

FOOD SECURITY MANAGEMENT

PROJECT

STORAGE TECHNOLOGY DEVELOPMENT
AND TRANSFER

Plan of Work

STORAGE TECHNOLOGY DEVELOPMENT AND TRANSFER
POSTHARVEST MANAGEMENT
FOOD SECURITY MANAGEMENT PROJECT

PLAN OF WORK

MARCH 1, 1988

TO

APRIL 30, 1989

Prepared by

MINISTRY OF FOOD, AGRICULTURE, AND COOPERATIVES

and

FOOD AND FEED GRAIN INSTITUTE

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
I. SUMMARY	1
II. ADMINISTRATIVE STRUCTURE	9
III. RESEARCH (<i>technical grain storage</i>)	12
IV. TRAINING	15
V. POSTHARVEST INFORMATION	19
VI. MARKETING AND DISTRIBUTION <i>Policy Research</i>	20
VII. CONCURRENCE	21

SECTION I

SUMMARY

BACKGROUND

Contract 391-0491-C-00-6080-00, between USAID and the Food and Feed Grain Institute (FFGI) of Kansas State University established the Storage Technology Development and Transfer (STDT) component of the Food Security Management (FSM) project. The project agreement obligates the FFGI to conduct specific and research activities as mutually agreed upon in a Plan of Work signed by the GOP, USAID, and the FFGI in October, 1986.

The contract agreement and original plan of work also anticipated that the GOP would contribute to the STDT programs by making available qualified research, training, and support personnel who were to be authorized in a PC-1 document. For the most part, the required personnel were already in place under a World bank project which terminated on December 31, 1987. The PC-1 would have essentially continued the funding to enable the staff to work on STDT activities. Due to a combination of circumstances, the personnel required were not "sanctioned" in the PC-1 document as approved, and will not be available for the STDT project.

As a result, the original project work plan of October, 1986 has undergone substantial modification so as to adjust for this occurrence.

OBJECTIVES

The goal of Storage Technology Development and Transfer (STDT) program is to improve the capacity of the Government of Pakistan (GOP) to manage the national food security system effectively and efficiently. The activities will ultimately enhance the capabilities of public-sector agencies and concerned private-sector firms to store food grains over extended periods of time.

The specific purposes of the program are (1) to strengthen the capabilities of the Pakistan Agricultural Research Council (PARC) institutions for testing and developing improved grain storage technologies appropriate to local conditions, (2) to organize and implement training programs for the rapid extension of improved technologies to all levels of managerial and operational personnel in the grain handling and storage sector, and (3) to provide training to enhance the skills of researchers and those personnel responsible for training programs, (4) examine and conduct studies on grain policies, grain handling technology, and marketing systems, that may improve or hinder Pakistan in achieving optimum efficiency in grain storage and distribution.

REVISIONS IN TRAINING AND RESEARCH

Discussions with PASSCO and the Provincial Food Departments concerning training needs indicate a need for training in greater depth and on a wider range of topics than originally planned. The largest need is in grain grading and grain quality. Other areas in which more training is desired is in grain procurement, record keeping, and grain management practices.

Due to GOP funding constraints as noted above, the cooperating research institutions and PFD's have been solicited to determine what support they may be able to provide from their available resources. In general, the PFD's have indicated their willingness to second personnel for use as "master trainers", to pay the costs of trainees participating in training activities, and to make available whatever facilities they may have that can be used for training purposes.

The Chairman of the Pakistan Agricultural Research Council (PARC), and the administrator of the Grain Storage Research Laboratory (GSRL) and the Federal Pesticide Residues Laboratory (FPRL) indicate that they have some funding flexibility for the support of laboratory based activities. The major constraint is the lack of funding for the cooperating academic and research institutions who were to conduct the field work and supply grain samples and data to the laboratories.

The budgets of the STDT have been examined to determine the amount of funding that could be used for training and research support, including funds not specifically allotted for these purposes.

In consultation among those concerned with the STDT project, the following steps are proposed:

1. Combine the field work for the research program with the training program for the following reasons:
 - a. The research program will utilize godowns and stocks of PASSCO and PFD's in areas where training will be conducted. Duplications in travel and supervisory expenses will be reduced.
 - b. Training in grain quality has been identified as the number one priority for the Provincial Food Departments and PASSCO.
 - c. The IBRD/IDA project provided a considerable quantity of grain quality testing equipment that has not been installed or personnel trained in their use. Much of the equipment can be used for both training and field work in the research projects.

