FOOD SECURITY MANAGEMENT PROJECT (391-0491)
STORAGE TECHNOLOGY DEVELOPMENT AND TRANSFER
CONTRACT NO. 391-0491-C-00-6080-00

A PLANNING PHASE REPORT

By

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INTRODUCTION

The Storage Technology Development and Transfer (STDT) Project is to adapt and implement improved grain storage, handling and integrated pest management (IPM) technologies to reduce stored grain losses in the public sector post harvest management system. It is to ultimately enhance the capabilities of: the Provincial Food Departments (PFDs); the Pakistan Agricultural Storage and Services Corp. (PASSCO); and, concerned private sector firms to store food grain over extended periods. The FFGI is to assist the Government of Pakistan (GOP) in this project, on behalf of USAID/Pakistan.

This consultancy was to assist in initiating in-country planning for the implementation of the project. The consultant work started on 6 July and continued until 13 August 1986. From August 2-13, Dr. J.R. Pedersen, Grain Storage Consultant, FFGI, joined in the work with this consultant. His separate report is summarized in this report. FFGI is to assist in a second six-week period of in-country planning for project implementation.

PHM is implemented under the overall authority of Mr. Inam Ul Haq, Joint Secretary, Food Division, Ministry of Food, Agriculture and Cooperatives (MINFA). Day to day contact with MINFA is possible through Mr. Siraj Uddin Ahmed, Deputy Secretary (Storage), MINFA. The STDT sub-component is administratively within the Pakistan Agricultural Research Council (PARC) under the direction of Dr. Amir Mohammed, Council Chairman and Dr. Umar Khan Baloch, Coordinator of the STDT Coordination Unit established within the Council.

SCOPE OF WORK

During this consultancy, the assigned task was to:

1. Assist in initiating the development of the necessary GOP work plans with the counterpart institutions.

2. Assist the GOP in initiating selection of project sites, facilities and counterpart personnel for a mutually agreed program of applied research, including that for monitoring of losses, integrated pest management, pesticide residues and pesticide resistance.

3. Assist the GOP in initiating the identification of qualified Pakistanis for post baccalaureate training in the U.S., both short and long-term, and for the eventual development of a cadre of trainers of post harvest grain management operating personnel.

4. To initiate the establishment of cooperative ties with collaborating GOP agencies.

5. In collaboration with PARC and MINFA personnel, identify potential Pakistani participants in a review of results of studies to date on the feasibility of public sector bulk storage facilities, and to initiate plans for the review.

ACTIVITIES

1. Development of Work Plans: The principal activity to assist in initiating development of the necessary GOP work plans was a review of the FFGI proposal for the implementation phase of the project with the Coordinator (STDT), PARC. Reviews of part of the implementation phase were also made with the Chairman, PARC; the Joint Secretary, Food, MINFA; and the Deputy Secretary (Storage). Many of the other activities noted later were ones leading toward development of these work plans.

We, the consultants wish to thank all those with whom we worked for their generous contribution of time and effort. At all stages, the Project Manager, FSM, USAID/Pakistan kept abreast of the consultants' activities.

2. Visits: The consultant made visits to institutions and installations in the Punjab, the Sind and the Northwest Frontier Province (NWFP). Visits were arranged with the assistance of the FSM Project Coordinator, USAID/Pakistan, who accompanied the consultant on all but the visits in NWFP, where the consultant was accompanied by the Senior Scientific Officer, STDT Coordinating Unit, PARC. The consultant was also accompanied by the Deputy Secretary (Storage), MINFA, and the Program Specialist, Agricultural Data Collection, FSM Project, USAID/Pakistan, on the the trip to Karachi, Tando Jam and Hyderabad.

3. Research Sites, Facilities and Personnel: Discussions were held with PARC and MINFA regarding initiating the selection of research sites, facilities and personnel for the applied research program. Most of the visits to other institutions and installations were made with these needs in mind.

4. Cooperative ties with collaborative GOP agencies: The consultant was attentive to the need to initiate cooperative ties with such agencies in all visits and discussions. Extensive discussions were held with PARC and MINFA regarding the training program. As a result, suggestions were drawn for the qualifications and responsibilities of a cadre of trainers of post harvest grain management operating personnel.

In all visits requests were made for informal submissions by September 2 of suggestions:

a. regarding the qualifications and responsibilities of the above noted cadre of trainers;

b. of persons (together with bio-data) to be trainers of the operating personnel;

c. of persons (together with bio-data) to be trainers of the above trainers;

d. of persons (together with bio-data) for short and long-term training in the U.S.

e. of persons (together with bio-data) to be involved in the applied research program; and

f. of items of equipment needed for the applied research program.

5. Applied Research Program: Though discussed in all appropriate situations, the consultant, together with the Grain Storage consultant, visited PARC's Grain Storage Research Laboratory (GSRL) and Pesticide Research Laboratory (PRL), Karachi, in an effort to develop collaboratively more details of examples of the research program.

6. Bulk Storage Facility Review: The consultant presented, by letter to PARC and MINFA, suggested Pakistan participants for the review of studies to date on the feasibility of public sector bulk storage facilities. The agencies of the participants, indications of their background, suggested dates for the review's initiation, its duration, and the probable time requirements of the individuals' participation were noted.

7. Persons Contacted are listed in Annex A.

RESULTS

1. Development of work plans:

a. Review of planning and implementation

The review of the FFGI proposed outline of work plans for the planning phase led to an agreement to review the FFGI proposal for the

implementation phase. The Coordinator (STDT), PARC, considered that agreement on plans for implementation were necessary first. During the review of the implementation phase proposal with this coordinator, few areas of agreement were found.

The consultant learned that it was expected in many areas of proposed project activity that the development of more detailed work plans would be dependent on FFGI personnel becoming sufficiently acquainted with the situation to propose such work plans. These more detailed proposals would then be presented to the appropriate GOP officials for criticism.

The following illustrates the areas in which agreement is lacking. As a part of the applied research program it was suggested that studies of flour quality be undertaken and that the susceptibility of wheat varieties to insect losses be studied. The consultant considers these matters are essentially completely outside the scope of this project. It may be important for the GOP to have such investigations, however.

It was suggested that the element for long-term training abroad be expanded from two to four Ph. Ds., and from seven to nine M.Ss. The consultant has no objection to such an expansion but considers that agreement should be reached on the overseas training currently specified in the project. This could be considered the minimum desirable.

Nearly all officials with whom the "large-scale" in-country training was discussed agreed that the KSU proposal was not the most suitable. The concensus seemed to be that KSU using short-term consultants visiting Pakistan, should strive for uniformity of the training by working with appropriate university and research institute personnel. These Pakistani professionals would train as trainers selected personnel with thorough, practical knowledge of the operations of grain

handling/storage in Pakistan. These latter trainers would then be offered further training at the KSU Grain Storage and Marketing Short Course (7 weeks) with an added two weeks of participation in study of training techniques and maintenance of training aids and equipment. These trainers would then organize and hold training courses for the operational personnel of grain handling/storage institutions. This training would be conducted in the language of the area, together with the use of training aids in Urdu.

