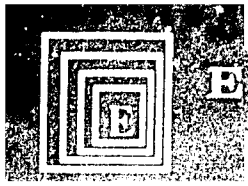

EXPERIENCE, INCORPORATED

TENTH QUARTERLY REPORT

July 1 to September 30, 1978

Contract AID/NE-C-1217

DRYLAND AGRICULTURAL DEVELOPMENT - PAKISTAN

November 1978

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TENTH QUARTERLY REPORT

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DRYLAND AGRICULTURAL DEVELOPMENT - PAKISTAN

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I. INTRODUCTION

The objective of this project is to advise and support the Government of Pakistan (GOP) Barani Project staff in their efforts to plan and implement programs that will improve the efficient production, harvesting, storing, and marketing of crops, and improve the supply of inputs and services in non-irrigated areas of Pakistan.

Personnel serving on the Project were unchanged from the previous quarter, and they have furnished most of the information for this report. They are:

1. Clarence J. Miller, Agricultural Economist/Team Leader: Responsible for overall leadership and coordination of Experience, Incorporated activities in Pakistan, liaison with the Government of Pakistan and USAID officials, and economic studies.

2. Lawrence G. Ulsaker, Agronomist - Punjab Province: Responsible primarily for providing technical assistance for the agronomic program in Punjab Province and administrative support to the Provincial project director.

3. William D. Burgess, Jr., Agronomist - Northwest Frontier Province (NWFP): Responsible primarily for providing technical assistance for the agronomic program in NWFP and administrative support to the Provincial project director.

II. SUMMARY

The tenth quarter has been marked by a number of personnel changes in Barani Project staff: Rana Saleem, former director of the Project in the Punjab, is now a principal in the In-service Training Institute, Sargodha; Major Aslam, Barani Project Agronomist, has now been assigned to Multan, after being transferred initially to Sargodha Training Institute; Nisar Ahmad Barulla, DDA in Rawalpindi, has been appointed Acting Director for the Barani Project in the Punjab; Hafiz Bashir Ahmad, formerly public relations manager for the recently disbanded Murree-Kohat Development Authority, is not assistant agronomist and acting agronomist for Rawalpindi District.

All data from the Impact Survey conducted by Dr. Miller has now been tabulated and analyzed. Questionnaires are also being designed for surveys in Punjab and NWFP which will provide basic information on marketing of agricultural products in barani areas. Emphasis is on groundnuts in two market areas and maize in a third market. Benchmark survey, farmer profile, and plot yield data tabulation has progresssed.

Training and demonstrations of seedbed preparation methods and planting methods of sunflowers and soybeans have been conducted throughout Punjab Province by Mr. Ulsaker. A demonstration on use and adjustment of the moldboard plow was also given to various personnel in the Punjab. Sixty acres of sunflower plots have been planted in three different climatological zones in the Punjab during this quarter.

During the quarter several publications on design of hand-, bullock-, and tractor-powered farm implements have been procured by the Experience, Incorporated home office from Intermediate Technology Publications, Ltd. of London. These were distributed by Mr. Ulsaker to IRRI-PAK personel. Steps have also been undertaken to prepare two different training manuals for barani extension workers.

Work is underway on a Rabi Production Plan in the Punjab for 1978-79. Mr. Ulsaker is working with several personnel from USAID, GOP, and the Barani Project, on implementation of the Plan.

In the NWFP a province-wide scheme for collection of rainfall data is underway. The data for rainfall and all other weather conditions will be recorded daily, to provide accurate information on weather conditions in the NWFP. The soil testing program begun two years ago is becoming more effective and fertilizer recommendations are becoming a useful part of the Barani Project program.

A main thrust of the Barani Project in the NWFP for Rabi 1977-78 and Kharif 1978 was good quality farmer meetings at the demonstration plot sites. The assistant agronomists report over a thousand meetings were held during Rabi season. The entire technical staff has had relatively minimal turnover. The technical staff met in September to review the Kharif plan and set targets for the Rabi season.

The marketing survey was undertaken in the Mansehra area under supervision of Dr. Miller.

III. Quarterly Report
Clarence J. Miller, Team Leader

A. Activities During the Period

1. Recent Developments

a. Rana M. Saleem, formerly Director of the Barani Project (Punjab), has been transferred to a new position as Principal of the In-Service Training Institute, Sargodha.

b. Nisar Ahmad Barulla, Deputy Director of Agriculture (DDA), Rawalpindi, has been appointed Acting Director, Barani Project (Punjab).

c. Staff of the Barani Project in NWFP have published a report containing agricultural statistics for the years 1970-71 through 1976-77.

d. Several news items of interest to barani farmers were published in the Pakistan Times (see Appendix A). Areas covered include:

(1) Official ABAD encouragement and mechanization (July 26-27).
(2) Revival of Farm Produce Marketing Act (August 31).
(3) Purchase of HYV rust resistant wheat seed abroad and higher price guarantee (August 30-31).
(4) Official encouragement of barani farmers (September 21).

2. Field Trips

a. July 3. Travel to Haripur, NWFP, to pretest marketing questionnaires for farmers and for dealers in barani crops. Data obtained for two individuals are summarized in Appendix B.

b. July 16. Visited the Economic Research Institute in Lahore. Discussed design of the marketing questionnaires with Institute staff.

c. July 17. Travel to Chakwal, Punjab, to pretest marketing questionnaires with farmers and dealers of barani crops.

d. July 18. Travel to Mansehra, NWFP, to pretest marketing questionnaires with farmers and dealers of barani crops.

e. September 18. Visited barani staff in Peshawar to discuss interviews on marketing that they will be taking in the Mansehra area.

3. Impact Survey

All data from the survey has been tabulated and analyzed. A review draft will be presented as soon as the Conclusions and Recommendations are written.

4. Marketing Survey

a. Experience, Incorporated and Economic Research Institute staff have been actively cooperating in questionnaire design, and the field surveys. Barani Project (NWFP) staff are also involved in the field work.

b. A questionnaire for dealers of barani crops and a questionnaire for barani farmers were pretested in the Chakwal area. Samples of these questionnaires are illustrated in Exhibits 1 and 2.*

c. More than seventy questionnaires have been filled out by interviewers working in Chakwal, Dhudial and the adjacent rural area. Most of this data has been transferred to basic data sheets at the Economic Research Institute.

d. Field work has also been initiated in the vicinity of Mansehra, and will be completed early in October. Revised and simplified questionnaires are being used -- one for the village (see Exhibit 3), one for the farmer, and one for the dealer.

* A list of the exhibits is shown as Appendix J. The actual documents and reports are on file with USAID/Pakistan and Experience, Incorporated, Minneapolis, but are not included in the quarterly report.

5. Benchmark Survey and Farmer Profiles

Summary profile tables for two seasons in NWFP are now prepared for analysis, to complement the Benchmark data that has been tabulated.

6. Crop Yield Plot Data

Barani offices in both provinces are working steadily to update the records on demonstration plot data and yields. Records are complete in the Punjab for Rabi 1976-77, Kharif 1976, and Rabi 1975-76. More data remains to be collected from the field for Kharif 1977 and Rabi 1977-78. Appendix C contains a historic summary of some plot data for the Punjab.

7. Improving Market Sites

Barani Project (Punjab) is still planning the construction of concrete platforms as a fundamental part of furnishing barani market centers at a number of sites. Unfortunately, the paper work and bureaucratic approvals needed before any actual work can be initiated have caused undue delays of several months.

B. Work Planned for October-December, 1978

1. Assist agronomists and advisors in implementing plans for completion of 1978 Kharif season, and initiation of Rabi 1978-79 season.

2. Maintain liaison with staff and officials of the USAID Mission, the two Provincial governments, the Barani Project in both provinces, and the Agency for Barani Area Development (ABAD).

3. Assist Project agronomists, economists, and statisticians in collection, tabulation, and analysis of crop yield data for 1978 Kharif and all previous seasons during the life of the Project.

4. Complete Farmer Profile data tabulation for two seasons for NWFP and combine it with Benchmark data, all of which are to be analyzed (see Figure 1).

5. Assist agronomists and advisors in establishing coordinate monitoring procedures for all Project field work.

6. Complete review draft of the Impact Survey, distribute for comments, then complete preliminary draft for distribution (see Figure 1).

7. Encourage and assist in the development of barani market centers, with site plans, financial estimates, and full range of actual construction and development of sites.

8. Complete field work on Marketing Survey, as well as all basic data tabulation, and initial analyses of the data. This work is being partially supported by contract (see Figure 1).

9. Revise report on the use of improved practices for HYV wheats and fertilizers in plots on actual farms (see Figure 1).

10. Gerald McKay has been approved to join the Experience, Incorporated advisory staff in Islamabad, and he will be working on the preparation of educational and training methods and materials to be used by field agents and their supervisors who are working in cooperation with the Barani Project.

FIGURE 1

REVISED WORK PLAN AND TIMETABLE
FOR ELEVENTH QUARTER
Clarence J. Miller

	October	November	December
Impact Survey			
Release Review Draft	xxxx		
Revise and Release Second Draft		xxxx	
Marketing Survey			
Complete Mansehra	xxxx		
Preliminary Data Tabs	xxxx		
Preliminary Data Analysis		xxxx	
Complete Data Analysis			xxxx
Farmer Profile/Benchmark			
Complete Data Analysis			xxxx
Wheat Yield Analysis			
Revise Manuscript		xxxx	

IV. QUARTERLY REPORT

Lawrence G. Ulsaker, Agronomist-Punjab Province

A. Activities During the Period

1. Training

a. Practical training and demonstrations of seedbed preparation methods (flat and ridges) and planting methods (bullock and tractor powered implements) of sunflowers were given to 40 field-level staff and several farmers at Choa Saidan Shah. Fifty acres were planted during the two-day training program.

b. The same training and demonstration was given to two research assistants and five research plots workers at Pakistan Agricultural Research Center (PARC).

c. A short (one-half day) training and demonstration program on soybean planting and production practices was given to the farm manager and four field plot workers at the DDA's farm in Rawalpindi.

d. A one-day demonstration of three-point hitch moldboard plow adjustment and use was given to the commandant, farm manager, tractor drivers, and farm staff of the Pakistan National Police College at Sihala.

e. Preparation of a Wheat Production Training Manual was initiated through Brigadier Mansoor, Chairman of ABAD; Dr. Z. A. Hashmi, Chairman of Pakistan Science Foundation; Dr. Homer Hepworth, CIMMYT; and Dr. Tahir, National Wheat Coordinator for Agricultural Research Council (ARC). The Experience, Incorporated Barani Project Advisor will coordinate preparation of the manual.

f. Attended the two-day Wheat Production Seminar with the Barani Project Director and Agronomist and the Chairman of ABAD. It was sponsored by ARC and chaired by Dr. Norman Borlaug, CIMMYT.

g. Initiated preparation of a Barani Agricultural Production Training Manual for rural development officers with the cooperation of the Chairman of ABAD. The Experience, Incorporated Barani Project Advisor will coordinate its preparation.

h. Assistance in the preparation of the 1978-79 Rabi Production Plan (see Appendix D) was given to the following personnel: Major Aslam, Barani Project Agronomist who was transferred; Mohammad Akram Sodla, Assistant Agronomist who was suspended; and Hafiz Bashir Ahmad, Assistant Agronomist for Rawalpindi District and Acting Agronomist.

i. Submitted a memorandum to USAID (see Appendix E) outlining the justification for establishing an extension education project designed to upgrade the standards of the training institute in Sargodha. This endeavor could conceivably qualify as a Title XII project.

j. Received the English printing of the Barani Area Sunflower Production Training Manual (see Exhibit 4) from the printers. It had been submitted to the Project Director over three months ago. The Urdu printing is expected next week.

k. Took Dr. Qureshi, Fodder Botanist for ARC, on a field trip to Chowk Pindori to see the Bajra-Napier Hybrid forage plots. He did a fine job of recommending improved production practices to the farmers on whose land the plots were located.

l. Participated in the district-level refresher training courses for Rabi 1978-79 by presenting the Rabi Production Plan with the assistance of Hafiz Bashir Ahmad.

m. Conducted a briefing session on the agricultural development situation in Punjab's barani areas for Dr. Goerte Bertilsson, Swedish agronomist, and Dr. George Arnott, British agricultural economist, both with FAO attached to Pakistan's National Fertilizer Development Center.

n. Organized and conducted a two-day Barani Wheat Production Training Course for 6 extra assistant directors of agriculture (EADAs) and 10 selected agricultural officers (AOs) at the DDA's farm in Rawalpindi. It was originally organized in cooperation with Dr. Homer Hepworth of USAID, who was scheduled to return from home leave in the United States on September 12 in time to finalize the details and start on September 24, 1978. Dr. Hepworth's return has been delayed by illness, so only half the course material was presented.