- d. The research sites can provide unique demonstrations of the problems and solutions in grain quality maintenance.
 - e. PFD personnel to be trained in grain quality assessment will obtain higher levels training and an a wider variety of experience than would be possible under separate research and training programs.
 - f. The laboratories and personnel trained can form nucleus of future PFD and PASSCO quality control programs.
 - g. Overall project costs, personnel, equipment needs and implementation times can be reduced.
2. Establish training sites in fixed locations rather than traveling to field as in original proposal.
- a. Establishing a training site with adequate facilities and equipment will encourage institutionalization of training program after project is completed.
 - b. Training in two or more subjects can be offered at a permanent site simultaneously, better utilizing trainee time with more specialized programs.
 - c. Permanent training sites will provide better living conditions for trainees and instructors and encourage retention of qualified instructors in the training program.
 - d. Training sites established in close proximity to research sites will provide personnel to conduct field research work and permit better supervision of the field work.
3. Reorganize the administration and supervision of the STDT Project. The major changes from the present administrative structure suggested are to:
- a. Centralize GOP supervision in the Storage Cell of MINFA under the overall direction of Joint Secretary Janjua. Dr. Hafiz Ahmed, GSRL would provide consultation for MINFA on scientific matters.
 - b. Add an expatriate Senior Grain Storage Specialist to the STDT staff by converting 24 of the presently available TDY short term man months to a long term position. The person selected for this position will provide both supervision for field work in research and

training, and technical expertise in grain storage and quality control.

The Senior Grain Storage Specialist will be assisted by two locally hired persons with responsibilities for coordinating the training and research programs with the PFD's, PASSCO, research laboratories, and MINFA.

- c. The head of the Grain Research Laboratories (GSRL) in Karachi will provide supervision of research project design, laboratory analysis, and training for field workers in research methods.
 - d. Shift administrative responsibilities for Post-harvest Information and Documentation Service (PHIDS), external training, executive seminars, and relationships with the private sector from PARC to the Storage Cell and the FFGI/STDT.
4. Phase in research and training program by stages including:
- a. Reduce field research sites to 5 in first year.
 - b. Eliminate participation of academic institutions in research field work in the first year.
 - c. Concentrate training in first year on grain quality and grain storage.
 - d. Expand research sites in subsequent years according to availability of funding, trained personnel, and results of previous research.
 - e. Initiate GSRL and Federal Pesticide Research Laboratory (FPRL) portions of research protocols using available personnel and funding sources.
 - f. Phase in participation of academic institutions by granting student scholarships for participating in field work and data analysis for academic purposes.

Anticipated Contributions by PFD's and PASSCO

1. For the training program
 - a. Seconding qualified personnel to be used as "master trainers" and field investigators in the research and training programs.
 - b. Selection and release of personnel for training, plus payment of transportation to training, and per diems or

living accommodations at the training sites.

- c. Provision of a training site, available training equipment, godown sites and/or other owned facilities for installation of training equipment, and instructional facilities.

2. For the research program.

- a. Three house type godowns of the "PASSCO" design from each PFD and PASSCO filled to normal capacity with new crop inventory (3,000 - 3,330 MT). Each godown will be subject a different research protocols, and must be held for as long as necessary to complete the research design (9 to 12 months.)
- b. Access to other godowns and facilities as required for collection of samples of grain and/or data, and observations of storage practices.
- c. Provision of laborers for loading and unloading of godowns according to present management practices.

Support to be Provided by the FFGI/STDT

1. A long term grain storage specialist for supervision of the field work in the training and research programs. This long term advisor would also serve as an instructor in the training of the "master trainers" and present special topics during the training courses, short courses, and seminars.

This long term advisor will also assist in establishing training sites, establishment of facilities for grain quality evaluation, and maintenance of laboratory and training equipment.

2. Two local hire personnel for field programs, one each for the research and training program. The two persons will assist the long term advisor in the organization and conduct of the field training and research, including providing instruction in special topics in training courses.

In addition to the duties listed in 3b., the training assistant would supervise preparation of training manuals and materials including translations into Urdu or local languages as necessary, conduct training for the "master trainers", and provide specialized instruction in field staff training. The training assistant would be sufficiently knowledgeable to supervise sampling and data collection in the field research as required.

The research assistant would likewise be participate in the

training programs, but would primarily supervise the collection and analysis of grain samples the field. The research assistant would also be involved in the analysis and publication of research results, and recommend research results for inclusion in the training program.

3. Laboratory and training equipment to supplement that which is available to adequately equip training cum laboratory centers.
4. Incentive allowances and support for master trainers while conducting training and field work for the research projects.