Training of IPM researchers in the USA for 4-8 weeks was said to be desirable. The consultant considers that assistance "on-the-job" from KSU short-term consultants would be more useful.

It was suggested that development of a "documentation center" and analysis of weather data for its possible use in grain storage management be delayed for re-evaluation.

b. Applied research work plans

As a result of the assistance of the Grain Storage Consultant, more progress was made in developing work plans in connection with applied research than in other areas.

The needed studies of IPM and the related loss assessment studies were discussed briefly in visits in Lahore and Hyderabad, and more extensively in Faisalabad, Peshawar and Tando Jam. The principal discussions on this subject were held at PARC's Grain Storage Research Laboratory (GSRL), Karachi.

Discussions in GSRL centered on testing in Sind of these protocols in comparison with each other and in comparison with present procedures. The study of a protocol in a bulk storage situation was not considered. These discussions are summarized in Annex B.

c. Training

On the basis of the discussions regarding in-country training, suggestions were drawn regarding the ultimate trainers of operating personnel of grain storage facilities. The qualifications, experience, English language requirements and the responsibilities are stated. These would be the persons working with the aid of mobile training units (vehicles). These suggestions are in Annex C.

2. Research sites, facilities and personnel

Initial, tentative suggestions are the result of visits and discussions, which can lead to selection of project sites, facilities and counterpart personnel for a mutually agreed program of applied research.

a. IPM research

It was learned that because of the apparent relative availability of research personnel, it would seem best to start this research in the Sind using personnel of the GSRL, Karachi, for the research, working with PFD/PASSCO personnel in the godown storage centers. It was agreed that losses would need to be monitored as a part of this work. It was determined that there are apparently adequate numbers of sites in Sind with similar types of godowns to allow sound conduct of this research. It was learned that a "pattern" for this research during one storage cycle in one province would probably enable these studies to be extended in following years into other provinces with other research personnel of other institutions.

b. Residue studies

The Grain Storage consultant found that the Federal Pesticide Research Laboratory (PRL), Karachi was a suitable institution, with generally suitable facilities and available research personnel for the studies of the fate of insecticides directly admixed with wheat. Please see the Grain Storage consultant's report for August 2-15, 1986.

c. Insect resistance studies

The Grain Storage consultant found that the Grain Storage Research Laboratory, Karachi, was a suitable institution, with generally suitable facilities and available research personnel to conduct a survey of insect resistance to pesticides used in public sector grain storage. Please see the Grain Storage consultant's report for August 2-15, 1986.

d. Grain storage/handling systems

No conclusive information was gained to indicate the need for improved knowledge of the grain storage/handling system of the country. Continued extensive monitoring of losses, as done in connection with the World Bank project on Grain Storage does not seem essential to this project. (It is a necessary part of the IPM research, as noted above.) Yet, it would seem helpful to decision makers in Pakistan to have more information than is currently available about present losses.

3. Bulk storage review

MINFA reported there were no objections to the persons suggested by the consultant as Pakistani counterparts in the review of earlier feasibility studies on the use of bulk grain storage in the public sector. Plans were proposed for the first meeting of these Pakistanis and the FFGI team in September 1986. Pertinent documents leading to those results are attached as Annex-D.

4. Project Complexity

It is concluded by this consultant that this project is more complex than was seemingly anticipated by GOP institutions and FFGI. The inter-relationships between the various institutions are multiple, are not easily discernible by the outsider, yet each institution's link with the project and FFGI must be delineated, and understood. This is very time consuming and the results in project achievement are slow to occur.

RECOMMENDATIONS:

1. It is recommended that the planning phase be extended by an additional 3 months. This would be done to allow the GOP time to prepare written counter-proposals to the work plans presented to them by FFGI at approximately the end of the second period of short-term visits.

2. PARC's proposal for an Organizational Structure and Personnel to Support the Storage Technology Development and Transfer (STDT) Post Harvest Management Program:

At our (Mr. Qazi, Shuyler and Pedersen) first meeting with Mr. Inam Ul Haq, Joint Secretary Agriculture (Food), we were asked to review two letters from Mr. Umar Khan Baloch, Coordinator (STDT), PARC. These letters proposed an organizational structure within PARC to support the STDT sub-component of the Food Security Management Project. We were asked to comment on the size and advisability of the proposed organization. Copies of the letters are attached as Annex E-1 and E-2.

In brief, the organizational structure included a PARC Coordination Unit and six Research Units. A Coordinator, presumably Mr. Baloch, would be responsible for all units. The Coordination Unit is to be staffed with a Senior Scientific Officer, an Assistant Director (Administration), Stenographer, Accounts Assistant, two drivers and a Naib Qasid (laborer). Each Research Unit was to consist of a part-time Principal Investigator (not listed), a Senior Scientific Officer, Scientific Officer, Junior Scientific Officer, three (3) Field/Lab Investigators and a Driver. The six Research Units are designated at the same locations as used in the World Bank supported loss assesment study.

In theory, such an organization to conduct post harvest research work in Pakistan is not bad. A Coordination Unit would be a necessity if the activities of all research units were to function in a unified manner. The need for two drivers for this unit might be questioned.

The need for six research units might also be questioned. One unit per province should be sufficient. The Grain Storage Research Laboratory (GSRL), Karachi is a functioning unit and could provide coverage for Sind Province. Whether the unit for Punjab Province would be best located at Faisalabad or the National Agricultural Research Centre (NARC), Islamabad is open to discussion. Each location has certain positive aspects. The Agricultural University at Faisalabad has a history of involvement in post harvest grain research and is reported to have facilities for training and research related to grains. NARC, although facilities are not as specifically dedicated to grain work, does have laboratory facilities which could possibly be useful in grain research and training. The N.W.F.P. Agricultural University, NWFP, and the Agricultural Research Institute at Quetta, Baluchistan are the only viable locations in each of these two provinces.

We (Shuyler and Pedersen) do not see the need for full staffing of the organization (as presented) to implement the STDT sub-component. This is not to say that at some time in the future the full organization could not be fully utilized.

Until the STDT sub-component work plan is finalized it will be difficult to specify which Research Units should be activated and at what level of staffing. We understand that the Tropical Development and Research Institute will be undertaking same training and research at four of the locations (GSRL), Karachi; Faisalabad; NARC; and Peshawar. Initial planning for the STDT sub-component involves training and research

activities centered at the GSRL, Karachi during years-1 and 2. In fact, the research activities at the Federal Pesticide Research Laboratory (FPRL) and GSRL in years - 2,3 and 4 are tentatively scheduled to utilize more personnel than called for in the organizational chart for the GSRL, i.e. as follows:

	FPRL	GSRL		
	Residue Research	Resistance Research	IPM Research	Total
Scientific Officer	1	1	1	3
Junior Scientific Officer	1	2	2	5
Statistician	-	-	1	1
Field/Lab Investigators	2	2	4	8
NAIB QASID	-	-	12	12
TOTAL	4	5	20	29

In year 3, IPM research will probably focus on Punjab Province and in Baluchistan and NWFP in year 4. It should be pointed out that these plans are only tentative and subject to revision based on further discussions between PARC, USAID, and FFGI/KSU. Scheduling of most of the training activities is too uncertain at this time to indicate where the main effort will be located in the different years of the project.

