclides Goncalves Martins, Head
 Executive Team of Plant Production
 State Director of the Ministry of Agriculture
 Minas Gerias, Brasil

Gilberto Primo Schaefer, Head
 Executive Team of Plant Production
 State Directory of the Ministry of Agriculture
 Florianopolis, Santa Catarina, Brasil

Sidney Corradini, Manager
 House of Seeds
 Carlos Corradini Ltda (Seed Company)
 Sao Paulo, SP, Brasil

Joao Giansi Netto, Advisor
 Engineering Department
 Sementes Agrocerec (Seed Company)
 Sao Paulo, SP, Brasil

Renato Casali Pavan, President
 Pavan Engenharie Industria Ltd. (Equipment Manufacturer)
 Sao Paulo, SP, Brasil

Erico Aquino Weber, Planning Engineer
 Keplar, Weber S/A (Equipment Manufacturer)
 Rio Grande do Sul, Brasil

Renata L. Hammoud, Interpreter

Team Leader

Dr. Sammie B. Parkman, Sec.-Treas.
 Georgia Seed Development Commission
 State College, Mississippi

4. Visitors under USAID sponsorship. There are several visitors each year that come to Kansas State University under AID sponsorship. Some visitors remain only a day or two while others may be here for several months. Some of these visitors have interests in grain storage and marketing and our project team members spend varying amounts of time with them. Some of these visitors during the past year are listed below:

Mr. John Sihombing, Chief
 Marketing Division
 Directorate General of Cooperatives
 Department of Transportation and Cooperation
 Djakarta, Indonesia

Mr. Sihombing was at Kansas State University from August 27, 1970, through May 17, 1971, and worked between the Department of Economics and Department of Grain Science and Industry. Dr. Richard Phillips and John Pedersen devoted several days to discussing storage and marketing of grain with Mr. Sihombing.

Dr. Ronald Echandi
University of Costa Rica
San Jose, Costa Rica

Mr. Paul A. Holden, Cooperative and Credit Advisor, USAID/Costa Rica, proposed a program wherein Dr. Echandi would visit Mississippi State University and Kansas State University to discuss seed storage and technology. The visit was coordinated through the Office of International Training, AID/USDA, Washington.

Dr. Echandi spent two days, February 24 and 25, 1971, in conference with team members Dr. Richard Phillips and John R. Pedersen discussing marketing, preservation, and storage of seeds. KSU's technical assistance Contract AID/csd-1588 was discussed also with emphasis on how assistance for Costa Rica might be implemented. As a result of our discussions, it is very likely one of Dr. Echandi's assistants will attend the next Grain Storage and Marketing Short Course at Kansas State University.

Mr. G. S. Bains, Chairman
Discipline of Flour Milling and Baking Technology
Central Food Technological Research Institute
Mysore, India

Mr. Bains spent approximately two weeks in October 1970 in the Department of Grain Science and Industry discussing various aspects of grain quality, processing, storage, and handling. John Pedersen devoted several hours to discussing mill and elevator sanitation with Mr. Bains.

Mr. V. P. Mital, Entomologist
University of Udaipur
Udaipur, India

Mr. Mital worked on stored grain insect problems in the Department of Entomology, Kansas State University, from January 18 through May 15, 1971. John Pedersen spent several days during this period discussing grain storage problems with Mr. Mital.

Mr. Thomas Wilson
Feed Grains Marketing Advisor
Crops Production Branch
Domestic Production
USAID/Vietnam

Mr. Wilson visited the Grain Storage Project personnel on January 3-7, 1971, to discuss possible KSU assistance in feed grains marketing in Vietnam and the possibility of Vietnam participant training at Kansas State University.

5. Non-AID Sponsored Visitors. Kansas State University is the only grain and feed processing instructional center in the United States, and as such, is called on to play host to many diverse groups and individuals from the U. S. and abroad who are interested in the grain and feed industries. Through contacts our project personnel have with individuals during these visits, we feel there is a possibility for formal requests for team assistance under our Contract AID/csd-1588.

Several such groups of foreign visitors are listed below:

- a. Colombia Wheat Team sponsored by the Kansas Wheat Commission, July 1970.

This three-man group consisted of government grain marketing specialists.