ACTIVITIES

1. Applied Research

- a. Development of integrated pest management (IPM) protocols/weather data information for storage management: to recommend protocols which would provide for the minimum storage loss at least cost and to apply such protocols to storage operations via project training activities.
- b. Monitoring for insect resistance to pesticides: to determine the general level of insect resistance to chemicals used in residual spraying, protectants applied directly to grain, and fumigants.
- c. Pesticide residues in grain and grain products: to determine if insecticides used as grain protectants leave undesirable residues in grains or cereal-based foods.
- d. Ecology of storage losses: to create a base of factual observations about conditions relating to storage losses so as to develop internal systems for pest monitoring and control.

2. External Training

- a. Long-term degree training: to increase the availability of academically-trained personnel in postharvest system for universities, institutes, research units, and government agencies. this training will be at the Ph.D. level in postharvest entomology and the M.S. level in storage engineering, postharvest entomology, grain marketing, plant pathology, and grain science.

- b. Short-term training: to provide project and research personnel with specialized training required by project activities.

3. In-country Training

- a. Organize and conduct training at the Provincial level for management and operating personnel on grain protection, quality control, and management systems to improve technical capabilities of operational personnel. Coordinate training activities with other FSM and USAID sponsored projects such as Vertebrate Pest Control, Grain Storage Rehabilitation, and MART. Include the private sector in training activities, or conduct separate training programs as appropriate.
- b. Organize a series of seminars, conferences, and workshops for senior grain storage officials and government personnel to familiarize them with the technical, economic, and policy issues related to food security reserves, quality preservation, management systems.
 - i. Seminars on Grain Quality Maintenance
 - ii. Conference on Improving Grain Storage and Distribution Systems
 - iii. Conference on Safe Pesticide Use in Grain Storage

4. Postharvest Information

- a. Provide support in postharvest information ~~and~~ ~~the~~ on all aspects of postharvest grain systems for use by researchers, extension personnel, private sector, and other educational institutions.
 - i. Transfer all relevant information in the FFGI Post-Harvest Information and Documentation Center to the selected system.
 - ii. Train selected system personnel in use of documentation services, database searches, and other advanced information storage and retrieval technology.
- b. Receive, classify, and distribute Pakistan post harvest research information on a world-wide network to enhance status of Pakistan research and obtain additional research literature on an exchange basis.

5. Marketing and Distribution

Changes in GOP grain policies and fiscal constraints since the project was initiated requires consideration of the economic and social environment in which the output of the training and research activities will be utilized.

- a. Abandonment of the wheat rationing system and encouragement of the private sector to enter long term storage has placed greater emphasis on grain quality. The current "no loss" policy creates conditions that negates the utilization of improved storage technology and training. Fiscal constraints are causing the GOP to look to bulk grain handling as a means of reducing distribution costs.
- b. Studies of the economics of bulk grain handling and the "no loss" policies have been requested by the GOP and USAID. Additional analysis of other marketing and policy issues will be made as requested.

SECTION II

ADMINISTRATIVE STRUCTURE

GOP Supervision

GOP administrative supervision of the STDT project will be with Joint Secretary (Food), Ministry of Food, Agriculture, and Cooperatives (MINFA). The contact point in MINFA will be the Deputy Secretary (Food) of the Storage Cell Wing.

Storage Cell would be the official contact point between the FFGI and the GOP. All reports and requests for official appointments, clearances, and requests for assistance in contacting other GOP organizations and officials would be channeled through the Storage Cell. In a similar manner, all MINFA communications to the FFGI would be directed through the Storage Cell.

The basic activities of the STDT project will be divided into three functional areas; FFGI Support Activities, Technical Research and Training, and Field Activities. The project structure is presented in the diagram at the end of this section.

FFGI Support Activities

Support Activities will be under the direction of the Long Term Advisor who will schedule TDY personnel as required, plan and participate in economic analysis, plan and supervise non-field training and seminars for officials MINFA, the PFD's, PASSCO, USAID, and Pakistan institutions as required. The Support Activity will serve as primary contact for the Private Sector, but refer the private sector activities as necessary to the Field Staff as will be noted below.

The Support Activities will also maintain contacts with the Post Harvest Information and Documentation Service (PHIDS).

Technical Research and Training

The administrator of the PARC research units in Karachi will serve as the Research and Technical Training Coordinator. The Coordinator will allocate resources provided by PARC to support research planning, laboratory work, data analysis, and publications in PARC affiliated laboratories.