It is assumed that some of the current staff located at stations outside of Karachi under the World Bank project could be utilized at the GSRL during the first two years of the STDT Sub-component and later used at locations in other provinces. It is also assumed that some of the current staff might be used to assist in the training by professionals of trainers of grain management operational personnel.

3. It is recommended, as requested, that the Federal Pesticide Research Laboratory submit, informally, a proposal for the pesticide

residue research for the project. It is similarly recommended that the Grain Storage Research Laboratory, as requested, submit, informally, a proposal for at least one year of IPM research, and a proposal for the research on insect resistance to pesticides.

All of the remaining recommendations are considered "tentative". Insufficient information is known for the points made to be considered definitive.

A. Developing Work Plans.

5. The FFGI planning phase team should return with a "brochure" about the project which can be sent by PARC and MINFA in appropriate numbers to all institutions which are probably to be involved in or responding to project activities and opportunities.

6. The FFGI should present to the appropriate GOP officials, as soon as possible, proposed work plans for each project activity and then present the combined work plans for all activity to PARC and MINFA.

7. The GSRL should initiate the IPM research and should conduct the research on insect resistance to pesticides. The PRL should conduct the insecticide residues studies. (Facilities outside the base station need to be chosen, yet. Informally, it is considered that personnel with whom the consultants worked are suitable for conducting the studies needed.)

B. Training:

8. The FFGI should request in writting that USAID forward to PARC and MINFA a specific request for nominees for training in the USA, both short and long-term, stating the nature of the training (the discipline for a degree), the number of people for each kind of training, the duration of the training, and the timing of it (what year, etc.). Any special (beyond basic) qualifications needed should also be noted.

9. A complex system of in-country training seems necessary.

a. Professionals in universities and research institutes who are interested, capable and available for use in training must be indentified. (Six to 12 persons probably should be selected.)

b. Short-term consultants from KSU, visiting Pakistan, would strive for uniformity in training by working with these professional participants in groups.(Though many indications were observed that these professionals consider themselves, generally speaking, adequately trained, there may be some who will be interested, capable and available for training at the Annual KSU Grain Storage and Marketing short-course and 2-week supplement as noted above.)

c. Persons of PASSCO and PFDs, assigned to PASSCO (maybe the PASSCO Training Unit), interested, capable and available, meeting qualifications as laid out in one of the three types of persons listed in Annex C (or as modified hereafter), will be selected to be trainers of grain storage management operating personnel.

d. Persons selected in sub-paragraph c. will be trained by the Pakistan professionals noted in sub-paragraph b.

e. As interested, qualified, and available, persons trained as in sub-paragraph d will be further trained at the Annual KSU Grain Storage and Marketing Short-Course and 2-week supplement.

f. Such trainers will then plan and initiate the training of the grain storage management operating personnel.

g. If is anticipated that there will need to be one trainer on grain and grain handling who will also be the head person in the training unit (see Annex F). The training program could start with one of each of the three types of trainees. With successful implementation, in the fourth

year, there would be four of each of the additional two types of trainers:

1) Stored grain insect pest management; and

2) Storage engineering.

In this way. with four mobile training units (vehicles), training can be given in each province in the local language with training aids in Urdu.

Annex A

LIST OF CONTACTS

MINISTRY OF FOOD, AGRICULTURE AND COOPERATIVES (MINFA), ISLAMABAD

Mr. Inam Ul Haq, Joint Secretary, Food

Mr. Siraj Uddin Ahmed, Deputy Secretary (Storage)

Mr. Khan Naseem Iqbal, Technical Officer (Grain Quality) Storage Cell

PAKISTAN AGRICULTURAL RESEARCH COUNTIL (PARC) ISLAMABAD

Dr. Amir Muhammad, Chairman.

Dr. Umar Khan Baloch, Director of Research (Crop Protection) and National Coordinator (Post Harvest Management)

Mr. Javed Iqbal, Scientific Officer, Post Harvest Coordination Unit

NATIONAL AGRICULTURAL RESEARCH CENTRE, ISLAMABAD.

Mr. Mohammad Irshad, Senior Scientific Officer, Grain Storage Project.

Mr. Joe E. Brooks, Denver Wildlife Research Centre, U.S.D.A.

Dr. Rafiq Ahmed, Chief Scientific Officer, NARC (contact at Faisalabad)

GRAIN STORAGE RESEARCH LABORATORY (GSRL), KARACHI.

Dr. Hafiz Ahmed, Chief Scientific Officer/Director

Mr. Mubarik Ahmed, Scientific Officer (Entomology)

Mr. Mohammad Sardar Alam, Scientific Officer (Entomology)

Mr. Mohammad Anwar, Scientific Officer (Agr. Entomology)

Mr. Mohammad Qasim Chaudhry, Scientific Officer (Chemistry)

Mr. Syed Asim Rehan Kazmi, Scientific Officer (Plant Origin Pesticides)

FEDERAL PESTICIDE RESEARCH LABORATORY (PRL), KARACHI.

Mr. M. M. H. Baig, Principal Scientific Officer/Head

Mr. M. J. A. Osmani, Senior Scientific Officer, Quality Assurance Section

Dr. S. Z. Masud, Senior Scientific Officer, Residue Research Section

Mrs. Sharim Farhat, Scientific Officer, Residue Research Section

Miss Zahida Parveen, Assistant Scientific Officer, Residue Research Section.

VERTEBRATE PEST CONTROL LABORATORY (VPCL), KARACHI.

Mr. Mian Mohammad Shafi, Director.

Mr. Aziz Khan, Senior Scientific Officer, Zoology

PAKISTAN AGRICULTURAL STORAGE AND SERVICES CORPORATION (PASSCO), LAHORE.

Maj. Gen. Mohammad Akram, Managing Director

Mr. Muhammad Amin, Senior General Manager (Works), Chief Engineer

Mr. Sheikh Ijaz Ahmed, Superintending Engineer

Mr. Shabir A. Qureshi, Superintending Engineer

Mr. S. M. Chaudhry, General Manager (Finance and Accounts)

Col.(Retd.) Mohammad Taj, Senior General Manager (Field)

PUNJAB PROVINCIAL FOOD DEPARTMENT, LAHORE

Mr. Mohammad Azhar, Secretary, Food

Mr. Mohammad Siddiq, Deputy Secretary, Food

Mr. Mohammad Sharif, Deputy Director, Food, Lahore Region

Mr. Kabir Ahmed, Additional Director, Food, Punjab.

PUNJAB PROVINCIAL FOOD DEPARTMENT, FAISALABAD

Mr. S. M. A. Sabri Bukhara, District Food Controller

Mr. Mohammad Jamil, Assistant Food Controller

Mr. Abdul Hamid, Food Inspector, Site 1

PASSCO, FAISALABAD

Mr. Abdul Hamid Akhtar, Executive Engineer, Faisalabad.