2. Engineering

a. Continued assistance to Mr. Sulaiman of USAID in designing modifications of Earthway's hand-operated seeder.

b. Assisted the agricultural engineer of PARC in modifying and field testing tillage implements for the 12 h.p., Chinese two-wheeled diesel tractor so effective cultivation could be conducted in the research plots.

c. Continued compilation of tractor driver training materials which will eventually be part of a course to be conducted in cooperation with Dr. Hepworth.

d. Supplied Mr. Abdul, Agricultural Engineer, IRRI-PAK, with numerous designs of hand-, bullock-, and tractor-powered farm implements for groundnut planting, harvesting, and processing. Most of them had been published by Intermediate Technology Publications, Ltd. of London, England.

e. Conducted a field trip for Norman Eisley to Attock (formerly Campbellpur) to visit groundnut fields. The various soil types in which groundnuts are grown were studied and the harvesting methods observed. Mr. Eisley, Agricultural Engineer from Colorado State University stationed in Lahore with the On-Farm Water Management, hopes to develop groundnut harvesting prototypes for the Barani Project.

3. Research

a. Over sixty acres of sunflower plots were planted in three different barani climatological zones: Dhumin near Choa Saidan Shah, Qudarpur near Talagang, and PARC near Islamabad. Heavy daily monsoon rains after planting were detrimental to stand establishment. Still, only the plots at PARC required replanting. In each zone the plots planted on ridges did better than the flat plantings.

b. A depth of tillage experiment for sorghum and one for sunflowers was put in at PARC. Initial tillage was conducted at 4-, 8-, 12-, and 16-inch depths. After the seedbed was prepared, half of each plot was ridged. See Exhibit 5 for details.

c. A statement of justification was submitted to USAID for a tillage, crop residue management, and forage production systems research effort that could conceivably be conducted by ARC. See Appendix F.

4. Field Trips

a. July 5-6. Choa Saidan Shah with Major Aslam to assist in ABAD's sunflower production scheme and monitor Kharif plot establishment along the Choa Saidan Shah-Rawalpindi route.

b. July 10. Chakwal, Talagang, Tcharchak, and Qudarpur with Major Aslam and Colonel Mumtaz to assist in ABAD's sunflower production scheme and monitor Kharif plot establishment along the route.

c. July 20. Sihala with Major Aslam to discuss possibilities of establishing sunflower and soybean demonstration plots at the National Police College farm with Commandant Mallie. He offered full cooperation (see part 1 on "Training").

d. August 1. Took the Barani Project moldboard plow to Sihala. Demonstrated its proper adjustment and plowed 10 acres of weedy field along the Soan River (see part 1 on "Training")..

e. August 6. Sihala with Major Aslam to check on progress of plowing the remaining 10 acres and prepare for planting. Heavy rains had kept the tractor out of the field.

f. August 22. Hassen Abdul and Attock with Norman Eisley to observe groundnut field soil types and monitor Kharif plots along the way.

g. August 23-24. Sihala, Rewat, Sohawa, Choa Saidan Shah, Kalar Kahar, Boun Farm, and Chakwal with Dr. Ed Rice, Agronomist, USAID, to check on sunflower production scheme and monitor Kharif plots along the way (see Exhibit 6).

h. September 13. Lala Musa with David Lundberg and Jim Gingerich of USAID to participate in district-level refresher course training of extension field staff.

i. September 20. Sialkot to participate in district-level refresher course training with Rana Saleem and Hafiz Bashir Ahmad, Acting Agronomist.

5. Meetings

a. July 13. Brigadier Mansoor, Chairman of ABAD; Mr. Zahoor, Project Manager for ABAD; and assistant directors for Pind Sultani, Daultala, and Kharian, to discuss objective details, establish priorities, and assign responsibilities for intensified rural development of the three pilot project areas.

b. July 16. Major Aslam and Mohammad Akram Sodla, Assistant Agronomist, Talagang, to outline preparation of the 1978-79 Rabi Production Plan and explain the plan's implementation procedures.

c. July 16. Mr. Lundberg, to discuss TDY trip to ICRISAT, Hyderabad, India with Messrs. Burgess and Sulaiman, and Dr. Ed Rice, which is tentatively scheduled for October 15, 1978. Clearance for counterparts from Barani Project to accompany will be sought.

d. July 18. Dr. Homer Hepworth, to plan preparation of tractor driver's training short course.

e. July 19. Harold Kruge, Norwegian agrometeorologist with FAO, to discuss collection and recording of climatological data from barani areas. Mr. Kruge is setting up a computerized flood warning system for Pakistan.

f. July 23. Brigadier Mansoor and Major Aslam, to discuss possibilities of clearing counterparts with GOP for trip to ICRISAT.

g. July 24. Major Aslam and Mohammad Akram Sodla, to review Rabi Production Plan preparation progress. Both men have been preoccupied with police reports and litigation proceedings over Mr. Sodla's traffic accident which resulted in the death of the other car's driver; hence, no progress.

h. July 26. Saleem Malik, Consultant to Edible Oils Corporation, and Dick Lockman, an agricultural missionary, to discuss future cooperative efforts with the Pakistan Edible Oils Corporation in view of their recent change in administrative and staff officers.

i. July 27. DDA's farm manager, to borrow his two-wheeled Chinese tractor for use in PARC research plots. Permission granted.

j. August 2. Brigadier Mansoor, who is now officed in Satellite Town; Dr. Z. A. Hashmi, Chairman of the Pakistan Science Foundation; Dr. Homer Hepworth; and Dr. Tahir, on development of a wheat production manual for use in training programs and as a reference for extension and ABAD field staff.

k. August 3. Dr. E. Nasir, Director of Stewart Herbarium, Islamabad, to verify identification of a species of sedge which produces edible nuts. It is Cyprus bulbus.

l. August 8. Dr. Bas Mohammad Khan, Director of Soil and Irrigation, ARC, concerning difficulties of conducting research at PARC and steps required to overcome them.

m. August 16. Dr. Homer Hepworth; Dr. Nur Ulla, Punjab Wheat Botanist; Mr. Barulla, DDA; and Brigadier Mansoor, to plan a three-day wheat production training short course for EADAs, assistant agronomists, and selected AOs.

n. August 17. Brigadier Mansoor, Dr. Hepworth, Messrs. Lundberg and Zahoor, and the assistant project director for each of ABAD's three pilot rural development areas, on the Rabi crop production plans to be implemented.

o. August 20. Tony Wirtz and Mr. Lundberg of USAID, on Barani Project activities.

p. August 21. Rana Saleem and Major Aslam, on progress of printing the Sunflower Production Manual, finalizing the Rabi Production Plan, painting the field plot signs which had been delivered in June, and allocation of vehicles.

Brigadier Mansoor and Mr. Barulla, to organize the details of the wheat production training short course.

Dr. Tahir, on progress of developing a wheat production training manual.

q. August 29. Rana Saleem and the assistant agronomists, to explain their job description, outline their plan of work, etc. Minutes of the meeting are contained in Exhibit 7.

r. August 30. Hafiz Bashir Ahmad, to explain details of the 1978-79 Rabi Production Plan.

s. August 31. Rana Saleem and Mr. Lundberg, in response to memorandum of August 16 (contained in Appendix G) on the Barani Project performance. Rana Saleem promised everything would be set right.

t. September 3. Brigadier Mansoor, to discuss possibility of him or another counterpart accompanying Mr. Ulsaker to ICRISAT, should USAID approve of the trip request. He appreciated the suggestion, but felt obligated to remain on duty and did not have another counterpart.

u. September 10. Brigadier Mansoor, to discuss various rural development project plans, and the outline of a preliminary self-teaching course handbook on Barani Agricultural Production in the Punjab.

v. September 25. Hafiz Bashir Ahmad, to calculate tehsil-wise allocation of seed and fertilizer for the Rabi Production Plan.

w. September 27. Dr. Miller and Mr. Shah, to discuss methods of tabulating and analyzing the plot yield data that has been received to date.

6. Other Activities

a. August 3. Preparation of Rabi Production Plan began by Mr. Ulsaker.

b. August 7. Memorandum to Dr. Mohammad Sharif, Director of PARC, regarding water management practices (see Exhibit 8).

c. August 16. Memorandum to Rana Saleem regarding Barani Project performance.

d. September 26. Mr. Barulla, who took charge of the Barani Project on September 12, requested changes in varieties of the early planted wheat variety plots. These are noted in Appendix D.

e. September 27. Trip to ICRISAT in India approved for Dr. Rice and Messrs. Sulaiman, Burgess, and Ulsaker.

B. Operational Situation and Suggestions

1. Situation

a. Hafiz Bashir Ahmad, formerly public relations manager for the Murree-Kahot Development Authority (recently disbanded), is now assistant agronomist and acting agronomist for Rawalpindi District. Assignment of the eighth Barani Project agronomist in 26 months is pending.

b. Major Aslam, Barani Project Agronomist, was first transferred to Sargodha Training Institute and then to Multan.

c. Three of the four assistant agronomist positions are now filled.

d. One of the two assistant engineers positions is filled.

e. Additional vehicles are being purchased with USAID-withheld rupees.

f. A new project agreement is expected to be signed within two months.

g. The field plot signs received in June, 1978 have yet to be painted and delivered.

h. Most of the Rabi 1978-79 plot seed and fertilizer has been distributed.

i. Overall, the Barani Project is being administered expeditiously.

2. Suggestions

Continue to extend full cooperation and support to the new Barani Project Director to assure effective implementation of the Project plans.

C. Work Planned for October-December, 1978

1. Meet Gerald McKay on October 2, brief him on events since his last visit, and introduce him to the new staff members.

   a. Develop a realistic plan of work for the preparation of extension and educational training materials and programs in cooperation with Mr. McKay and the appropriate Barani Project staff.

   b. Follow up on Mr. McKay's initiative and recommendations so far as available resources allow.

2. Continue efforts to collect, analyze, and report all Barani Project yield plot data.

3. Visit ICRISAT and Iudhiana and obtain all available information applicable to Punjab's barani areas on the following subjects:

   a. Farming systems that increase and stabilize agricultural production through better use of natural and human resources.

   b. Improving the genetic potential for yield and nutritional quality of wheat, groundnut, maize, sorghum, millet, pigeonpea, and chickpea.

c. Hand-, bullock-, and/or tractor-powered farm tools and implements that have the potential of improving the efficiency of agricultural production, harvesting, storing, processing, and marketing.

d. Socio-economic and other constraints to agricultural development and alternative means of alleviating them through technological and institutional changes.

4. Conduct field tours of Rabi plots and other rural development efforts for USAID and other interested personnel.

5. Keep all interested parties informed of all aspects of the Barani Project developmental efforts.

6. Finalize plans for the Rabi plot harvest, yield collection, and analysis.

7. Continue efforts to establish coordinated monitoring procedures of all Barani Project field work and those aspects of ABAD field activities in which the Barani Project cooperates.

V. QUARTERLY REPORT

William D. Burgess, Jr., Agronomist-NWFP

A. Activities During the Period

1. Rainfall Data Collection

There is no adequate province-wide collection of rainfall data. All agricultural endeavors are hampered by the paucity of accurate and reliable rainfall information. To overcome this problem the Barani Project has undertaken to develop and implement a comprehensive well-organized province and agency-wide rainfall data collection scheme. The scheme provides for about seventy

strategically located sites for establishing professional-type rain gauges. A comprehensive proforma for recording daily rainfall and other weather conditions, such as daily maximum and minimum temperatures, snowfall, hail, and wind has been prepared for daily recording and monthly submission to the Barani Project headquarters at Peshawar. A copy of this proforma with a self-addressed and stamped return envelope is contained in Exhibit 9. The data, when received at headquarters, will be tabulated on a district basis and then reproduced and distributed to all agriculturally oriented government offices in the province, with extra copies being made available to anyone requesting them. The scheme is expected to be fully operational in the coming quarter.