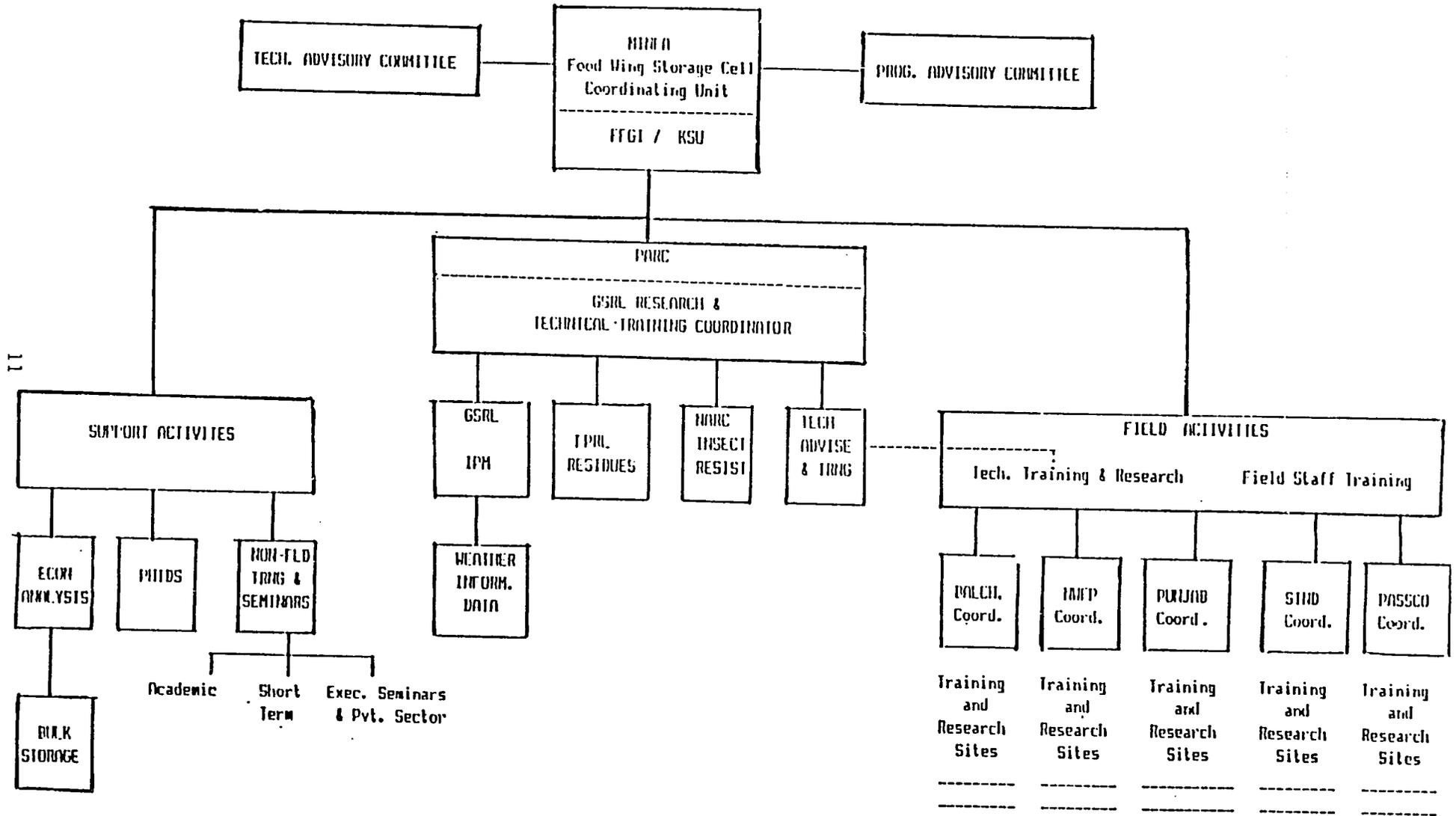
The Integrated Pest Management (IPM) Project Leader will act as the director for technical research training the field work personnel who will collect samples and data for laboratory analysis. The IPM project leader will be assisted by the Project

Leaders of the Ecology of Storage, Pesticide Residues, and Insect Resistance research projects, in training field workers for their respective research.

Field Activities

Field activities will combine the training and research work to be conducted for and in cooperation with the Provincial Food Departments and PASSCO at sites as mutually agreed upon. The major emphasis will be on the training of operations and management personnel, plus the conduct of research experiments within existing godowns. Sections III and IV contain detailed descriptions of the activities to be conducted. Training and consultation for the private sector will also be included in Field Work.