FAISALABAD UNIVERSITY OF AGRICULTURE, FAISALABAD

Mr. M. Mumtaz Ali, Vice Chancellor

Dr. M. Rafiq Khan, Head, Department of Entomology

Professor Manzoor Ahmad, Department of Entomology, (Post Harvest)

Dr. Ghulam Sarwar Sheikh, Dean, Faculty of Agr. Engineering & Tech

AYUB AGRICULTURAL RESEARCH INSTITUTE, FAISALABAD, PUNJAB

Dr. Ghulam Rasul, Entomologist

Mr. Mohammad Ulfat, Assistant Entomologist

Mr. Amjad, (former field investigator, Faisalabad University)

PLANT PROTECTION INSTITUTE, FAISALABAD, PUNJAB

Dr. Mukhtar Ahmed Haleemi, Director

SIND PROVINCIAL FOOD DEPARTMENT, KARACHI

Mr. Irshad Ali Unner, Deputy Director, Food, Karachi

Mr. Afzal Mehdi, Assistant Director, Food, Karachi

SIND PROVINCIAL FOOD DEPARTMENT, HYDERABAD

Mr. Hidayat H. Rizvi, Deputy Director, Food, Hyderabad

Mr. Sohrab Kalwar, Assistant Director, Food, Hyderabad

Mr. M. Ghulam Ally, Rationing Controller, Hyderabad

Mr. Raza Muhammad Siad, Ward Rationing Officer, Hyderabad Godowns

FEDERAL BUREAU OF STATISTICS, KARACHI

Mr. S. M. Ishaque, Deputy Director General

SIND AGRICULTURAL UNIVERSITY, TANDO JAM, SIND

Dr. N. N. Ansari, Dean, Faculty of Agriculture

Dr. G. R. Solangi, Director, Advanced Studies & Research, & Professor of Plant Pathology

Dr. Shafi M. Nizamani, Department of Plant Protection

NORTHWEST FRONTIER PROVINCE AGRICULTURE UNIVERSITY, PESHAWAR

Dr. G. M.Khattak, Vice Chancellor

Dr. Said Khan Khalil, Associate Professor, Entomology

Mr. Abdul Raquib, Research Officer (WB Project)

AGRICULTURE RESEARCH INSTITUTE, TARNAB, PESHAWAR

Mr. Mohammad Suleman, Entomologist

Mr. Gulnawaz Marwat, Entomologist (Nat'l Fruit Fly Project)

Mr. Imtiaz Ahmed Khan, Entomologist

N.W.F.P FOOD DEPARTMENT, PESHAWAR

Mr. Farid Khattak, Food Inspector

Mr. Abdul Rahman, Storage & Enforecement Officer

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Mr. M. Gulzar A. Qazi, FSM Project Coordinator

Dr. Zakir Hassain Rana, Program Specialist, Economic Policy Analysis, FSM

Mr. A. Masood Khalid, Program Specialist, Agriculture Data Collection FSM

Mr. A. Dean Pratt, Controller

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Mr. Mujeeb Sidiqui, Controller's Office

Mr. Rana, Controller's Office

USAID CONTRACTOR PERSONNEL

Dr. Larry Morgan, Chemonics (EAN, FSM)

Mrs. Karthy Luneburg, Chemonics (EAN, FSM)

Ms. Nilofer Hashmi, Chemonics (EAN, FSM)

Dr. Cecil E. Fuller, Experience, Inc. (Godown Survey, FSM)

Dr. Rodda, Chief of Party, TIPAN, NWFP Agriculture University

OTHERS

Mr. Tareq Jawed Rajput, Banking Assistant, American Express Bank, Islamabad.

ANNEX B

INTEGRATED PEST MANAGEMENT RESEARCH

A Suggested Cooperating Institution:

Grain Storage Research Laboratory
Malir Halt, Karachi - 27

Objective: To determine the technical and economic efficiency of three safe programs of integrated pest management (IPM) in grain storage in bags in godowns.

Year 1 of Research

Test Locations: Three to four locations in the Sind representative of some of the major ecological situations of the province. Godowns used in the study should be of good quality, similar in type of construction and capacity to the extent possible, e.g., the PASSCO type godowns of 1100 T. capacity. The locations chosen should be both a procurement centre and a storage centre. Three replications of each protocol, each in different area are needed.

Nature of IPM Activities: The IPM protocols should be preventive, detective and curative in nature. The program should start with a thorough cleaning of the godown area and environs, and application of an appropriate contact insecticide. Necessary physical

preparation of godowns, such as closing of cracks, will be done. Inspection, sampling, moisture content measurement, etc., for insect infestation detection should be a part of the procedure for all grain coming into the test godowns. The grain will be inspected at frequent intervals, say every 3-4 weeks, for about 9 months. The godowns will be cleaned frequently.

The above activities will be used whenever IPM protocols are being tested. In addition the specific pest management chemical applications peculiar to each protocol (see the PIO/T or contract for the project) will be used in the selected godowns.

In contrast, one set of replicates studied will be godowns in which current practices are used.

Assessment of losses and assessment of costs will be two of the techniques used to evaluate efficiency.

Responsibilities for activities: Close collaboration of the GSRL and PFD/Sind personnel will be required. The PFD must have primary responsibility for all activities at godowns, GSRL must determine that all activities are conducted as per protocol. This will entail some "oversight" of PFD personnel by GSRL investigators. In other instances a PFD observer/learner will accompany the GSRL worker as they take measurements. In other instances daily wage earners or contract labor arranged by GSRL will perform duties under the "dual" supervision of both institutions. GSRL will have overall responsibility for necessary training.

Loss assesment evaluations will be the responsibility of GSRL.

Assesment of costs will necessarily be particularly the responsibility of the PFD, but GSRL must share in this work and cooperate with the PFD, providing all needed information.

Methods of Loss Assesment: Though not discussed in detail, some of the methods used in the WB study may be applicable. Comments were made by GSRL personnel that improvements in techniques are being investigated.

GSRL Personnel:

1 Scientific Officer

1 Statistician

2 Junior Scientific Officers

4 Field/Lab Investigators.

Contract labor and/or daily wage earners up to equivalent of 12 persons for 1 year.

Equipment: Needs were not discussed.

Analysis of Data:

Analysis of data collected during the 9 months and the report preparation, together with any special training required for the following year, will require 3 months.

Years 2 and 3 of IPM research: Discussions were very brief and not definitive.

The need for travel support for GSRL activities was noted.

Trainer on Grain and Grain Handling

Qualifications: Education: Minimum B.Sc. (Hons.) Agriculture or equivalent. Preferred: Ist Class M.Sc. Agriculture or equivalent.

Language: Excellent ability in use of English.

Experience: Work record must show extensive experience and/or knowledge, during at least 3 years, of actual conditions of grain procurement, handling and storage in Pakistan, especially that pertaining to wheat. Knowledge of grain characteristics, especially those of wheat, is essential. Experience in training is preferred. Special training to be a trainer is acceptable.