2. Soil Testing Program

A program to introduce the advantages to be realized from soil testing has long been undertaken by the Barani Project. In Kharif 1977, 600 soil samples from farmers' fields were collected and tested. In Rabi 1977-78, 1,653 samples were taken, 1,100 of which have been tested with the remaining 553 expected shortly from Tarnab Laboratory. For the Kharif 1979 season approximately five hundred samples have been collected to date and await delivery to the laboratory for analysis.

Under this program soil samples are taken by extension field agents who have been previously trained in the techniques of doing this. Samples are collected by the Project division agronomists and delivered to the Project headquarters. Samples are then recorded in the ledger; a three-form proforma is initiated with pertinent information such as farmer's name, location, crop, etc.; after which the numbered sample and the corresponding proforma are delivered to the soil chemist at the soils laboratory of the Agricultural Institute, Tarnab. Based on the laboratory analysis recommendations for the applications of fertilizer are typed on the proforma, as well as the results of the fertilizer analysis which include, in addition to the chemical analysis for nitrogen,

phosphorus, and potash, the soil pH, organic matter, and texture. Upon completion, the Barani Project collects the proformas and returns them to the field agent who collected the sample and he in turn discusses the results of the soil analysis and the fertilizer recommendation with the farmer.

3. Publication of Agricultural Statistics

With the objective of providing current basic information on agricultural statistics of NWFP to all those who are associated with its agriculture, the Barani Project undertook the printing of the agriculture statistics covering the period 1970-71 through 1976-77. Five hundred copies have been printed and are being distributed.

4. Farmer Information Meetings

A new aspect of the Project's 1977-78 Rabi program was the introduction of farmer information meetings held at the site of the Project demonstration plots.

One thousand two hundred and ninety-two information meetings are reported to have been held. Appendix H shows the number of meetings with farmers in districts and agencies throughout the province. This phase of the Project's work of promoting improved practices, technology, etc. is considered the best method of increasing and improving the effectiveness of demonstration methods for promoting improved agriculture. The use of farmer information meetings has been accepted as a permanent activity to be undertaken during or at the conclusion of each cropping season at each established demonstration.

5. NWFP Barani Agriculture Advisory Council

On August 12 the Council met for the seventh time since the Project began in 1976. The meeting was attended by all members of the Council. A review of the results of the Rabi 1977-78 season was presented as was an up-to-date progress report of the Kharif 1978 program. Fifteen topics relating to the work of the Project were presented and discussed as listed in the working paper prepared for the meeting (see Exhibit 10). The actions taken by the Council on these topics are presented in the minutes of the Seventh Council Meeting. The minutes are contained in Exhibit 11.

6. Quarterly Meeting Held with Project Technical Staff

The meeting was held on September 12 at the Barani headquarters, Peshawar. The Project's two senior agronomists and five assistant agronomists were present. Each agronomist gave a report on the progress of the establishment of Kharif demonstration plots; and establishment of chisel plowing trials prior to the Kharif, as well as chisel plowing trials established for the Rabi 1978-79 season. The forthcoming 1978-79 program of work was outlined and discussed. This included the targets fixed for the establishment of demonstration plots and the distribution procedure for seed and fertilizer. The forthcoming field extension training program to be conducted by the senior and assistant agronomists in each tehsil and the meteorological data collection scheme were explained and discussed.

7. Extension Training Program

The pre-Rabi 1978-79 extension training program was commenced in late September. The pre-season Kharif and Rabi project training programs have become a fixed part of the Project's efforts to upgrade the competence of the extension agent working in the barani areas. A total of 42 tehsil-wise training programs are scheduled through October. In these training meetings with

extension workers the senior agronomists explain the details and make assignments for the work to be carried out by each agent. It is during these meetings with the extension agents that the results and recommendations of the soil testing program are returned and explained to the respective agent. During current meetings the Fertilizer Calculator printed with English and Urdu instructions will be presented and training given in its operation. Appendix I contains instructions for laying out demonstration plots for the ensuing Rabi and a schedule of the training programs now under implementation.

8. Marketing Survey

Dr. Miller, with assistance from the Project Economist and Project Statistician, has undertaken a marketing survey of the barani areas of NWFP. Questionnaires were prepared and training in the use of the questionnaires was conducted by Dr. Miller. It was determined that farmers in barani areas are concerned with marketing problems and it was for this reason a decision was made to undertake the study and survey. The first in a series of surveys has been completed in the Mansehra area in Hazara Division. Dealers in farm products serving the Mansehra area and farmers located within 20 miles from Mansehra will be interviewed. From the results of this survey the recommendations for improvement in marketing conditions should be possible.

9. Communications Media Specialist

Gerald McKay, a communications media specialist and associate consultant with Experience, Incorporated, will join the Barani Project team in October, 1978. Mr. McKay is expected to work in both the NWFP and the Punjab for a period of three months, producing much needed "Fact Sheets for Farmers", which describe the latest and most modern technology of crop production. The publications will be printed in Urdu and will be produced in quantities large enough for general distribution to farmers.

B. Work Planned for October-December, 1978

1. Conduct 35 training programs for extension field workers.

2. Install 76 rain gauges throughout the province and train local personnel in data collection and recording.

3. Establish approximately two thousand crop demonstration plots on farmers' fields.

4. Establish 100 to 200 chisel plowing trials prior to Rabi plantings.

5. Hold an agronomy meeting for all Project agronomists in Peshawar.

6. Take delivery of four newly designed wheat threshers previously ordered and manufactured in Peshawar for the Project.

APPENDIX A

NEWS ITEMS OF INTEREST TO BARANI FARMERS

Pool of farm tools soon: Sawar

P.T. - 7/26/78

By Our City Staff

A pool of agricultural machinery, including tractors, will be formed shortly on hire basis to benefit peasants in the Punjab, Lt.-Gen. Sawar Khan, Martial Law Administrator, Zone 'A', disclosed in Gujar Khan on Tuesday.

Addressing delegations from different walks of life in Jinnah Hall there, the MLA further disclosed that 4,000 tractors were being imported this year. Officers and ex-servicemen were also present.

Reiterating the Government decision to give top-priority to the development of agriculture and ameliorate the lot of tillers the MLA recounted the facilities—supply of better seeds, fertilisers, improved agricultural implements, loans, etc.—already available to the rural folk. He specially mentioned the importance of functions of the Agency for the Development of Barani Areas and called upon people to make the best use of these facilities. He also urged them to strive hard for ensuring greater output to solve the economic problems.

Market Committee Secretary sacked

P.T. 1974

GUJRAT, Aug. 31: The Extra Assistant Director of Agriculture, Mr. Mohammad Yasin Randhawa, has dismissed from service by Mr. Idris Ahmad, Secretary Market Committee, Mandi Bahauddin.

He was found guilty of receiving Rs. 71,000 without issuing receipts and heavy embezzlement of Market Committee funds.

A case has also been registered against him.—APP.

Sawar asks farmers to boost output

P.T. 7/27/78

Punjab Martial Law Administrator Lt.-Gen. Sawar Khan, on Wednesday called upon growers to bend their energies for the promotion of agriculture and livestock to save foreign exchange spent on import of wheat edible oils and milk.

He said that the Government was spending Rs. 400 crore on the import of edible oils and another Rs. 40 crore on that of milk products.

Addressing delegations of peasants, farmers, labour and members of Islahi Committees at Fateh Jang and Talagang, he said the Government would continue to provide all-out help to farmers to ameliorate their lot.

The MLA said the people of Barani areas should make the best use of small dams by utilising the irrigation water for agriculture. The Agency for Barani Area Development, he added, would formulate plans for the construction of more small dams to augment irrigation resources in Barani areas. It was now the responsibility of cultivators and zamindars to construct water channels to fully benefit from the huge funds spent by the Government for their welfare.

The MLA said that Islahi Committees had been constituted throughout the province to help solve the problems of local importance and bring about reconciliation between parties and individuals involved in petty disputes. The PDSPs, he said, were also being given better grades to attract talent needed for the timely disposal of cases.

Stressing the need for improving educational standards, the MLA urged students, teachers and parents to realise their respective role and responsibilities.

The MLA advised the teachers to shun politics and devote all their time and energies to their profession. He held out an assurance that the previous ghee quota of Fateh Jang would be restored. He exhorted the people to use edible oils in view of their suitability for health. The people, he said, should also eat maize and bajra and change their existing food habits.

On a complaint regarding the harsh treatment of officials of the Market committee in the levy and collection of local taxes, the MLA directed the functionaries to provide every possible facility for the promotion of trade. He accepted the demand of the people of Village Malal (Tehsil Fateh Jang) for the upgradation of the middle school and ordered the Education Department to take necessary steps for fulfilling this demand.

The MLA announced that the Government would soon import 4,000 tractors and would grant concession in price to enable the small growers to

(Continued on back page, col. 5)

Call to boost agriculture yield

PT 9/21/78

BY OUR CITY STAFF

Dr Abdul Ghafoor Bhatti, Punjab MLA's Adviser on Agriculture, Irrigation and Livestock, has stated that the Barani area of this region can excel the irrigated regions of the province in the matter of agricultural production.

He was speaking on Wednesday morning at Daultala at a meeting of the farm leaders, progressive agriculturists, project managers and villagers of Daultala. The Commissioner of Rawalpindi, the Deputy Commissioner and officers of the departments engaged in rural development were also present.

Dr. Bhatti said the quality of the soil and climatic conditions, obtaining in the Barani area, were ideally suitable for attaining desired results in the enhancement of agricultural production as compared with the irrigated areas whose production presently happened to be the lowest in the world.

The Adviser remarked that this Barani area had purposely been kept backward so far by the former regimes who either promoted the cause of the vested interests or desired that the region should serve as a recruitment base for the British Army. He pleaded for spending 80 per cent of the income accruing from the country's resources on the betterment of the lot of the villagers.

The Provincial Adviser urged the farmers, cultivators and small land-owners to make full use of the facilities being made available to them and prove it to the Government that Rawalpindi could produce more wheat than Faisalabad.

He said the condition of the rice and cotton crops this year in the Punjab, as compared with the past year, was far better notwithstanding this year's heavy rains.

The Adviser urged the Project Managers to put on record the difficulties faced by the people, because identification of these difficulties was a condition requisite to their solution.

He also assured the participants that there will be no delay in the supply of fertilisers, improved seeds and other agricultural development equipment. The schedule of seed rates will also be supplied expeditiously

The Adviser also disclosed that the total area to be under wheat cultivation was one crore and 14 lakh acres. Obviously, the Government could not supply seed for the entire acreage. However, a target of 10 lakh maunds had been fixed this year and out of it four lakh maunds had to be imported. For future, the Adviser added, there would be seed exchange system under which a farmer shall get the seed in exchange for an equal quantity of wheat of any quality brought by him. The progressive agriculturists, who receive the supplies of seed this year, shall have to return it after reaping the "rabi" crop.

He also disclosed that instructions have been issued to banks that in cases where the crops have been damaged by rains, the recovery of loans may be deferred to the next year.

PT 8/31/78

Farm produce Marketing Act to be revived

LAHORE, Aug. 30: The Provincial Council of Advisers, which met here today under the chairmanship of Lt.-Gen. Sawar Khan, Martial Law Administrator Zone 'A approved the revival of Agriculture Produce Marketing Act to revitalise market committees.

It was decided that the plant protection operations would be extended to rural areas through participation of private sector as well.

The Council decided that the family pension of second widow of the renowned writer and litterateur late Shaukat Thanvi be extended and enhanced to Rs. 400 per month for five years in view of her family liabilities.

The Council also approved the enactment of an effective law to screen the ration depots and fertilisers pesticides dealerships indulging in irregularities.

The Council considered measures to strengthen the system of distribution of fertilisers through the Rural Supplies Co-operative Corporation.

It also reviewed the working of the Adult Education Programme in the province and ordered evaluation of the programme by the Planning and Development Department for further consideration.—APP.

Wheat support price raised to Rs. 45 a maund for next crop

PT 1978 1/30

The Federal Cabinet, at its meeting in Rawalpindi on Tuesday, decided to fix the support price of wheat for the next crop at Rs 45 per maund.

The present support price is Rs. 37 per maund which was fixed in 1974-75.

The increase in the support price has been made as a major incentive to wheat growers.

This was the first working meeting of the new Federal Cabinet which was sworn in on Aug. 23.

The Chief of the Army Staff and Chief Martial Law Administrator, Gen. Mohammad Zia ul-Haq presided over the meeting, held at the CMLA's Secretariat.