ADMINISTRATIVE STRUCTURE



11

SECTION III

Technical Grain Storage RESEARCH

Ecology of Storage Losses

Objective: Create a base of factual observations to assist in developing systems for assessing and controlling public-sector storage losses. This informational base will be used in conjunction with the IPM research program.

Description: This program will carry forward the results generated in the loss assessment survey of 1984-85 (Losses in Public Sector Storage in Pakistan, PARC, 1986) and will reinforce the current work promoted by PARC on determining the relationship of the density of stored-product insect populations to the occurrence of storage losses.

A sampling survey will be developed for various regions and levels of the grain marketing system where significant quantities of grain are held for more than 2 months. This survey will identify principal pests of stored grain and evaluate the importance of the deterioration they cause. Reports describing the physical conditions, quantities, and length of time grain is stored at each level of the marketing system, and pest control practices will be compiled.

Pesticide Residues in Grain and Grain Product

Objective: (1) Determine whether the use of insecticides as grain protectants (in admixture with grain) will result in undesirable residues in Pakistani cereal-based foods, and (2) determine the level of insecticidal residues in food commonly consumed in Pakistan.

Description: Wheat will be treated with insecticides which are approved for direct application to food grains. The wheat will then be evaluated under laboratory and field conditions. Residue levels in wheat will be determined at various intervals after treatment and storage under environmental conditions which occur in Pakistan. The fate of residues will also be determined at various stages of the processing and preparation of commonly-consumed cereal foods.

Monitoring for Insect Resistance to Pesticides

Objective: Determine the general level of insect resistance in Pakistan to chemicals used in residual spraying, protectants applied directly to grain and fumigants.

Description: Repeated and constant use of a given pesticide in a large segment of storage can lead to development of a tolerance or resistance to that pesticide in an insect population. In addition, improper usage of pesticides at sublethal dosages can also allow surviving insects to develop resistance to the pesticide.

A survey of local insect populations will be conducted to determine whether resistance currently exists to malathion, phosphine or other approved insecticides. Representative samples of insects populations will be obtained from public-sector godowns at various locations throughout Pakistan. As much background on pesticide usage as possible will be obtained for sites where test populations are acquired.

Development of Integrated Pest Management Protocols Including Weather Information for Storage Management

Objective: (1) Investigate the application in bag storage of three safe protocols for maintenance of stored-grain quality, (2) recommend protocol which would provide for the minimum losses at the least cost, and (3) apply this protocol to day-to-day operations of public-sector storage facilities. Knowledge of the storage environment as determined by temperature, relative humidity, and airflow is integral to a successful IPM protocol development. The objective of weather data information is to establish a linkage with a suitable IPM program via design and implementation of a system that provides grain storage facility managers with a set of information on possible moisture movements that cause losses in grain under certain weather conditions. The undesirable moisture movement (migration) during storage could be prevented by formulating suitable aeration programs for various storage weather conditions.

Description: Three basic IPM protocols will be evaluated in three warehouses (one protocol per warehouse) in Baluchistan and Northwest Frontier (NWFP) provinces while considering the effect of storage environment. Three warehouses will be used for each protocol in Sind and Punjab provinces. Warehouses should have a capacity of 1,000 MT (or 1,110 MT PASSCO design) and should be of standard quality construction and maintenance. The evaluation of each IPM protocol will be based on its technical and economic efficiency.

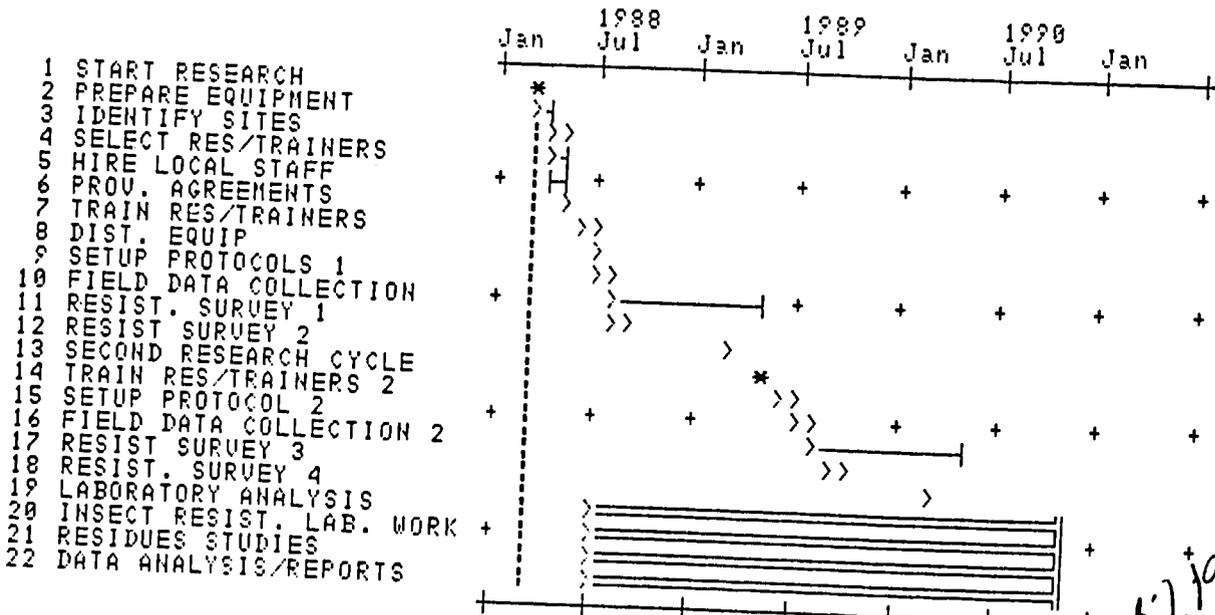
To be able to determine the storage environment, as much data as available will be compiled on grain moisture content and grain