Job Description: With the assistance of the project's postharvest management specialist, make the overall plan for the specialised training for procurement personnel, storage inspectors, and other operational personnel of grain handling institutions.

Provide practical training, applicable to the participants, in training sessions on the characteristics of grain, especially those of wheat, the knowledge of which will allow improvement in the handling and storage of grain in bag stacks in godowns and in bulk in various types of facilities. This training will be provided generally, through the use of one of two mobile training units, in varying locations in the various provinces, as needed.

Coordinate the organization and conduct of training and other transfer of technology. As appropriate, revise and update, as additional information is obtained, the training content and related materials regarding the characteristics of grain, especially of wheat, which will improve the handling and storage of grain.

Perform other duties in regard to transfer of technology as needed and requested.

July 22, 1986

Trainer on Stored Grain Insect Pest Management

Qualifications:

Education: Minimum B.Sc. (Hons.) Entomology or equivalent. Preferred Ist Class M.Sc. Entomology or equivalent.

Language: Excellent ability in use of English

Experience: Work record must show experience and/or knowledge, during at least a year, of actual conditions of grain procurement, handling and storage in Pakistan, especially that pertaining to wheat. Knowledge of stored grain insect pests, their behavior, life histories and control/management is essential. Integrated pest management in stored grain, especially wheat, must be known; this knowledge must include the safe and effective use of fumigants and other insecticides. Experience in training is preferred. Special training to be a trainer is acceptable.

Job Description:

With the assistance of the trainer on grain and grain handling, plan the portion of the specialised training pertaining to stored grain insect pest management for procurement personnel, storage inspectors and other operational personnel of grain handling institutions.

Provide practical training, applicable to the participants, in training sessions on stored grain insect pests, their behavior, life histories and control and management.

Provide practical training in integrated pest management in stored grain, especially wheat, ensuring that the participants become knowledgable in the safe and effective use of fumigants and other insecticides in stacked bags of grain in godowns and in grain in bulk in various types of facilities. This training will be provided, generally, through the use of one of two mobile units, in varying locations in the various provinces, as needed.

As appropriate, revise and update, as additional information is obtained, the training content and related materials regarding stored grain insect pest management. Through coordination with the trainer on grain and grain handling and other trainers integrate the training of each homogenous group of participants into a cohesive package.

Perform other duties in regard to transfer of technology, as needed and requested.

July 22, 1986

Trainer on Storage Engineering

Qualifications:

Education: Minimum B.Sc. (Hons.) Agricultural Engineering or equivalent. Preferred Ist Class M.Sc. Agricultural Engineering or equivalent.

Language: Excellent ability in use of English.

Experience: Work record must show experience and/or knowledge, during at least a year, of actual conditions of grain procurement, handling and storage in Pakistan, especially that pertaining to wheat. Knowledge of techniques of construction and maintenance of improved grain storage godowns and other types of facilities is essential. Knowledge is needed of the technical requirements and proper methods of use and maintenance of equipment used in measuring condition of the grain. Experience in training is preferred. Special training to be a trainer is acceptable.

Job Description:

With the assistance of the trainer on grain and grain handling, plan the portion of the specialized training pertaining to proper use and maintenance of storage facilities for procurement personnel, storage inspectors and other operational personnel of grain handling institutions. Plan for training these persons in proper use and maintenance of equipment used in measuring and maintaining condition of the grain.

Provide practical training, applicable to the participants, in training sessions on the proper use and maintenance of storage facilities and equipment used in measuring and maintaining condition of the grain. Provide practical training that enhances the procurement of grain in good condition and enhances the opportunity for use of an effective integrated insect pest management program to maintain the grain in good condition. This training will be provided, generally, through the use of one of two mobile units, in varying locations in the various provinces, as needed.

As appropriate, revise and update, as additional information is obtained, the training content and related materials regarding the above specified subject matter. Assist the trainer on stored grain insect pest management to integrate the training of each homogenous group of participants into a cohesive package.

Perform other duties in regard to transfer of technology, as needed and requested.

ANNEX D

Food and Feed Grain Institute
Kansas State University

Storage Technology Development & Transfer/
Food Security Management Project

Islamabad, July 24, 1986

Mr. Sirajuddin Ahmed
Deputy Secretary(Storage Cell)
Ministry of Food, Agriculture
and Cooperatives
29-Blue Area, FSM Building
Islamabad

Dr. Umar Khan Baloch
Director, Research (Crop Protection)
PARC, L-13, Al-Markaz F-7
Islamabad

Dear Messrs Ahmed and Baloch:

During this planning phase of the STDT project, a review is to be made by the Food and Feed Grain Institute (FFGI) of the results of studies to date on the feasibility of public sector bulk grain storage facilities, in collaboration with PARC and MINFA personnel. If a bulk storage/handling system is feasible and desired by the Government of Pakistan, an implementation plan is to be developed by FFGI, in collaboration with PARC and MINFA personnel, for conducting a study to identify the most efficient bulk storage facility design(s) for Pakistan conditions.

It is requested that personnel be nominated with whom FFGI specialists will work in collaboration on this task. Each person involved must have knowledge of the grain storage/handling system. It is anticipated that the study will begin 6 or 7 September 1986 and will be completed in about a five-week period. An initial briefing/task assignment meeting is intended to be held in Islamabad. Similarly there will be a meeting at the conclusion of the study. There might be a need for other meetings. An average of about 2 work days per work week will be required of each person.

Suggested experience of the personnel for this review and suggested names, where known, follow:

1. Storage engineer with extensive knowledge and experience of the bag and bulk storage/handling systems. Mr. Muhammad Amin, Senior General Manager (Works), PASSCO, Lahore, is suggested.

2. A person with economics/finance experience and knowledge of these kinds of information regarding bag and bulk storage/handling systems, Mr. S.M. Chaudhry, General Manager (Finance & Accounts), PASSCO, Lahore, is suggested.

3. An official of a food department of a province producing a surplus of wheat, having extensive knowledge and experience of the bag storage/handling system and some knowledge of the bulk storage/handling system, and, preferably, having an acquaintance of grain quality preservation problems due to insects, etc. Mr. A. Rashid Khan, Director, Food, Punjab Food Department, is suggested.

4. A person with extensive knowledge and experience in the logistics of grain handling and storage and, preferably, with knowledge of economic/financial matters related to these logistics. Mr. Abdul Majeed, National Transport Research Center, Planning and Development Division, is suggested.

The FFGI team will consist of a storage engineer, a grain marketing economist, a grain quality preservation specialist and the postharvest management specialist. The total team must not be so large as to be unwieldy, but one or two additional participants may be desired by the Government of Pakistan. Suggestions follow:

a. An official of a food department of a province with a wheat deficit having extensive knowledge and experience of the bag storage/handling system and, preferably, some knowledge of the bulk storage/handling system. Mr. Aman Ullah Khan, Director, Food, N.W.F.P., is suggested.

b. PARC may wish to nominate some fully qualified person from outside the Council's staff. In this connection, it is noted that Mr. Noor Muhammad Shah, Director General, Food, Karachi, has experience in handling wheat in bulk at ports and in handling/storing wheat in bags in the Sind.