The present wheat support price of Rs. 37 a maund, fixed in 1974-75, has remained in operation for three crops, that is, up to 1976-77. During this period an added incentive was provided by reducing the price of fertiliser from Rs. 75 per bag of urea to Rs. 68 in April, 1976, with large reduction for phosphatic fertilisers.

As distinct from compulsory procurement price, the support price operates to place a floor below which market prices are not allowed to fall.

The Government would be willing to buy unlimited quantities at this floor price to prevent a fall below the support price, an official statement issued after the Cabinet meeting said.

If higher prices prevail, the farmers will be free to take advantage of higher market prices, it added.

The Cabinet reviewed the pricing policy of agricultural commodities for the year 1978-79, including assistance in procurement and distribution of these commodities and availability of fertilisers for the forthcoming season.

The Cabinet was informed that there had been a movement of 70 swarms of locust during the last fortnight or so from India into the border areas of Pakistan extending from Cholistan to Tharparkar. Sixty of these swarms had been contained while the operation is continuing against the rest to prevent them from reaching the green belt. The anti-locust operation is being organised by the Army in co-operation with the Plant Protection Organisation.

EDITORIALS

Islamic Chamber of Commerce

Green belts

Steps to procure quality wheat seeds

PT. 1978

ISLAMABAD, Aug. 31: The Government has made arrangements to procure best quality wheat seeds from Mexico, Tunis, Turkey and India. In this connection, two delegations have been sent abroad. One delegation led by Dr. Amir Mohammad Chairman of Agricultural Research Council, would visit Mexico, Tunis and Turkey while the other delegation headed by Mian Mumtaz Ali, Agricultural Development Commissioner Ministry of Food and Agriculture, would visit India.

Arrangements have also been made to ensure availability of quality wheat seed to the farmers in time.—APP.

APPENDIX B

MARKETING SURVEY PRETEST

Marketing Survey Pretest

(Farmer)

Interview with Ahmad Khan(only selected items noted here)

Area/Yield Crops: Has 7½ acres irrigated, in addition to barani land. Also has large amount of uncultivated land, from which he sold the grass. Sells jowar for green fodder; produces "charee"(green fodder) for own use but cannot estimate yield. Cultivates vegetables only for own kitchen, so no estimate of yield.

Crops paid in Kind: (1) Temporary labor received 2 maunds for harvesting/threshing during kharif; 1/10 of rabi crop for harvesting only because he owns thresher.2)Permanent labor received 20 maunds during rabi plus green fodder throughout the year. (3) Gifts of faslana(saypee): 1 maund to barber; 10 seers or less to artisans and others; 1/10 of crop given as " usher". (4) Crop saved: for food--80 mds wheat; 3 mds maize. For seed--25 mds wheat; 5 mds maize.

Crops Sold: He has not yet sold most of his wheat crop. He sells in his village.

Family Consumption: 5 family members, but a total of 12 persons(including family) who depend on food produced on the farm. He saves enough wheat for the 12 persons. No purchase of wheat, maize or other farm produce for consumption.

Marketing Practices: No personal experience of malpractices, since he does not sell to dealers. His friends report that buyers in the market usually underweigh what they buy--as much as 5 seers per maund.

Marketing Channel: He sold in the village to consumers, who used their own transport.

Marketing Decisions: Consumers pay at time of purchase, which he prefers. Market price information comes through village shopkeepers and town dealers.

Production Incentives: Wheat should be priced at 40-45 per maund, and gram at Rs 60-80 to cover production costs. He plans to increase gram production, because his land is enriched after the monsoon rains. Has no interest in increasing livestock or poultry.

Input Purchases: Purchased fertilizer and seeds from the Agricultural Development Agency, paying cash. Farm chemicals obtained from the Extension Agronomist. Uses own tractor and trailer for transportation.

Credit: Obtained no credit during past year.

Market Improvement: A Farmer Union Society should be formed. Each village should elect a representative from each"caste", and from these representatives a tehsil-level organization could be formed. The government must give powers to this organization if it is to function effectively.

Storage: His farm in many pieces, some distant from his village and some close. Separate storage room (pucca 20' x 12'), mostly for wheat and small amounts of other.

Income: No remittance from family members working elsewhere.

Interview with Sher Afzal(only selected items)

1. He is a farmer, as well as being a dealer.
2. Each shop privately owned. 4-5 feet of plinth in front of shop built by shopkeeper, but he must pay rent for the space to the municipality.
3. There are 7 shopkeepers in the market who buy crops; there is no commission agent. There are 200-300 shops in the market (of all kinds).
4. There are 14 nearby villages that supply agricultural products to this market.

I. Farm Supplies.1)He purchased 500 bags of wheat and maize from shopkeepers (nearby villages) and from farmers. He sold only grains for feed and seed). He purchased some jowar from Rawalpindi market.
(2) He has a markup of Rs 1.50-2.00 for wheat for food, and of Rs 5-7 for wheat for seed.
(3) Farmers often mix their seed so it is difficult to sell. They need good storage furnished so that their seed is in better condition.

II. Crops Purchased. Wheat, maize, jowar. Mustard(oilseed) from village shopkeepers and farmers. Jowar from commission agents(in Rawalpindi).

III. Sales Channels: Mustard sold to processor. Wheat to consumer(food) and to farmers(seed). He depends fully on agricultural products in his shop.

IV. Transportation;grading: .(1) Prodocts sorted by farmers to get high price, so dealer does not have to sort. (2) When he buys less than 10 bags, uses tonga from village(Rs 2/bag); otherwise uses Suzuki van. Pays Rs 1/maund for truck transport from Rawalpindi.

V. Storage; losses. (1) has own storage (9' x 25'x 10' height)--200 bags cap. (2) Rs 500 per year loss from spoilage and wastage. Semi-pucca storage; would prefer pucca.

VI. Credit.1)Often advances credit for farmers to buy seed. Farmer can return the seed in repayment or pay back at the price then prevailing later in the season.
(2) He receives credit from village shopkeepers because he gets their grain, sells it, then pays them back the price he agreed to.

VII.1)Reports payment of price both to farmer and dealer determined by government price-setting. He deducted only transport cost and labor charges to determine the net price he paid his suppliers.
(2) He gets price information through large beoparis.

IX. Problems. (1) Seed not available that was not mixed or of poor quality.
(2) Government should provide threshers to farmers, and storage in villages.
(3) Should be godowns for seeds of different varieties.
(4) Government should provide tractors and bulldozers on cheaper rates.

APPENDIX C

CROP YIELD PLOT DATA
FOR PUNJAB PROVINCE

Objectives of the Project.

The Project for development of barani area was started in 1975-76 with following main objectives:

1) Layingout field trials in various crops throughout the barani area for demonstration(mainly) of benefits of improved technology(high yielding varieties, use of fertilizer and moisture preservation techniques etc.

2) Establishment of market outlets at proper places if those are not existing.

3) Training of farmers and field workers. This was necessiated as Barani tract of Punjab comprises of 18 million acres of land and a population of about 10 million, i.e ¼th of the total population of Punjab. The area is being managed at extremely primitive level of agricultural technology and never benefited by any extension scheme introduced in the past. The green revolution even could not have any effect in this area.

Achievements.

The upto date year wise achievements of layingout of various types of plots (field trials) are as follows:

	Target	Achievement.
1) Rabi 1975-76	8239	7655
2) Kharif 1976	3450	2381
3) Rabi 1976-77	11114	9206
4) Kharif 1977	2505	2505
5) Rabi 1977-78	2210	1826 (provisional)

Alongwith this, a bench mark survey was conducted, the final report of which is shortly expected.

Training of Field Staff.

During 1975-76 field staff was trained at district level and provincial level. In 1976-77 a total of 84 training sessions were held right upto tehsil levels. Before start of this Rabi (1977-78) a comprehensive training programme was worked out. In this duration training was imparted at 13 tehsil headquarters and 6 district headquarter and one at Rawalpindi (Project level).

Procurement of farm equipments.

Following machinery has been procured and provided in the field.

1-	Tractors	3
2-	Chisel ploughs	3
3-	Mould Board ploughs	3
4-	Cultivators	3
5-	Wheat threshers,	6
6-	Maize Shellers	6
7-	Groundnut diggers (bullock drawn)	8
8-	Groundnut diggers (tractor drawn)	8
9-	Tilletbed trailer	1
10-	Rain guages	18
11-	Soil Augur	18

Agricultural Marketing.

11 sites were surveyed on preliminary basis e.g Karianwala, Daultala, Shakargarh, Pinanwal, Chakwal, Dina, Choa-Saiden-Shah, Mangowal, Sohawa, Gujrat and Jhelum. The first four places were exphasised for new markets and legal formalities in that respect are nearly complete. Notification for three places has been issued and one i.e Shakargarh is at final stages.

Field work by staff.

Out of total 542 working days the technical staff of the Directorate visited the fields for:

1-	Director of Agriculture (Barani Project).	361.5 days.
2-	Agronomist.	240.5 "
3-	Economist.	146.0 "
4-	Asstt:Agril:Engineer(Design)	69.5 "
5-	Asstt:Agril:Engineer(Field)	85.5 "

Budget position.

Upto date financial utilization of Barani Project:

Year	Budget allotment	Actual expenditure
1975-76	10,23,434	4,61,942
1976-77	19,92,180	9,88,308
1977-78	30,00,000	9,58,466
Total	60,15,614	24,08,716

(for further details please see Appendix *A*)

The schedule shows that actual expenditure is less than the budget allocation. The comparison of last year 1977-78 shows that expenditure is on a good pace & it is well hoped that history of previous years would not be repeated. However, it is well understood that full achievement would not be possible due to the effect of previous years. The reasons for low achievements are:

1- Severe shortage of required staff. New staff has been demanded under revised PC-I which will solve this problem.

2- Late communication of administrative approval in the previous years. This is not the case in the current year and pace of expenditure shown above is self explanatory to this point.

3- Late release of funds by USAID authorities. This had a similar effect as described in (2) above.

4- Severe shortage of transportation. For full 2 years of the Project, the problem was of the vital importance. The Project had to get work from other departments and agencies scattered in 18 million acres of land in 8 districts. This was to be covered by the small number of workers of this Project with only one vehicle on their disposal. However, now the situation has been improved. Two more vehicles have been provided as temporary arrangement by the Govt: and more vehicles have been provided in revised PC-I which will be available after passing through the formalities.

5- The difference between targets and achievements of barani plots was mainly due to natural calamities specifically heavy rainfall at sowing times or drought throughout the season.

Director of Agriculture
Barani Project, Rawalpindi.

TYPES WISE PLOTS SOWN BY THE BARANI PROJECT.

Rabi 1975-76.

	Extension	Soil Conservation	I.R.D.P	Total.
Experimental	26	-	9	35
Verificational	258	58	98	414
Demonstration	5465	488	1253	7206

Kharif 1976.

	Extension		Soil Cons:		I.R.D.P		M.K.D.A		Soil Fert:		Total	
	Tar-get.	Achi-eved.	Tar-get.	Achi-eved.	Tar-get.	Achi-eved.	Tar-get.	Achi-eved.	Tar-get.	Achi-eved.	Tar-Ad get	ie
Experimental	105	68	-	-	50	39	-	-	-	-	105	107
Verificational	435	276	-	-	-	-	-	-	-	-	435	276
Demonstration	2060	1320	300	274	500	404	-	-	-	-	2860	1996
Total	2600	1664	300	274	550	443	-	-	-	-	3450	2381

Rabi 1976-77.

Experimental	68	56	-	-	40	34	5	1	-	-	113	91
Verificational	376	367	30	23	120	104	21	13	-	-	547	507
Demonstration	7986	6662	800	769	1184	990	484	107	-	-	10454	8608
Total	8430	7085	830	792	1344	1128	510	201	-	-	11114	9206

Kharif 1977. (Provisional Reports of achievements).

Experimental	-	-	-	-	-	-	-	-	66	-	66	45
Verificational	72	-	-	-	16	-	5	-	-	-	93	43
Demonstration	1880	-	105	-	240	-	116	-	-	-	2341	1649
Total	1952	-	105	-	256	-	121	-	66	-	2500	1737

Rabi 1977-78. (Target only)

1- Deep plough	55
2- Varietal	97
3- Varietal Late-set.	26
4- Verificational.	394
5- Manurial.	50
6- Demonstration	1588
Total	2210

PLOTS BY DEPARTMENT WISE.