quality for grain purchased by the public sector in these regions. A systematic collection and compilation of data on grain moisture content, temperature, and condition will be compared with atmospheric air temperatures and relative humidities over time in public-sector warehouses in these regions. Grain moisture content/relative humidity equilibrium tables will be developed for typical varieties of grain being stored in public-sector warehouses. An aeration protocol will be observed with the aim of making the IPM program more effective.

Once the weather data have been collected, analysis can begin in which the data are incorporated with accepted psychometric theory to produce guidelines which can be applied to the storage of local varieties of grain under Pakistani environmental conditions. The guidelines and instructions for their use will then be distributed to participants in the grain marketing system. The data collection and analysis is a continuous process, allowing guideline modifications as necessary.

The work plan for the upcoming storage season is indicated below. The work plan is coordinated with the training work plan in the next section, as the research sites will be set up in conjunction with the training sites, and development of laboratories which can serve for both the preliminary inspection of samples taken from the research experiments, and for training purposes.

SCHEDULE



Need preliminary reports - outlines - drafts,

NO Results until 1990!?

SECTION IV

TRAINING

IN-COUNTRY TRAINING UNITS

Objective

Organize and conduct training at the provincial level for management and operating personnel on grain protection, quality control, and management systems to improve technical capabilities of operational personnel. Coordinate training activities with other FSM and USAID-sponsored projects such as Vertebrate Pest Control, Grain Storage Rehabilitation, and MART. Include the private sector in training activities, or conduct separate training programs as appropriate.

Description

This training activity will be structured in four Provincial Training Cells, each responsible for carrying out training functions within its province. Overall direction, control of activities, and resource support will be the combined responsibility of the Storage Cell, Provincial Food Departments, PASSCO, and the FFGI. Actual training operations will be conducted by special units for training and field research as outlined in Section I.

These units would be established within existing facilities of the Provincial Food Departments and PASSCO. Available training and grain quality testing equipment provided by the World Bank project will be supplemented as required for each training / research site to the levels necessary to fulfill the objectives of the training and research program.

Personnel nominated as 'master trainers' by the Provincial Food Departments and PASSCO will receive intensive in-country training by the GRSL and FFGI. Additional training may also be provided as appropriate by the MART project in audio-visual and communication methods, and by the Academy for Educational Development on adult education and teaching techniques. Master trainers who demonstrate the interest and capability may be nominated for external training at the Grain Storage and Marketing Short Course and/or other external courses and conferences as appropriate.

The master trainers, the GSRL, the FFGI Senior Grain Storage Specialist and local staff will determine the subject matter to be taught and prepare appropriate training materials, including translations in to local languages as required. The training

courses will be directed toward meeting the specific needs and operational goals of their respective Provincial Food Departments and PASSCO.

While the 'master trainers' will have the primary responsibility for conduct of the training within their organizations, The Senior Grain Storage Specialist, FFGI local staff, and other qualified personnel from the Vertebrate Pest Control program, the GSRL, PARC, and academic institutions will be made available to supplement their efforts.

It is anticipated that training sessions for operating personnel will be approximately 12 days, while those for management will be about 6 days. It is estimated that approximately 1,200 persons will be trained by the training units in the first year of operation, and 1,500 to 1,800 in the second year.