Thank you for your kind assistance in this matter.

Sincerely,

Harlan R. Shuyler

Harlan R. Shuyler
PHM Specialist
STDT Component, FSM Project
Office of ARD, USAID/Islamabad

cc: ARD, USAID/Islamabad - Barry Primm
FSM Proj Coordinator - Gulzar Qazi
KSU - Roe Borsdorf

بسم الله الرحمن الرحيم

Telephone No. 814107.

Telex No. 5844 MINFA Pk
Telegram: AGRIDIV

D.O. No. 10-6/86-S.C.

GOVERNMENT OF PAKISTAN
Ministry of Food, Agriculture
and Cooperatives
(Storage Cell)

SIRAJ UDDIN AHMED
DEPUTY SECRETARY

Islamabad, the 10th August, 1986.

Dear Mr. Shuyler

Kindly refer to your letter dated July 24, 1986 regarding review of Public Sector bulk storage facilities in the country

We have no objection to the nominations proposed in your letter. MINFA will be represented by the undersigned.

Yours sincerely

(SIRAJ UDDIN AHMED)

Mr. Harlan R. Shuyler,
Programme Specialist,
O/O ARD/USAID,
Islamabad.

C.C. Mr. Umar Khan Baloch, Director of Research (Crop Protection), P.A.R.C; Islamabad.

3/

FOOD AND FEED GRAIN INSTITUTE
KANSAS STATE UNIVERSITY

STORAGE TECHNOLOGY DEVELOPMENT AND TRANSFER/
FOOD SECURITY MANAGEMENT PROJECT

Islamabad, August 11, 1986.

Mr. Siraj Uddin Ahmed
Deputy Secretary (Storage Cell)
Ministry of Food, Agriculture and Cooperatives
29-Blue Area, FSM Building
Islamabad.

Dear Mr. Ahmed:

Please refer to my letter of July 24, 1986 and your reply of August 10, for which I am appreciative. This letter also concerns the review of studies on the feasibility of bulk grain storage in the public sector.

Anticipating the timely clearance of the Food and Feed Grain Institute(FFGI) team for this review, I wish to offer the suggestions below and on the attached sheets.

I would request that you, Mr. Ahmed, representing MINFA, be the convenor/ organizer of the study group. The initial meeting might open at 10:30 a.m. September 8, 1986, in the MINFA Committee Room. May I also suggest that the Joint Secretary, Food, Mr. Inam Ul Haq be requested to act as the chairperson for the initial meeting of the study group or at least the early portion of it.

May I suggest that you endeavor to see that all Pakistani participants have copies of the most pertinent documents related to feasibility studies before the meeting. Perhaps Mr. Gulzar Qazi, FSM Project Coordinator, can assist with this in my absence from o/a 13.8-4.9.86. It may be wise to suggest to participants that each bring with them any other documents they consider useful.

Please note the suggestions on the attached sheet.

Sincerely,

Harlan R. Shuyler

Harlan R. Shuyler
PHM Specialist
STDT Component, FSM Project
O/O ARD, USAID/Islamabad.

c.c. Mr. Inam Ul Haq, Joint Secretary, Food, MINFA.
Mr. Umar Khan Baloch, Director of Research (Crop Protection), PARC, Islamabad
ARD; USAID/Islamabad-Barry K. Primm.
FSM Project Coordinator-Gulzar Qazi.
KSU-Roe Borsdorf.

SUGGESTIONS CONCERNING THE REVIEW OF STUDIES ON THE FEASIBILITY OF BULK GRAIN STORAGE IN THE PUBLIC SECTOR

JOINT PAKISTAN/FFGI (USAID) STUDY GROUP
CONVENOR - MR. SIRAJ UDDIN AHMED, MINFA
Initial Group Meeting - 10:30 a.m., September 8, 1986
Committee Room, MINFA

Initial Chairman - Mr. Inam Ul Haq, Joint Secretary, Food.

AGENDA OF FIRST MEETING:

1. Introduction: The need for the Group and the need for the results of its study.
2. Any organizational actions considered necessary.
3. Identification of and agreement on reports to be reviewed.
4. Summary of pertinent parts of principal reports (WB and DANIDA minimum) (about 20 min). (It is suggested that prior to the meeting Mr. Siraj decide which reports are to be summarized. It is also suggested that Mr. Siraj request a Pakistani participant of the Review Group to prepare the summary prior to the meeting and then present this summary during the meeting.)
5. Agreement on method of evaluation of reports.
6. Agreement on assignment of tasks.
7. Agreement on tentative plans for follow-up meetings of: a) individuals; and, b) the group.
8. Other matters, with permission of the chair.

It is suggested that for any meeting to be considered a Group Meeting at least four Pakistani and three consultants should be present.

Anticipated duration of First Meeting - Four(4) Hours.

Documents which all participants should have:

1. Pertinent parts of:
   Food Storage and Processing Study, Vol I & II, (Agroprogress)WB, 1986.

2. PASSCO Bulk Conversion Study, Vol. I & II, PAK/DANIDA, 1985.

3. Foodgrain Transport, Economics and Logistics Study, National Transport Research Centre, 1986.

Other documents which may be of value to the Group.

1. ADB Appraisal Report.

2. Various PASSCO documents related to bulk storage.

3. Other documents of MINFA or other institutions, including USAID/Pakistan

Other matters:

If considered appropriate by MINFA, FFGI(USAID) will arrange for hotel reservations and pay for lodging (as required) for out-of-town Pakistani participants for the first meeting.

In view of the duration of the first meeting, FFGI(USAID) will pay the cost of a catered working lunch or whatever is considered appropriate.

If considered appropriate by MINFA, FFGI(USAID) will provide air tickets for the out-of-town Pakistani participants.

بسم الله الرحمن الرحيم

ANNEX E1

Telephone : 829669
Telegrams : AGRESCOUNCIL
Telex No. 5604 PARC PK
D. O. No. F.9-37/85-DR(PP)

PAKISTAN AGRICULTURAL RESEARCH COUNCIL
G - 13, Almarkaz, F-7 Post Box 1031 , ISLAMABAD

Director of Research (Crop Protection,

DATED...01.July.....1986.

Mr. Sirajuddin Ahmed
Deputy Secretary (Storage)
29-Blue Area, FSM Building
Opposit American Centre
G-6/3, Islamabad.

Subject:- STORAGE TECHNOLOGY DEVELOPMENT & TRANSFER-POST HARVEST MANAGEMENT PROGRAMME

Dear Mr. Ahmed,

Kindly refer to our meeting with the Joint Secretary (Food) who kindly agreed to the inclusion of our financial and staff requirements in connection with implementation of storage technology development and transfer under the above project.

The desired information alongwith necessary justification is sent herewith for necessary action.

With kindest regards,

Yours sincerely

(Umar Khan Baloch)

C.C.

Dr. Barry Prim, ARD, USAID, Islamabad.