Rabi 1977-78.

1) Deep ploughing (only wheat).

Only Extension wing.	Wheat
1- Dina	35
2- Campbellpur	10
3- Rawalpindi	10
Total	55

2) Varietal plots.

1- Extension	32
2- Soil Conservation	18
3- I.R.D.P	32
4- I.R.D.P (F.G)	9
5- M.K.D.A	6
Total	97

3) Varietal plots (Late-set)

1- Extension	4
2- Soil Conservation	9
3- I.R.D.P	11
4- M.K.D.A	2
Total	26

4) Verificational plots.

	Wheat
1- Extension	338
2- Soil Conservation	26
3- M.K.D.A	30
Total	394

5) Demonstration plots.

	Wheat	Gram	Oilseeds.
1- Extension	676	220	338
2- Soil Conservation	60	38 + 4	26
3- M.K.D.A	60	-	14
4- I.R.D.P	82	33	41
Total	878	291 + 4	419

6) Manurial plots.

1- Soil Fertility.	50

SEED AND FERTILIZER CROP WISE IN KHARIF 1976.

I. S E E D

Crop	Type of plots.		Seed Requirements(in mds.)
Maize	a) Experimental	21	98-28 Neelum.
	b) Varietal.	10	9-17 Akbar.
	c) Verificational	87	0-21 Changaz.
	d) Demonstration	572	2-07 Sadaf.
			1-05 Soan.
	Total	690	111-38
Sorghum	a) Experimental	21	85-13 Pak-SS-II
	b) Varietal.	10	2-38 DG.Pearl.
	c) Verificational	87	0-13 SS-1
	d) Demonstration.	572	141-06 J.S.263
			3-30 J.S.1.
	Total	690	233-20
Bajra	a) Experimental	21	36-31 By-18
	b) Varietal	10	0-32 S.B.3
	c) Verificational	87	0-04 Composit.
	d) Demonstration	572	0-38 Glen Bajra.
	Total	690	38-25
Groundnut	a) Experimental	21	165-35 No.334
	b) Varietal	10	5-15 No.4
	c) Verificational	87	0-35
	d) Demonstration.	572	
	Total	690	172-05
Forage.	a) Experimental	21	25-24 Guara.
	b) Varietal	10	
	c) Verificational	87	0-37 No.2/1
	d) Demonstration	572	
	Total	690	26-21
		3450 Nos.	

II. F E R T I L I Z E R.

1- Urea.	1234 bags.
2- DAP	1251 "
3- SOP	12 "

SEED AND FERTILIZER REQUIREMENTS IN RABI 1976-77.

I. SEED.

S.No.	Crop.	Variety	Qnty.(in Mds.).
1.	Wheat	1- Barani-70	161-35
		2- Lyp.73	3561-30
		3- Yecora	7-30
		4- Nuri.	7-30
		Total	3739-05
2.	Gram.	1- C.727	483-00
		2- C.612	7-20
		Total	490-20
3.	Oilseeds. (Rape seed & Mustared).	Sarsoon.	
		1- Napus imported	10-04-01
		2- Napus imported	0-19-06
		3- Raya L.18	10-04-01
		4- New Ray.	0-19-06
		Total	24-06-14

II. FERTILIZER.

1- Urea	5925	bags.
2- TSP	4938	"
3- SOP	12	"

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SEED AND FERTILIZER REQUIREMENT
for
BARANI PROJECT PUNJAB RAWALPINDI.
KHARIF-1977

Crop	Total No.of plots		Seed Requirements(in Mds).	Source of supply.
Maize	Experimental	15	4-20	55-0Mds. Arranged from Yousafwala(Variety Syn:Neelum
	Verificational/ Varietal.	28	4-08	
	Demonstration	500	75-00	28-28 " Neelum(should be available with PAD&SC.
	Total	543	79-28	
Sorghum	Experimental	12	3-00	Available with PAD&SC.
	Verificational	22	2-30	
	Demonstration	559	69-35	
	Total	593	75-25	
Bajra	Experimental	24	2-16	Being arranged from Yousafwala(By.18)
	Verificational	24	1-08	
	Demonstration	547	27-14	
	Total	595	30-38	
Ground-nut.	Experimental	12	12-00	12-0Mds.Bank available with Asstt:Botanist,Rawalpindi.
	Verificational	10	5-00	
	Demonstration	353 + 5 IRDP Sihala	176-20	181-20" No.334 available with PAD&SC.
	Total	375	193-20	
Pulses (Mong & Mash).	Experimental	3	0-24	6-22mds.Available with Pulses Botanist.
	Verificational	9	0-36	
	Demonstration	382	38-08	33-06 (mash)locally available.
	Total	394	40-18	

Grand Total. 2500 + 5

F E R T I L I Z E R.

Urea	867 bags.
DAP	1048 "
SOP	8 "

SUMMARY of PLOTS.

RABI 1977-78.

Sr.No.	Name of the crop.	Type of plots. Deep plo-ughing	Varie-tal.	Varie-tal. late-set.	Verifi-cation-al.	Manu-rial.	Demon-stra-tion.	To-tal.
1.	Wheat	55	97	26	394	50	878	1500
2.	Gram	-	-	-	-	-	291	291
3.	Oilseeds.	-	-	-	-	-	419	419
	Total	55	97	26	394	50	1588	2210

SEED REQUIRED.

I. WHEAT

1.	Lyp.73	714-30 Mds.
2.	Sandal.	11-30
3.	Pb.76	11-30
4.	Barani-70	11-30
5.	Arz.	11-30
6.	Tarnab.73	11-30
7.	LU.23	11-30
8.	Blue Silver	3-36
9.	SA.75	3-36
10.	LU.26	3-36
11.	Nuri.	3-36
	Total	900-34 mds.

II. GRAM-C.727 — 72-30-0 mds.

III. OILSEEDS.

Raya-L.18 — 7-33-4 "

FERTILIZER REQUIRED.

1- Urea	1112 bags.
2- DAP	257 "
3- TSP	782 "

APPENDIX D

RABI PRODUCTION PLAN
1978-79

INTRODUCTION REGARDING LAYING-OUT EXPERIMENTAL, VERIFICATIONAL AND DEMONSTRATION PLOTS ON WHEAT, GRAM AND OILSEEDS DURING RABI 1978-79 UNDER THE BARANI AGRICULTURE DEVELOPMENT PROJECT.

A. Under the scheme varietal/verificational/farmurial/Demonstration plots will be conducted. The details of the plots is enclosed as per Rabi production plan for 1978-79(attached).

B. Lay-out of plots.

It is emphasised that layout of plots, farmer's area will be selected 12½ acres and plots layout in such a way that almost all the villages laying under the barani areas are covered. The farmers who have already been benefited with the plots will not be given plots this year. However, the farmers who have sown sunflower and soyabean may be allowed wheat plots as it is being planed to intensify the cropping pattern in the Barani areas i.e sowing of soyabean, sunflower, groundnut before wheat as an additional crop and no land should be left fallow. The Barani area can be distributed in two categories depending on rainfall as per detail below:-

(1)High Rainfall Tehsils.

1. Rawalpindi	2. Gujarkhan	3. Murree
4. Kahuta	5. Jhelum	6. Chakwal
7. P.D.Khan	8. Shakargarh	9. Pasrur
10. Narowal.		

(2)Low Rainfall Tehsils

1. Attock	2. Fatehjang	3. Pindigheb
4. Talagang	5. Gujrat	6. Kharian
7. Khushab	8. Isakhil	9. Mianwali
10. Bhakkar	11. Leiah.	

The detailed layout is given for each crop in the production plan.

Nutrients value of fertilizer

For general information to the staff and farmers, the information with regard to fertilizer, their nutrient weight per bag and nutrient per bag in lbs. are given below to facalitate the farmers:-

Name of fertilizer	Nutrients			Weight per bag	Nutrient per bag in lbs.		
	N	P	K		N	P	K
1.Ann.Sulphate	20.5	0	0	110	23	0	0
2.Calcium Ann.Nitrate	24	0	0	88	23	0	0
3.Urea	46	0	0	110	51	0	0
4.Ann.Sulphate-Nitrate	26	0	0	110	28.6	0	0
5.Single Super phosphate (S.S.P)	-	18	-	110	-	20	0
6.Triple Super phosphate(T.S.P)	-	46	-	110	-	51	-
7.Diamononum phosphate	18	46	-	110	20	51	-
8.Nitrophose (N.P)	23	23	-	110	25	25	-
9.Potassium Sulphate	-	-	50	110	-	-	55

Following types of plots will be laid on three important crops of Barani areas in Rabi season i.e wheat, gram and oilseeds.

1. Varietal - Early set.
2. Varietal - Late set.
3. Verificational
4. Manurial.
5. Demonstration

(a) Gram (b) Oilseeds (c) Wheat

I. VARIETAL PLOTS.

	S/kot	R/pindi	Jhelum	Attock	Gujrat	N/wali	Total.
Extension	4	7	9	10	6	6	42

Plot size

6 kanals.

Varieties.

On Farmer's Fields

V 1 Lyp.73
V 2 ~~Nuri~~
V 3 Lyp.73 ~~Barani-70~~
V 4 Arz
V 5 Pavon ~~Blue silver~~
V 6 Local.

On Ag. Dept. Fields of Bona, Rawalpindi & Attock

V1 Lyp. 73
V2 Nuri
V3 Barani-70
V4 Arz
V5 Blue Silver (Sona Like)
V6 Pavon
V7 Local

Fertilizer dose

70 lb. N + 50 lb. P_2O_5/per acre.

($\frac{3}{4}$ bag Urea + $\frac{3}{4}$ bag DAP per plot).
(82.5 lb.(37.5kg)each of Urea + DAP per plot)of each variety.

	V 1	V 2	V 3	V 4	V 5	Total
Extension	157.50	157.50	157.50	157.50	157.50	687.50 kg.

Note:- Local variety seed should be obtained from the farmers.

Fertilizer Requirements

	Urea	DAP
Extension	31.5 bag	31.5 bag.

Seed rate

30 kg. per acre (3.75 kg/sub plot).

Sowing method

By pore only

Layout plan

VI	V	IV	III	II	I

Note:- The varieties should be randomized within each variety plot.

II. VARIETAL PLOTS(LATE SET) for intensified cropping.

	S/kot	R/pindi	Jhelum	Attock	Gujrat	M/wali	Total
Extension	4	10	8	10	10	6	48

Varieties.

V 1	Bluesilver
V 2	Nuri
V 3	Local

Plot size

3 kanals (One kanal/sub plot).

Fertilizer dose

70 lb.N + 50 lb.P_2O_5/acre.

26 lb.(12kg)N + 19 lb.(8.5kg)P_2O_5/plot.

41 lb.(18.7kg)+ each of urea and DAP/plot.

Seed rate

30 kg. per acre(3.75 kg per sub plot).

Seed Requirements

	V 1	V 2	Total
Extension	180 kg.	180 kg.	360 kg.

Note:- Local variety seed should be obtained from the farmers.

Fertilizer Requirements.

	Urea	DAP
Extension	18 bags	18 bags.

Layout plan

III	II	I

Note:- The varieties should be randomized within each plot. (To be sown after soyabean/groundnut. If these two crops have not been sown name the previous kharif crop).

III. VERIFICATIONAL PLOTS.

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	34	64	66	52	50	50	22	338

Variety

Lyp.73

Fertilizer dose

50 lb. N + 50 lb P_2O_5/acre.

Plot size

One acre (Sub plot 4 kanals).

Seed Rate

35 k g/acre (15.00kg./sub plot).

Seed Requirements.

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	510 kg	960 kg	990 kg	780 kg	750kg	730kg	330kg	5070kg

Fertilizer Requirements.

(½ bag of Urea + ½ bag of T.S.P per plot) or
(33 lb.(15 kg) Urea + ½ bag of DAP).