IN-COUNTRY TRAINING (SEMINARS, WORKSHOPS AND CONFERENCES)

Objectives

Organize a series of seminars, conferences, and workshops for senior grain storage officials and government personnel to familiarize them with technical, economic, and policy issues related to food security reserves, quality preservation, and management systems.

Description

A series of seminars, workshops, and conferences will be conducted as follows:

An executive seminar on Grain Quality Maintenance will be presented to executive administrators and officials of public and private organizations and agencies to inform them of storage problems encountered on a day-to-day basis. The main focus of the seminar will be the major GOP policy issues related to the maintenance of quality in market supplies, operating reserves, and food security reserves.

When

A conference on Improving Grain Storage and Distribution Systems will examine the current and alternative systems of grain distribution for comparisons of costs, level of losses, quality maintenance, and levels of technical and managerial skills required. Participants should include all aspects public and private grain storage, handling, transportation, and processing.

A workshop on the Safe Pesticide in Grain Storage will feature both safety of the workers using chemicals, and the public health and safety issues involved in the consumption of stored grain products. The research and training components of the STDT

project will feature improved chemical application techniques, protective equipment, and advanced methods of detecting chemical concentrations and residues. Public officials and the private sector need to be informed of the risks of improper usage of chemicals in storage, as well as the costs and benefits to workers and the consumers of proper chemical usage.

SHORT-TERM TRAINING (EXTERNAL)

Objective

Provide Pakistani personnel with specialized training in area of postharvest grain systems.

Description

Storage rehabilitation - One PASSCO engineer was provided training in rehabilitation of grain storage. Additional personnel can be trained as requested by the GOP as the Rehabilitation Project is now being implemented.

Advanced grain storage research techniques - Two persons have received short-term external training in advance research technology in the United States and Great Britain. Two other persons were nominated but did not go due to problems in obtaining GOP clearances. The training will be rescheduled as their clearances are received. Advanced external training will be provided for the operator of the gas chromatograph which will be installed in the Grain Storage Research Laboratory. Additional training will be scheduled as the research progresses and training needs are determined by the research administrator.

Grain storage economics, policy, and marketing - As economic considerations and policy issues affect GOP and Provincial decisions on privatization, implementing the results of training research, and modernizing the storage and distribution systems, it is anticipated that requests for external training of key personnel planning and economic analysis will be received. External training will be designed to meet the specific needs.

Postharvest Information - The PARC and NARC library and information systems are being evaluated and reorganized under another USAID sponsored project. The reorganization should be completed by June, 1988. When the location and administrative structure of the Postharvest Information Center is determined, a specialized training program may be established for the librarian/documentation staff as needed.

Grain Storage and Marketing Short Course - Assist MINFA, PFDs, PASSCO, and Provincial Agencies with the selection and placement

of participants in the 7-week Grain Storage and Marketing Short Course held annually during the months of July and August by FFGI at Kansas State University. As of March, 1988, three participants from Pakistan have been confirmed.

ACADEMIC TRAINING (EXTERNAL)