STORAGE TECHNOLOGY DEVELOPMENT & TRANSFER
(POST HARVEST MANAGEMENT)

Justification

Post ahrvest protection and technology development is gaining importance because of substantial foodgrain losses during the various post harvest operations and storage. Loss deprives the farmer of benefit of efforts during pre-harvest stages. The precious resources in terms of inputs are wasted when the crop suffers loss during post-maturation period. Due to increased demand of food, growing world population, it is imperative that more efforts should be made to reduce the loss. This would enable any nation to feed more mouths.

In addition to reduction in quantitative loss, improved post harvest protection development would also influence the quality of foodgrains. With the advancement of modern technology, the mankind has become more conscious in having good quality food. Pakistan being a country with vast agricultural resources, is striving for increased food grain production for feeding its population. No doubt tremendous strides have been made in producing large quantities of foodgrain but still a lot of food is destroyed during post harvest operations. Quality of foodgrains supplied to the consumer has also to be improved substantially for better nutritive values.

Pakistan needs to give more attention to expansion of efforts and resources in this sector. There is acute shortage of technical knowledge in this field. Similarly, trained manpower in different disciplines of this subject is lacking. Pakistan Agricultural Research Council (PARC) established Grain Storage Laboratory at Karachi and implemented two programmes on loss assessment and reduction of losses under World Bank/IDA and Food and Agriculture Organization of the United Nations assistance. These programmes have provided basic infrastructure for psot harvest research work. However, to achieve more fruitful results, this discipline needs considerable support in terms of development of infrastructure and manpower training at the research institutes, in the provinces and at federal level by implementing more post harvest research and technology transfer programmes. Post harvest subject should be taught in higher degree classes with modern syllabi.

There is a growing awareness of psot harvest losses at all levels and an aptitude has been deveioping for strengthening the discipline on modern scientific lines and to fit it in the whole food chain improvement system.

During investigations under Grain Storage project, a preliminary survey was conducted and on the basis of this, main loss assessment survey was launched. Many factors effect the extent of losses such as quantity of grain stored, storage period, climatic conditions and condition of grain during storage. During survey of 1984-85 it was estimated that about 3.5% wheat is lost in a storage period of 5.4 months. The major insects recorded include Trogoderma granarium, Rhizopertha dominica, Sitophilus oryzae and Tribolium castaneum. Mould damage is not a serious problem. Quality analysis studies indicate that majority of the samples were of inferior quality. Foreign matter was most important factor responsible for down grading followed by insect damage. It shows that it is essential not only to reduce the losses but also up-grading the quality of wheat.

At the farm level moisture content ranged between 8-15%. Studies reveal that in barani area of Punjab about 3.7% farmers use DDT and 0.4% metallic mercury. In the irrigated area 46.5% do not treat the crop and 41.4% use mercury and about 7% also use phostoxin DDT and malathion dust. Thus pest control operation needs improvement. Loss assessment studies showed that about 4% wheat is lost.

Work on loss assessment has been accomplished. Now there is a need to undertake studies on reduction of losses and transfer of technology. During this project work will be conducted on these aspects of post harvest.

The main objectives of the project are introduction of better management systems, strengthening the system for transfer of technologies for storage design, grain quality maintenance and pest cotnrol technologie to these facilities, technical assistance and provision of short term and long term training programme.

To achieve the above objectives in the light of priority areas identified by PARC in collaboration with provincial institutions, a component on a "Storage Technology Development & Transfer" was included in the Post Harvest Management project being financed jointly by the USAID and Government of Pakistan.

The proposed Coordination Unit and Research Units are already in operation under the World Bank project "Grain Storage Research & Extension Training Programme". The Coordination Unit will be located at PARC, Islamabad. This unit will provide advice and assistance to the various participating units, and to draw togather the results of the programmes common to each unit.

The other six Research Units will be located at Islamabad, Quetta, Peshawar, Tandojam, Faisalabad and Karachi. Each unit will be responsible for day to day research work. Principal Investigator at each unit will be responsible for the activities of the units. He will be full time institution's employee and will work on part time basis in the project. The Senior Scientific Officer and the Scientific Officer will be responsible for the research activities and programme for transfer of technology. Each unit will have one Senior Scientific Officer, one Scientific Officer, one Junior Scientific Officer , three Field Investigators and a Driver.

The sketch of the project staff attached.

Staff position under Post Harvest Management Project - Storage Technology Development and Transfer Programme

Coordinator

PARC Coordination Unit

- Sr. Scientific Officer (1)
- Asstt. Director (Admn) (1)
- Stenographer (1)
- Accounts Assistant (1)
- Driver (2)
- Naib Qasid (1)

Research Units

	Faisalabad	Peshawar	Tandojam	Quetta	NARC, Islamabad	GSRL, Karachi
Senior Scientific Officer (S.S.O)	(1)	S.S.O. (1)	S.S.O. (1)	S.S.O. (1)	S.S.O. (I)	S.S.O. (1)
Scientific Officer (S.O)	(1)	S.O. (1)	S.O. (1)	S.O. (1)	S.O. (1)	S.O. (1)
Junior Scientific Officer (J.S.O)	(1)	J.S.O. (1)	J.S.O. (1)	J.S.O. (1)	J.S.O. (1)	J.S.O. (1)
Field/Lab. Investigator (F.I.)	(3)	F.I. (3)	F.I. (3)	F.I. (3)	F.I. (3)	F.I. (3)
Driver	(1)	Driver (1)	Driver (1)	Driver (1)	Driver (1)	Driver (1)

STAFF POSITION UNDER POST HARVEST MANAGEMENT STORAGE TECHNOLOGY DEVELOPMENT & TRANSFER

Coordination Unit

Name of the post	B.P.S.	No. of posts
National Project Director	(Part time)	-
Senior Scientific Officer	18	1
Asstt. Director (Admn.)	17	1
Stenographer	15	1
Office Assistant	11	1
Driver	05	2
Naib Qasid	01	1

Research Units

Principal Investigators	(Part time)	-
Senior Scientific Officer	18	6
Scientific Officer	17	6
Junior Scientific Officer	16	6
Field/Lab. Investigator	08	18
Driver	05	6

BUDGET DETAILS CO-ORDINATION UNIT

		Per year	Total for 4 years
1-000	Total Establishment Charges	776,000 42.5	3,104,000
1-010	Total Basic Salary	186,000 10.1	744,000
1-011	Basic salary of officers	89,000 5.3	356,000
1-012	Basic salary of other staff	97,000 5.8	388.000
1-020	Total Regular Allowances	44,000 2.4	176,000
1-100	Purchase of Durable Goods*	150,000 9.0	600,000
1-400	Repair & Maintenance of durable Goods	20,000 1.2	80,000
3-500	Commodities and Services	346,000 20.7	1,384,000
1-511	Personal T.A.	42,000 2.5	168.000
1-512	Transportation of Goods	12.000 0.7	48,000
1-513	Running cost of vehicle (POL)	60,000 3.6	240.000
1-521	Postage and Telegraphs	5.000 0.3	20.000
1-522	Telephone & trunk calls	5,000 0.3	20,000
1-540	Office stationary & it printing	15.000 0.9	60.000
1-550	Printing & publication	25,000 1.5	100.000
1-560	Purchase of books & period	15,000 0.9	60,000
1-570	Uniform & liveries	2,000 0.1	8.000
1-582	Rent of residential building	60,000 3.6	240,000
1-590	Other expenditure	30,000 1.8	120,000
1-595	Publicity & advertisement	15,000 0.9	60.000
1-596	Other services (DPL etc.)	25,000 1.5	100,000
1-598	Other stores	25,000 1.5	100.000
1-599	Rate & taxes	10,000 0.6	40,000
513-700	Other Expenditure	30,000 1.8	120,000
1-740	Other Misc expenditure (NES)	30,000 1.8	120,000