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension								
Urea	17	32	33	26	25	25	11	169
TSP	17	32	33	26	25	25	11	169
If TSP is unavailable								
Urea	12	22	22	18	17	17	8	116
DAP	17	32	32	26	25	25	11	169

Layout plan

IV 2 kanals Lyp.73 without fertilizer	I 2 kanals Lyp.73 + fertilizer
III 2 kanals local without fertilizer	IV 2 kanals local + fertilizer

IV. MANURIAL PLOTS.

Total plots. 48

Soil Fertility (Two per field Assistant)

Variety Lyp.73

Fertilizer dose

N	P	K	
0	0	0	
50	0	0	13.6 lb.(6.2 kg)urea
50	50	0	8.2 lb.(3.7 kg)urea + 13.6 lb.(6.2kg)DAP
50	50	25	8.2 lb. (3.7 kg)urea + 13.6 lb.(6.2kg)DAP + 6.25 lb. (2.8kg) K_2O
90	0	0	24.5 lb.(11.2 kg)urea
90	0	25	24.5 lb.(11.2 kg)urea + 6.25 lb.(2.8 kg)K_2O
90	50	0	19 lb.(8.6kg)urea + 13.6 lb.(6.2kg)DAP
90	50	25	19 lb.(8.6kg)urea + 13.6 lb.(6.2kg)DAP + 6.25 lb. (2.8kg) K_2O.

Full doze will be applied with sowing.

Plot size

8 kanals (sub plot one kanal).

Seed requirement

Lyp.73 1440 kg.

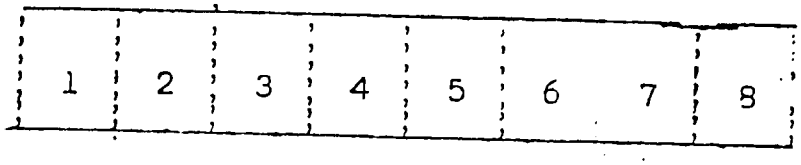
Fertilizer required

Urea 51 bags.

DAP 24 bags.

K_2SO_4 3.25 bags.

Layout



Manurial treatments should be randomized within each plot.

V. (a) GRAM

Demonstration plots.

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	20	40	80	-	-	80	-	220

Plot size

One acre (Sub plot 4 kanal).

Variety

C-727

Seed Rate

20 kg per acre (10 kg per sub plot).

Fertilizer dose

20 lb. N + 50 lb P_2O_5/acre.
($\frac{1}{2}$ bag of DAP/sub plot).

Seed Requirements

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	200kg.	400kg	800kg	-	-	800kg.	-	2200kg.

Fertilizer Requirements

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	10	20	40	-	-	40	-	110

Layout plan

Local Farmer practice	4 kanals C 727 Fertilizer improved practice.

(b) OILSEEDS

Demonstration plots.

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	34	64	66	52	50	50	22	338

Plot size

4 kanals (2 kanals sub plot).

Variety

Naya L.18

Seed Rate

3 kg./acre.

Fertilizer dose

50 lb. N + 50 lb. P_2O_5/acre
($\frac{1}{4}$ bag of urea + $\frac{1}{4}$ bag of TSP)

Seed Requirements

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension	25.5	48	49.5	39	37.5	37.5	16.5	253.5

Fertilizer Requirement

	R/pindi	Jhelum	Attock	Gujrat	S/kot	M/wali	SGD	Total
Extension								
Urea	8½	16	16½	13	12½	12½	5½	84½
TSP	8½	16	16½	13	12½	12½	5½	84½

Layout plan

II	I
2 kanal	2 kanal
Local	Maya L.18
No fertilizer	Fertilizer
Farmer practice.	I proved practice

(c) WHEAT

Demonstration plots.

3 per field Assistant

	R/pindi	Jhelum	Attock	Gujrat	M/wali	S/kot	SGD	Total
Extension	201	179	198	156	150	150	66	1100

Seed Rate

30 kg. per acre (15 kg. per sub plot)

Fertilizer dose

70 lb.N + 50 lb. P_2O_5 per acre.

Variety

Lyp, 73

Plot size

4 kanals

Seed Requirements

	R/pindi	Jhelum	Attock	Gujrat	M/wali	S/kot	SGD	Total
Extension	3015	2685	2970	2340	2250	2250	990	16500

Fertilizer Requirements.

	R/pindi	Jhelum	Attock	Gujrat	M/wali	S/kot	SGD	Total
Extension								
Urea	100½	134½	99	78	75	75	33	550
DAP	100½	134½	99	78	75	75	33	550

Layout plan

II	I
4 kanals	4 kanals
Farmer's practice.	Fertilizer Lyp.73 Improved practice.

DISTRICT WISE POSITION OF PLOTS RABI 1978-79
BARANI PROJECT, RAWALPINDI.

S.No.	Nature of plots.	Sialkot	Rawalpindi	Jhelum	Attock	Gujrat	Mianwali	Sargodha	G.Total
1.	Varietal(Early set)	4	7	9	10	6	6	-	42
2.	Varietal(Late set)	4	10	9	10	10	6	-	49
3.	Verificational	50	34	64	66	52	50	22	339
4.	Manurial (Soil Fertility)	9	9	9	9	9	4	4	49
5.	Demonstration								
	(a) Gram	-	20	40	90	-	90	-	220
	(b) Oilseeds	50	34	64	66	52	50	22	338
	(c) Wheat	150	201	179	199	156	150	66	1100
	G.TOTAL	266	314	372	439	294	346	114	2134

R E Q U I R E M E N T S

S.No.	Kind of trial	No.	Fertilizer(Bags)				Seed (Killogramm)					
			Urea	DAP	Potasium sulphate	T.S.P	Lyp.73	Buri	Arz	Blue silver	Gram C 727	Oilseeds Raya L.18
1.	Varietal plots (early set)	42	31.5	31.5	-	-	157.50 kg.	157.50 kg.	157.50 kg.	157.50 kg.	-	-
2.	Varietal plots (Late set)	43	19	19	-	-	-	190 kg.	-	190 kg.	-	-
3.	Verificational plots	338	116	169	-	-	5070 kg.	-	-	-	-	-
4.	Manurial plots	48	51	24	9.25	-	1440 kg.	-	-	-	-	-
5.	Gram (Demonstration plots)	220	-	110	-	-	-	-	-	-	2200 kg.	-
6.	Oilseeds (Demonstration plots)	339	94.5	-	-	94.5	-	-	-	-	-	253.5 kg.
7.	Wheat (Demonstration plots)	1100	550	550	-	-	16500 kg.	-	-	-	-	-
	TOTAL	2134	904	902.5	9.25	94.5	23167.5	337.5	157.5	337.5	2200	253.5

APPENDIX E

MEMORANDUM TO USAID
ON EXTENSION EDUCATION

Rawalpindi

September 3, 1 9 7 8

To : Dave Lundberg
USAID, Islamabad

From: Larry Ulsaker, E.I.
Barani Project

Re: EXTENSION EDUCATION

.....

Agriculture plays a key role in the development of Pakistan. Agricultural education plays a key role in the development of agriculture. Nearly all aspects of the agricultural development complex of any nation are based on a labor force which has received good agricultural training. The shortage of such a well-trained labor force is one of the basic bottlenecks to the agricultural development of Pakistan.

Many agricultural development programs have floundered because they were ill-conceived - often due to the lack of adequate agricultural training and education of the pgoram planners. Others, that were well-conceived, failed in execution due to the lack of personnel with the required agricultural skill and training.

The various institutions-research programs, seed multiplication and distribution agencies, credit agencies, marketing agencies, land reform programs, extension, etc.-- required for exploiting Pakistan's underutilized agricultural

resources, all depend on adequately trained manpower for their creation and operation. The use and application of improved agricultural practice depends on well-trained farmers. Pakistan suffers from a dearth of both, largely because it has yet to develop appropriate institutions for training extension workers.

In March 1977, I submitted a " Outline for Barani Project Training" proposal. Appendix no. 4 in March 1977 Report ~~a copy is attached~~, for various reasons it did not go beyond this proposal stage. Recently a training and visitation extension method has received more enthusiastic support and is scheduled to be implemented on a pilot basis within a few months. It is designed to reach a large number of farmers at low cost via village level workers with low educational standards supported by subject matter specialists. At best I can only visualize such an extension method serving as a stop-gap measure.

In the long haul Pakistan's agricultural development requires well-trained local officials, who understand the administrative problems of agricultural development; managers of local co-ops and of private businesses supplying inputs to farmers and marketing their produce; as well as extension agents. If they are to serve effectively, they require a wide range of knowledge and skills, many of which are most effectively provided by an appropriate formal agricultural education system.

The role of the extension agent and his training are

the primary interests of this memo.[1] This person must conduct production- oriented extension education programs which:

1) Stimulate farmers to accept appropriate technological change. This may be the extension agent's most important function during the early stages of agricultural development when farmers are still largely tradition-bound. The training and visitation approach may serve to accomplish this objective. But planners must be alert to recognize the decline in importance of this objective as the process of development gathers momentum. Otherwise they might blame a lack of progress on farmer's traditional attitudes when in reality the changes recommended may be inapplicable or the technical aspects of extension faulty.

2) Work with researchers on farmers fields in order to ensure that the ensuing research is adaptive and that the extension agent understands the concepts thoroughly . Traditionally in the LDC's, building an extension service is a numbers game. With the limited number of agriculturally-trained people going into research, extension filled its ranks with very young, minimally-trained staff. Invariably, this staff did not understand the package of practices they

were supposed to extend nor have the confidence to address farmers.

3) Disseminate results of production increasing research to farmers and to carry farmers problems back to the research organizations. The extension staff must not only understand the nature of the technology and accompanying practices involved but also be able to give the farmers sufficient knowledge to adopt the technology to suit their farming conditions and to aid in diagnosing the reasons for failures. Given correct diagnosis, the staff must then be able to recommend corrections or carry the information back to researchers for further work. Extension agents in Pakistan are not adequately trained to fulfill this role.

4) Train and guide farmers in decision-making. The applicability of agricultural technology will vary with the conditions on particular farms. Blanket recommendations cannot be applied on all farms, hence it is critical that farmers be taught to make the requisite judgments concerning innovation. This role of extension will grow in importance as a wider range of technology becomes available and as the accounting and calculating tools of farmers improve.

To successfully train agricultural extension agents, two

areas must be thoroughly covered.[3] First, they need technical knowledge of agricultural production, including current farming practices and new practices as they are developed . Even more important is knowledge of the supporting sciences which is necessary to understand innovation, diagnose failures, and adopt innovation to variable conditions. Second, they need training in the mechanical methods of transmitting knowledge and of the communication and leadership channels within the rural sector.

Pakistan extension agent training programs commonly touch briefly on technical details and concentrate on communication skills, partly because the importance of technical training is not fully appreciated and partly because of the shortage of trained instructors to provide technical training.[4] Consequently extension agents often lack the simplest rudiment of technical knowledge necessary to pass on stock sets of recommendations. They are completely unable to diagnose failures or modify recommendations to suit varied conditions.

Rectifying this situation will be , at best, a slow long-term process. But it is essential for Pakistan's agricultural development. Currently several factors exist which are conducive to initiating an improved agricultural education training program thereby upgrading the standards of extension agents.[5]

First, the newly appointed Director of the Training Institute in Sargodha has requested assistance in upgrading the staff, facilities, and training programs. His capability of administering such an effort appears to be relatively good.

Second, numerous well-planned agricultural efforts have failed in Pakistan due to the shortage of qualified manpower available to implement them. This fact has become more obvious and better understood by more governmental officials during the recent food situation developments.

Third, government officials appear more interested in supporting projects that are designed to help develop the agricultural sector of the economy.

Fourth, it is very late and the situation extremely serious. Therefore the sooner such efforts are initiated the better for all concerned.

Creating educational institutions to train highly skilled workers is a monumental task requiring many years.

One method of saving time is to send students abroad for training. An even greater saving occurs through the import of foreign technicians. They can be used to develop institutions that will provide a stream of well-trained managers or to build institutions which have a widespread multiplier effect, or even actually perform

research, teaching and other duties themselves in association with counterparts.

The great agricultural variability in Punjab's physical, economic, and cultural framework makes it particularly important that extension training be highly localized. Therefore each agriculturalist must develop a working knowledge of all the variables affecting agricultural production.

APPENDIX F

TILLAGE AND CROP RESIDUE MANAGEMENT: BARANI RESEARCH OPPORTUNITIES

Barani farmers must integrate three factors to maintain good crop production:soil water storage,weed control,and soil fertility.

Crop residue management is involved in all three factors. Residues effect water conservation by altering water infiltation rates, evaporation and runoff and, in areas such as Quetta,by trapping snow. Residues largely determine the nature and size of the weed population and dictate the weed control measures required. Residue management also effects the amount of plant nutrients tiedup in residues and the rate at which they are released for plant growth or lost by leaching or volatilization.