- b. Japanese Flour Millers Team sponsored by Western Wheat Associates, Inc.; Great Plains Wheat, Inc.; and Foreign Agricultural Service, USDA, September 1970.

Five top executives from Japanese milling companies made up this group.

- c. Republic of China Wheat Industry Team sponsored jointly by Western Wheat Associates, Inc.; Great Plains Wheat, Inc.; and Foreign Agricultural Service, USDA, September 1970.

Six top executives from the grain processing industry in Taiwan were in this group.

- d. Portuguese Wheat Trade Mission sponsored by Great Plains Wheat, Inc., and Foreign Agricultural Service, USDA, October 1970.

- e. French Wheat Team sponsored by the Kansas Wheat Commission, January 1971.

Four French grain processors and the French Agricultural Attache made up this team.

- f. UNICEF Indian Touring Fellowship, March 1971.

The three men on this team were nutrition, marketing, and storage advisors.

- g. Algerian Wheat Team sponsored by the Kansas Wheat Commission, April 1971.

- h. Asian Feed Industry Study Tour and Short Course, June 5-26, 1971.

This group of 39 individuals was sponsored jointly by the U. S. Feed Grains Council, American Soybean Association and National Renderers Association. The group included 30 Japanese, 5 Taiwanese, and 4 Korean feed manufacturing executives.

A two-week Feed Milling Short Course was held at Kansas State University in which Grain Storage Project personnel took part.

i. Individual visitors included:

Dr. D. Dendy
Tropical Products Institute
London, England (August 1970)

Drs. Asselberg and Chatelnat
Food and Agricultural Organization
Rome, Italy (August 1970)

Mrs. C. Linder, Head
Food Testing Laboratory
Ministry of Food and Trade
Haifa, Israel (November 1970)

6. Continuing Programs

a. Research

(1) Marketing Guidelines Checklist. Many of the requests for assistance received by Kansas State University have centered on various aspects of marketing grains. As indicated in last year's Annual Report (Annual Report 1969-1970), the need for a method of analyzing a given country's marketing system rapidly and systematically is apparent from the work already conducted under this contract. Research on the Marketing Guidelines Checklist continues.

The "Participant Country Information Summary" which was prepared in conjunction with work being done on the Marketing Guidelines Checklist had been used for the 1970 Grain Storage and Marketing Short Course. It was revised and translated into Spanish for use in the 1971 Short Course. After evaluating the revised "Summary", it will be distributed as a separate report for use by developing countries as an aid in making self evaluations of their grain storage and marketing systems.

(2) Farm Storage Facility. Initial plans have been made to start development of a small-size farm storage unit which will be effective in preventing deterioration of grains stored in tropical areas. An additional agricultural engineer will be approached to undertake this study.

b. Information Retrieval System. This is a continuing program where some 33 different journals and sources of information on various aspects of grain storage and marketing are abstracted and cross-referenced by 339 keywords. In addition, pertinent reprints are also being gathered on the various aspects of grain storage, drying, handling, transportation, and marketing of grain.

c. Slide File for Training Purposes. New slides showing grain storage, drying, handling, and marketing situations are continually being added to our file. The slides are used in making presentations to the various tour groups visiting Kansas State University under AID sponsorship and/or other sponsorship. Slides were also used extensively during the 1970 Grain Storage and Marketing Short Course and will be used again in 1971. In the future, we plan to develop series of slides and descriptive outlines which may be distributed to the Missions for use in self training.

6. Food Grain Drying, Storage, Handling, and Transportation Reports. A report is prepared for each overseas technical assistance assignment which Kansas State University completes under Contract AID/csd-1588.

In the coming year, we anticipate the preparation of several Reports dealing with general aspects of grain storage, drying, handling, transportation, and marketing. These Reports will be based, in part, on training outlines used in the conduct of the Grain Storage and Marketing Short Courses.

Reports issued to date and including those for this year's activities are listed below:

- No. 1 Rice Drying Technology and Equipment Which Might Be Applicable to Tropical Developing Countries. June 1968. Prepared by Dr. T. O. Hodges.
- No. 2 Brief Description for a Corn Handling Facility in Tropical Areas. June 1968. Prepared by Dr. T. O. Hodges and Dr. H. B. Pfost.
- No. 3 Structural Requirements of Grain Bins. July 1968. Prepared by Dr. T. O. Hodges.
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