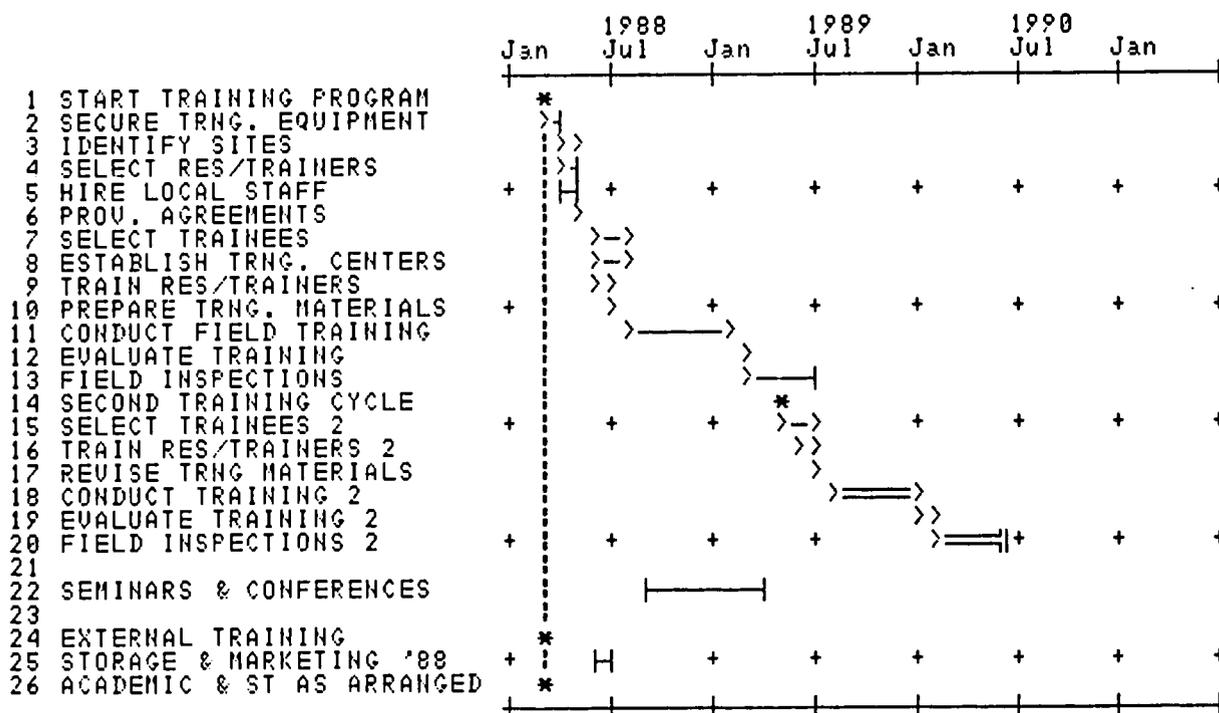
Objective

Increase the availability of academically-trained personnel in postharvest systems for universities, research units, government agencies, and private-sector entities in Pakistan.

Description

The original plan of work called for a minimum of seven persons to be selected for degree training at the M.S. level in the areas of entomology, agricultural engineering, marketing, plant pathology, and grain science and a minimum of two persons to be trained at the Ph.D. level in the field of entomology. However nominees have not been forthcoming. FFGI will assist the GOP, PARC and USAID in the selection and placement of nominees as required.

TRAINING SCHEDULE



SECTION V

POSTHARVEST INFORMATION

Objective

Provide support in postharvest information on all aspects of postharvest grain systems for use by researchers, extension personnel, private sector, and other educational institutions. This will include (1) transfer all relevant information in the FFGI Postharvest Information and Documentation Center to a selected system and (2) train the selected system library personnel in use of documentation services, database searches, and other advanced information storage and retrieval technology.

Receive, classify, and distribute Pakistan postharvest research information on a world-wide network to enhance status of Pakistan research and obtain additional research literature on an exchange basis.

Description

Provide a centralized information source, known as the Postharvest Information and Documentation Service (PHIDS) through the selected system on all aspects of postharvest grain systems for the use of researchers, technicians, extension personnel, and administrators within the various universities institutes, research units, government agencies, and private-sector entities in Pakistan.

The library and information system of PARC and affiliated institutions is being evaluated under the MART project. It is anticipated that recommendations will be made to relocate and change the administrative structure of PHIDS.

Schedule

Decision on location and administration of Postharvest Information Documentation Service. July 1, 1988.

Supply equipment for Postharvest Information Documentation Service, September, 1988.

Training personnel if requested, September - October, 1988.

Transfer of postharvest documents to and from Pakistan on a continuous through life of project.

SECTION VI

MARKETING AND DISTRIBUTION

Objective

Changes in GOP grain policies and fiscal constraints since the project was initiated requires consideration of the economic and social environment in which the output of the training and research activities will be utilized. Abandonment of the wheat rationing system and encouragement of the private sector to enter long term storage has placed greater emphasis on grain quality. the current "no loss" policy creates conditions that negates the utilization of improved storage technology and training. Fiscal constraints are causing the GOP to look to bulk grain handling as means of reducing distribution costs.

Description

Studies of the economics of bulk grain handling and the "no loss" policies have been requested by the GOP and USAID. Additional analysis of other marketing and policy issues will be made as requested.

Schedule:

"No Loss Policy" working paper preparation and report, March-April, 1988.

Economics of Bulk Storage Report, March - May, 1988.

Others studies as requested by AID/GOP.

SECTION VII

Concurrence

Plans of Work, March, 1988 to April 30, 1988 for Storage Technology Development and Transfer, Food Security Management Project approved this date:

M. Tariq Janjua
Joint Secretary (Food)
Ministry of Food, Agriculture and
Cooperatives

Date

Sirajuddin Ahmed
Deputy Secretary (Storage)
Ministry of Food, Agriculture and
Cooperatives

Date

Hafiz Ahmed
Chief Scientific Officer/Director
Grain Storage Research Laboratory

Date

Thomas M. Olson
Project Officer
USAID/Islamabad

Date

Richard C. Maxon
Long-Term Advisor
Food and Feed Grain Institute

Date