Removal of plant residues for fodder,fuel,or other uses reduces the conservation of soil and water, affects the weed populatioe, and increases fertilizer requirements. Continued removal of these residues eventually leads to a depletion of the plant nutrient reservoir and to a very infertil soil. This results in deterioration and distruction of soil resources as can be seen in most of Punjabs Barani areas where precious little organic residues or fertilizers are returned to the soil.

The quantity of plant nutrients temporarily immobilized each year in crop residue (straw,stubble,and roots) if it is left on the land,equals or exceeds the nutrients removed in the grain,An 900 Kg per acre wheat crop, for example,contains about 23 Kg of nitrogen per acre in grain, and leaves about the same amount in the field if the crop residue is not removed after harvest.

If the residues are removed the fertilizer applications have to be increased which increaser the energy required to produce, transport and apply that additional fertilizer.

Incorporation of residues into the soil hastens residue decomposition and nutrient turnover. Leaving these same residues on the soil surface results in slower decumposition and a greater accumulation of partially decomposed residues which insulate the soil, reducing daily maximum soil tempratures near the surface. This change can directly effect seed germination, stand establishment, and plant growth rates.

Most important in many Barani area, the lowered soil temperature also reduces evaporation causing greater water retention in the surface soil.

Therefore a no-till crop production system for the Barani areas may conserve soil and water, increase the efficient utilization of precipitation, and eventually provide a higher level of inherent soil fertility by enlarging the plant nutrient reservoir. This would involve the use of contact Killer herbicides but eliminate the cost of seed bed preparation. The fertilizer requirements might be as high or higher than for other residue management systems because the yield potential would likely be greater as a result of better soil and water conservation. Additional water availability allows greater plant growth which increases fertilizer requirements.

Each combination of crop, soil, and climate has its own distinctive residue management and fertilizer application requirements. Consequently specific research data for land resources areas having similar

soils, climate and crop production practices must be collected to perfect the ideal tillage and residue management systems for these respective areas.

In conjuction with research on improved tillage and crop residue management systems, improved forage production practices must be developed to replace the feeding of crop residues which are best left in the field.

The Barani Project urgently requires practical recommendations, based on solid research, of improved tillage, crop residue management, and fodder production systems for the various land resource areas.

APPENDIX G

MEMORANDUM ON
BARANI PROJECT PERFORMANCE

R a w a l p i n d i
August 16, 1978

To: Mr. Rana Saleem
Project Director

From: Larry Ulsaker
Project Advisor

Re: PROJECT PERFORMANCE

...

The Barani Project again appears to have retrogressed to the point of being unable to effectively implement its programs that were designed to meet the objectives outlined in the PC-1.

Our agronomist has been absent for the past month. Recently I was told that he has been transferred. I hope a qualified agronomist replacement is on the way. He will make our seventh agronomist in two years.

The completion of project activities is now over five weeks behind schedule. See the attached schedule of Rabi and Kharif plot production activities.

The assistant agronomists have not provided close supervision to the planting of the Kharif plots. The plots that have been planted are not being weeded. The Kharif plot harvest training program has not been prepared, nor has the 1978-79 Rabi Production Plan.

The Kharif plot location report has not been received. All the plot identification signs have not been distributed or erected. Arrangements for farmer's field days have not been made.

Preparation of the 1978-79 Rabi Production Plan was initiated with the last agronomist, on schedule. He assigned the assistant agronomist to write the final draft three weeks ago, but that individual has also been absent. Plot data from the previous season has not been compiled nor analysed. I ordered, collected, and delivered 12 maunds 20 seers of Arz wheat seed but much more needs to be obtained before distribution can begin. Distribution should have been initiated 10 days ago. The 1978-79 Rabi Production Plan Training Program has not been prepared nor the necessary materials ordered.

Out of necessity, many of these tasks were personally attended to in the past. We previously agreed that our agronomist was qualified and capable of carrying out these duties and that I would assist where necessary. Therefore I would be able to concentrate my efforts in the three pilot project areas of Pind Sultani, Daultala, and Kharian; in applied research; in the planning and implementation of a wheat production training program; and due to the absence of qualified assistant engineers, in the manufacture of appropriate farm implements. I am now fully involved in each of these areas. The completion of this work would be seriously jeopardized if I had to revert to conducting the Barani Project field work.

Another item we have been discussing the past two years is adequate storage facilities for the large quantities of seed,

fertilizers, chemicals, farm equipment, and vehicles. We should immediately either obtain a more adequate storehouse or recondition our present one. All the rotten grain needs to be cleaned out. It should then be waterproofed as much as possible, fumigated, kept clean, and pallets purchased on which to store the seed, fertilizer, etc.

Some of our office equipment is in urgent need of repairs. I propose we hold a meeting at your earliest convenience to discuss our problems, establish their priorities, and assignresponsibilities to the few staff who are available and qualified to carry them out.

c.c. Brig. Mansoor
David Lundberg

APPENDIX H

INFORMATION MEETINGS
HELD IN NWFP

BARANI AGRICULTURE DEVELOPMENT PROJECT, N.W.F.P.

Statement showing No. of Information Meeting held during Rabi 1977-78.

Name of Distt:/ Agency.	Wheat.	Gram.	Sarsoon.	Fodder.
1- Abbottabad.	74	9	4	-
2- Mansehra.	80	-	1	-
3- Kohistan.	-	-	-	-
4- Swat.	73	-	15	4
5- Dir.	79	-	14	3
6- Chitral.	-	-	-	-
7- Peshawar.	50	14	5	-
8- Mardan.	39	19	10	-
9- Kohat.	140	30	10	3
10- Bannu.	199	47	10	3
11- D.I.Khan.	112	37	9	2
12- Malakand Agency.	30	-	5	-
13- Bajawar "	20	-	10	3
14- Mohmand "	20	-	1	1
15- Khyber "	18	-	5	3
16- Kurram "	-	-	-	-
17- Orakzai "	-	-	-	-
18- N.Waziristan "	16	-	-	-
19- S.Waziristan "	20	-	5	-
Total:-	970	153	104	22

APPENDIX I

INSTRUCTIONS ON LAYING OUT DEMONSTRATION PLOTS DURING RABI 1978-79

Three types of plots will be laid out during Rabi 1978-79.

1) 2 point Demonstration Plots. (II) 4 points Demonstration plot (III) Commercial Demonstration or Block Demonstration.

I- 2-Points Demonstration Plots :-

These Demonstration Plots will be laid out under the Direction of the Deputy Director/Extra Asstt: Directors of Agri: concerned through their field staff with the following particulars.

1- The type and number of Demonstration Plots to be laid out in each District or Agency will be according to the type and No. given statement No: I P- 4.

2- Each Demonstration Plot will be of one acre. It will be devided in 2 sub plots of ½ acre or 4 Kanals each.

3- Half of the plot i.e. ½ acre will be sown with recommended type of seed in rows, in well prepared seed bed with proper dosages of fertilizers. The remaining 4 Kanals or ½ acre will be sown by the farmer using his own seed and according to the local practices but farmer fertilizer should not be applied by him to this control portion.

4- The field Asstt: will select the site and Agril: Officer will personally visit the site and give approval of the same.

5- The Demonstration Plots should be laid out in suitable and easily approachable places. The plots may be near the road or village path, if possible. The plots should neither be laid out in far flung, unapproachable places nor on the tops of hills nor under the shade of the trees.

6- The seed rate per plot and dosages of fertilizer will be according to Statement No: II P.5

7- The appropriate time of sowing wheat Demonstration Plots is the month November.

8- The seed should be treated against soil and seed born disease before sowing.

9- Each Demonstration Plot should be properly labled and demorcated with white washed stones or mud signs or properly prepered sign boards.

10- A soil sample of one Kilo, will be taken from each plot before the application of fertilizer.

11- A Questionnaire will be filled for each Demonstration Plot from the farmer concerned.

12- The field Assistant should take proper care after sowing of the plot and should maintain the following records in a separate register for Demonstration Plots, with a map of plot.

(i) Date of sowing (ii) Date of germination (iii) Dates of rain fall (iv) Variety sown (v) quantity of seed sown. (vi) quantity of fertilizer applied (vii) Dates of weeding (viii) Date of spraying (if any) (ix) Date of harvesting. (x) Yield of 200/ sq: foot from Imp:/local practices. (xi) Yield per acre from Imp:/local practices.

II- 4 points Demonstration Plots.

1- These are additional Demonstration Plot, which are not included in Statement -I P.4. Their number will be according to statement V. P. 8

The 4 point Demonstration Plots will be of wheat only.

2) Each Asstt: Agronomist concerned will be directly responsible for laying o 4 of these plots with the help of his attendant and the extension field st

3- The area of each plot will be one acre, devided into 4 parts of 2 Kanals or $\frac{1}{4}$ acre each.

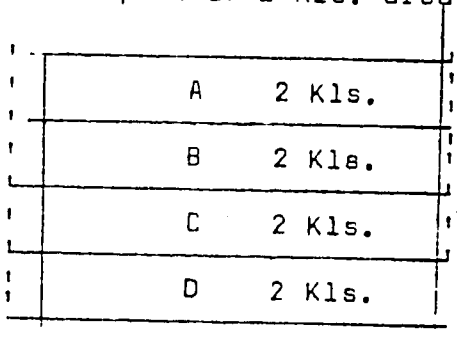
4- The following 4 treatments will observed in each sub plot of 2 Kls. area.

A) Farmer Seed and Farmers Practices.

B) Improved Seed and Farmer's Practices.

C) Farmer Seed and Improved Practices.

D) Improved Seed and Improved Practices.



5- Seed rate per acre and quantity of fertilizer to be applied, will be the same as given in statement No. II. P.5

6- Instruction number 5 to 12 given under 2-points Demonstration Plots will alsc be observed in these plots by the Assistant Agronomist.

III- Commercial Demonstration or Block Demonstration.

1-. Each Assistant Agronomist will lay out 4 commercial Demonstration Plots of wheat in an area of 3 acre each.

2- The plots should be laid out as tabulated in statement number V. P.8.

3- If suitable sites for two plots are not available in a particular Distt:. The Assistant Agronomist can lay out 3 or 4 plots in one District too.

4- The seed rate and quantity of fertilizer to be applied will be according to statement II. P.5

5- These will be one point plots with no comparison with local variety.

6- Instruction No. 5 to 12 given under 2-points Demonstration Plots will also be followed in commercial Demonstration by the Asstt: Agronomist.

Harvesting :-

A) (i) 2-Point Demonstration Plots of wheat Gram & Oil Seed.

2 samples harvesting of 10x10 Sq.feet each, should be taken from each sub plot. The places for harvesting should be selected at Random. The sheave of produce from the two places from each sub plot should be weighed together, at the time of harvesting and then kept for drying for 3 or 4 days. After drying these sheave should be weighed once again, before threshing and the weight recorded in the Barani Demonstration Plot Register. After threshing the weight of grain from these sheaves should be taken in Kgs. or lbs. and recorded in the register. The dates of harvesting and threshing should also be recorded there.

ii) Fodder Demonstration Plot :-

Three harvesting should be taken from each sub plot in the last week of January, February and March, 1969 from an area of two 10x10' Sq:ft. selected at Random. The weight of green fodder should be taken from each harvest and recorded in the Register with the dates of harvesting.

B) Four Point Demonstration Plot of Wheat :-

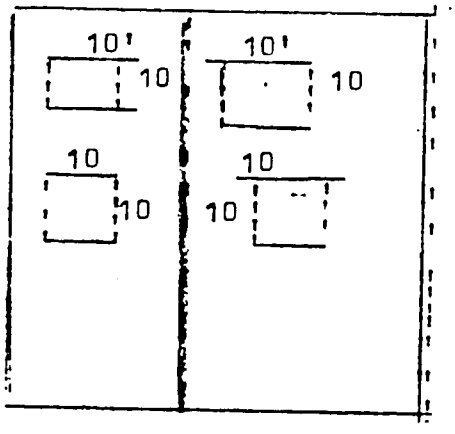
2 sample harvesting of 10x10' ft. each will be taken from each sub plot of 2 Kls. i.e. 8 places will be harvested from each plot of one acre at random. Other instructions are the same as given under para A (i).

C) Commercial Plots of Wheat.

4 sample harvesting from an area of 10x10 Sq: ft. each should be taken from each plot at Random. Other instruction are the same as given under para A (i).