*Training, transport and additional equipment etc. to be required will be procured through contractor in addition to above provision

		Per year		For 4 years	For 6 units
513-000	Total Establishment Charges	491,000	29.4	1,964,000	11,784,000
513-010	Total Basic Salary	208,000	12.4	832,000	4,992,000
01	Basic salary of officers	154,000	9.2	616,000	3,696,000
012	Basic salary of other staff	54,000	3.2	216,000	1,296,000
513-020	Total Regular Allowances	53,500	3.2	214,000	1,284,000
513-100	Purchase of Durable Goods	15,000	0.9	60,000	360,000
513-400	Repair & Maintenance of Durable Goods	15,000	0.9	60,000	360,000
513-500	Commodities & Services	179,500	10.7	718,000	4,306,000
-511	Personal T.A.	40,000	2.4	160,000	960,000
-512	Transportation of Goods	1,000	0.1	4,000	24,000
-513	Running cost of vehicle (POL)	15,000	0.9	60,000	360,000
-521	Postage & Telegraphs	1,500	0.1	6,000	36 000
-522	Telephone & trunk calls	1,000	0.1	4,000	24 000
-540	Office stationary & it printing	2,000	0.1	8,000	48,000
-550	Printing & Publications	1,000	0.1	4,000	24,000
-560	Purchase of books & periods	1,000	0.1	4,000	24,000
-570	Uniform & Liveries	1,000	0.1	4,000	24,000
-580	Rent of residential build.	60,000	3.6	240,000	1,440,000
-590	Other expenditure	15,000	0.9	60,000	360,000
-59	Other services (DPL/F.Lab.)	20,000	1.2	80,000	480,000
-598	Other stores	20,000	1.2	80,000	480,000
-599	Rate & Taxes	1,000	0.1	4,000	24,000
513-700	Other Expenditure	20,000	1.2	80,000	480,000
-740	Other Misc. expenditure	20,000	1.2	80,000	480,000

Coordination Unit	776,000	3,104,000	
Research Units	2,946,000	11,784,000	
G.Total	3,722,000	14,888,000	

Participating Research Units: Faisalabad, Peshawar, Tandojam, Quetta, Islamabad, Karachi.

بسم اللہ الرحمن الرحیم

ANNEX E2

Telephone : 829669
Telegrams : AGRESCOUNCIL.
Telex No. 5604 PARC PK
D. O. No. F.9-37/85-DR(RP)

PAKISTAN AGRICULTURAL RESEARCH COUNCIL
L - 13, Almarkaz, F-7 Post Box 1031 , ISLAMABAD

Director of Research (Crop Protection)

DATED 30 July, 1986.

Mr. M. Gulzar A. Qazi
FSM Project Coordinator
Office of ARD, USAID
Islamabad

Subject:- POST-HARVEST MANAGEMENT - STORAGE TECHNOLOGY DEVELOPMENT AND TRANSFER - JOB DESCRIPTIONS AND CVS OF THE SCIENTISTS

Dear Mr. Qazi.

Kindly refer to your letter of 24 July. 1986. I am enclosing herewith the desired information in line with our earlier designations. I wanted the job title to be in-line with their functions. Since it has created some confusion we are spliting the staff for coordination unit and research units.

I feel we could sort out these issues by meeting togather instead of writing letters which are time consuming and confusing too.

With regards,

Yours sincerely,

(Umar Khan Baloch)

C.C.
1. Dr. Harlan R. Shuyler, STDT, USAID, Islamab-
2. Dr. Barry K. Primm, ARD, USAID, Islamabad

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RESEARCH UNITS

Job title & grade	Job description	Qualification
Principal Investigator (Part time)	Will coordinate overall activities of the unit and guide the staff in carrying out the research, training and technology transfer functions. operate the funds of project. He will also prepare and submit the technical and financial reports as per requirements.	1st class Master's degree in Crop Protection or relevant Bio-Sciences discipline and sufficient research experience in line.
Senior Scientific Officer (Training) (BPS-18)	He will be responsible for coordinating and conducting training and organizing work on transfer of technology. He will closely liaise with the research staff.	1st class Master's degree in Crop Protection or relevant Bio-Sciences discipline and 5 years experience in line.
Scientific Officer (BPS-17)	Conduct research on aspects of grain storage for development of package of improved technology	1st class Master's degree in Crop Protection or relevant Bio-Sciences discipline
Junior Scientific Officer (BPS-16)	Will assist the Scientific Officer in carrying out the day to day research work and analysis of data	B.Sc. (Hons) Agri. or M.Sc. in the relevant Bio-Sciences discipline
Field/Lab.Investigator (BPS-8)	Will be responsible for sample collection and analysis of samples as well as assist training officer in transfer of technology as the need arises	Matric with Science or F.A.
Driver (BPS-5)	Drive & maintain the vehicle	Valid driving licence with atleast 3 years experience

Job title & grade	Job description	Qualification
National Project Director (Part time)	- Coordinate project activities with funding agency, Government ministeries, Federal and Provincial research, management and technology transfer organizations - Review & monitoring of project activities of cooperating institutions - Submission of combined fiscal and technical reports to GOP & funding agency, if needed	Ist class Master's degree in Crop Protection or relevant Bio-Sciences dicipline and sufficient research experience in line.
Senior Scientific Officer (Technical Officer) BPS-18	Assist the Coordinator in achieving the coordination functions of the various units particularly on technical issues and reporting etc.	Ist class Master's degree in Crop Protection or relevant Bio-Sciences discipline and 5 years experience in line.
Asstt. Director (Admn.) (BPS-17)	Assist in administrative issues of the staff and maintenance of the record	Graduate with 5 years experience in the line.
Stenographer (BPS-15)	Typing work of the project	F.A. or Matric with 5 years experience as Stenotypist with 100/40 word per minute in Shorthand/Typing
Office Assistant (Accounts BPS-11)	Maintenance of the project accounts	B. Com.
Lower Division Clerk (BPS-5)	Assist the staff in clerical work and typing	Matric with 30 word per minute typing speed
Driver (BPS-5)	Drive & maintain the vehicle	Valid driving licence with 3 years experience
Naib Qasid (Photo-Copy Machine Operator) BPS-2)	Assist the project staff for transmission of files, papers etc. and maintain and operate the photo-copying machine	Literate with skill in photo-copying machine operations.