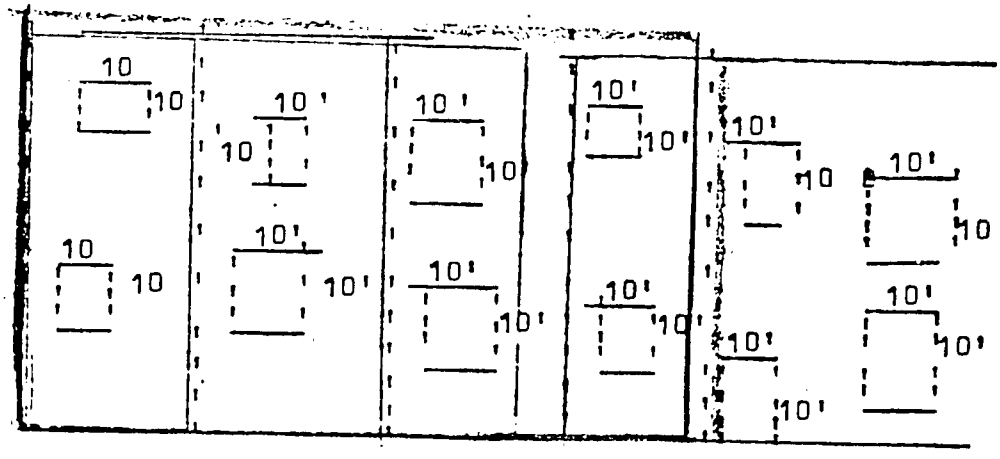
SKETCHES OF HARVESTING FROM DIFFERENT PLOTS.

A) 2- points Demonstration Plot.



B) 4- points Dem: Plot.

C- Commercial Plot.



Statement No: I showing number of Demonstration Plots to be laid out District-wise under B. A. D. P. during Rabi 1978-79.

Sl:No:	Name of Distt:/ Agency.	Wheat.	Oil Seed.	Gram.	Fodder.	Total.	Remarks
1-	Swat.Distt:	100	16	-	6	122	
2-	Dir. "	100	16	-	6	122	
3-	Chitral. "	20	-	-	6	26	
4-	Abbottabad. "	120	12	10	6	148	
5-	Mansehra. "	100	12	-	6	118	
6-	Kohistan. "	40	-	-	6	46	
7-	Peshawar. "	100	12	20	6	138	
8-	Mardan. "	40	12	20	6	78	
9-	Kohat. "	270	20	50	6	346	
10-	Bannu. "	200	16	50	6	272	
11-	D.I.Khan. "	200	20	50	6	276	
12-	Malakand Agcy:	30	10	-	6	46	
13-	Bajawar "	30	10	-	6	46	
14-	Mohmand. "	30	10	-	6	46	
15-	Khyber "	10	8	-	4	22	
16-	Kurram "	30	10	-	6	46	
17-	Orakzai "	15	10	-	4	29	
18-	N. Waziristan.	30	8	-	6	44	
19-	S. Waziristan.	15	8	-	6	29	
Total:-		1480	210	200	110	2000	

S T A T E M E N T - II.

1- Varieties to be sown :-

The following varieties will be used for laying out of Barani Plot during Rabi, 1978-79.

1-	Wheat.	Faisal Abad-73 (Lyallpur-73),Noori,Blue Silver, ARZ.
2-	Oil Seed.	Sarsoon P.R.7
3-	Gram.	C. 727.
4-	Fodder.	Mixed plot of Barley and Sarson.

Seed Rate of Different crops.

The under mention seed rates shown against each crop should be followed.

		Seed rate per acre.	Seed rate per plot of ½ acre.
1-	Wheat.	= One md/36 Kg.	20 Srs/18 Kg.
2-	Gram.	= 32 Sr/30 Kg.	16 Srs/15 Kg.
3-	Sarson	= 4 Sr/ 4 Kg.	2 Sr./2 Kg.
4-	Barley)	= One md/36 Kg.	20 Sr./18 Kg.
	Sarson)	= 2 Sr./2 Kg.	1 Sr./ 1 Kg.

Doses of fertilizers to be applied

The fertilizer doseage as mentioned against each area/locality should be followed for the lay out of Barani Demonstration Plots during Rabi 1978-79.

Name of Crop.	Localities.	Quantity per acre		Quantity per Plot.	
		Urea. Lbs.	DAP Lbs.	Urea. Lbs.	DAP Lbs.
1- Wheat.	Malakand & Hazara Divn:, Kurram & Orakzai Agcy:	137.5	137.5	68.75 to 69	68.75 to 69
2- -do-	) Peshawar & DIKhan Divn:) and remaining Agencies)	110	110	55	55
3- Gram.	All localities.	12	110	6	55
4- Oil Seed.	-do-	55	110	27.5	55
5- Fodder.	-do-	165	110	82.5	55

Note:- The District/Agency-wise requirement of seed and fertilizer for each crop with total requirements are given in Table III & IV Page 6 & 7.

Statement- III Showing District-wise seed required for laying out Demonstration Plot under Barani Agri: Dev: Project during Rabi 1978-79.

Sl:No:	Name of Distt:/ Agency.	Wheat.	Sarson P.R.7	Gram.	Fodder	
					Barley.	Sarson.
		Mds.	Mds.		Mds.	
1.	Swat.	50	0 - 32	-	3 - 0	0 - 3
2-	Dir.	50	0 - 32	-	3 - 0	0 - 3
3-	Chitral.	10	--	-	3 - 0	0 - 3
4-	Abbottabad.	60	0 - 24	4 - 0	3 - 0	0 - 3
5-	Mansehra.	50	0 - 24	--	3 - 0	0 - 3
6-	Kohistan.	20	-	--	3 - 0	0 - 3
7-	Peshawar.	50	0 - 24	8 - 0	3 - 0	0 - 3
8-	Mardan.	20	0 - 24	8 - 0	3 - 0	0 - 3
9-	Kohat.	135	1 - 00	20 - 0	3 - 0	0 - 3
10-	Bannu.	100	0 - 32	20 - 0	3 - 0	0 - 3
11-	D.I.Khan	100	1 - 0	20 - 0	3 - 0	0 - 3
12-	Malakand Agcy:	15	0 - 20	--	3 - 0	0 - 3
13-	Bajawar "	15	0 - 20	--	3 - 0	0 - 3
14-	Mohmand "	15	0 - 20	--	3 - 0	0 - 3
15-	Khyber "	5	0 - 16	--	2 - 0	0 - 2
16-	Kurram "	15	0 - 20	--	3 - 0	0 - 3
17-	Orakzai "	7.5	0 - 20	--	2 - 0	0 - 2
18-	N.Waziristan "	15	0 - 16	--	3 - 0	0 - 3
19-	S.Waziristan "	7.5	0 - 16	--	3 - 0	0 - 3
Total:-		740 Mds. or 26640 Kg.	10- 20 or 378 Kg.	80 Mds or 2880 Kg.	55 Mds or 1980 Kg.	1-15 Seers 52 Kg.

Statement No: IV showing quantity of fertilizers to be used District-wise for Barani Demonstration Plot during Rabbi, 1978.

District/ Agency.	Name of Fertilizers.	Wheat.	Oil Seed.	Gram.	Fodder.	Total. bags.
1. Swat.	Urea	62.5 bag	4 bag.	-	4.5 bag.	71.0/71
	DAP	62.5 "	8 "	-	3 "	73.5/74
2- Dir.	Urea.	62.5 "	4 "	-	4.5 "	71.0/71
	DAP.	62.5 "	8 "	-	3 "	73.5/74
3- Chitral.	Urea.	12.5 "	--	-	4.5 "	17.0/17
	DAP	12.5	--	-	3.0	15.5/16
4- Abbotabad.	Urea.	75.0	3 "	60 Lbs.	4.5	83/83
	DAP	75.0	6 "	5.0 bgs.	3.0	89/89
5-Mansehra.	Urea	62.5	3 "	--	4.5	70/70
	DAP	62.5	6 "	--	3.0	71.5/72
6- Kohstan.	Urea.	25.0	--	--	4.5	29.5/30
	DAP	25.0	--	--	3.0	28.0/28
7- Peshawar.	Urea.	50.0	3- 0	120 Lbs	4.5	58.6/59
	DAP	50.0	6-0	10 bgs.	3.0	690/ 69
8-Mardan.	Urea.	20.0	3.0	120 Lbs	4.5	28.6/29
	DAP	20.0	6.0	10 bgs.	3.0	39.0/39
9- Kohat.	Urea	135.0	5.0	300 Lbs.	4.5	147.3/148
	DAP	135.0	10.0	25 bgs.	3.0	173.0/173
10- Bannu	Urea	100.0	4.0	300 Lbs	4.5	111.3/112
	DAP.	100.0	8.0	25 bgs.	3.0	136.0/136
11.D.I.Khan.	Urea.	100.0	5.0	300 Lbs.	4.5	112.3/113
	DAP	100.0	10.0	25 bgs.	3.0	138.0/138
12.Malakand	Urea.	18.75	2.5	--	4.5	25.75/26
Agency.	DAP	18.75	5.0	--	3.0	26.75/27
13.Bajawar "	Urea.	15.0	2.5	--	4.5	22.0 /22
	DAP	15.0	5.0	--	3.0	23.0/23
14-Mohmand "	Urea.	15.0	2.5	--	4.5	22.0/22
	DAP.	15.0	5.0	--	3.0	230/23
15-Khyber.	Urea.	5.0	2.0	--	3 bags.	10/10
	DAP	5.0	4.0	--	2 bags.	11.0/11
16- Kurram"	Urea.	18.75	2.5	--	4.5	25.75/26
	DAP	18.75	5.0	--	3.0	26.75/27
17-Orakzai"	Urea	9.38	2.5	--	3 bags.	14.88/15
	DAP	9.38	5.0	--	2 bags.	16.38/17
18- N.Waz:	Urea.	15.0	2.0	--	4.5 "	21.5/22
	DAP	15.0	4.0	--	3.0	22.0/22
19- S. Waz:"	Urea.	7.5	2.0	--	4.5	14.0/14
	DAP.	7.5	4.0	--	3.0	14.5/15

Total of the Districts in round figure Urea..... 960 bags.
DAP..... 1073 bags.

Statement No: V showing number of 4 points Demonstration Plot and commercial wheat plots District-wise during Rabbi, 1978-79.

Sl: No:	Name of Distt:	No: of 4 points Dem: Plots.	No: of commercial plots.	Seed quantity required.	Fertilizer require	
					Urea.	DAP.
1-	Swat.	2	2	7 md.	9 bags.	9 bags.
2-	Dir-	2	2	7 md.	9 bags.	9 "
3-	Abbottabad.	2	2	7 "	9 "	9 "
4-	Mansehra.	2	2	7 "	9 "	9 "
5-	Peshawar.	2	2	7 "	7 "	7 "
6-	Mardan.	2	2	7 "	7 "	7 "
7-	Kohat.	4	4	14 "	14 "	14 "
8-	Bannu.	2	2	7 "	7 "	7 "
9-	D.I.Khan.	2	2	7 "	7 "	7 "
	Total:-	20	20	70 "	76 "	78 "

APPENDIX J

LIST OF EXHIBITS

Following is a list of exhibits which are referred to in the Tenth Quarterly Report. The actual documents and reports are on file with USAID/Pakistan and Experience, Incorporated, Minneapolis, but are not included in the quarterly report.

	Title	No. of pages
1.	Barani Marketing Survey 1978, Farmer Questionnaire	20
2.	Barani Marketing Survey 1978, Marketing Middlemen	13
3.	Barani Marketing Survey 1978, Farmer Questionnaire (Short Form)	1
4.	Barani Area Sunflower Production Training Manual	10
5.	Depth of Tillage Experiment	4
6.	Field Trip Report, August 23-24. 1978	3
7.	Minutes of Meeting of Assistant Agronomists, August 29, 1978.	2
8.	Lawrence Ulsaker Memorandum to Mohammad Sharif	2
9.	Proforma for Collecting Data on Rainfall and Weather Conditions in NWFP	2
10.	Working Paper for Seventh Meeting of the Barani Agriculture Advisory Council for NWFP Review of Rabi 1977-78, and Plans for Kharif 1978	17
11.	Minutes of the Seventh Meeting of the Barani Agriculture Advisory Council for NWFP, Review of 1978 Kharif, and Plans for Rabi 1978-79	12