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Reports

END OF CONTRACT

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FINAL REPORT FROM THE CHIEF OF PARTY

Afghanistan Agricultural Sector Support Project/ Private Sector Agribusiness
(AASSP/PSA) Funded by the United States Agency for International Development
Contract No.306-0204-C-00-9829-00

Development Alternatives Incorporated
April, 1993

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I. INTRODUCTION

This report serves as the End of Contract as well as the Final Report from the Chief of Party as called for in the contract between Development Alternatives Inc. and AID/Rep for implementation of ASSP/PSA. As such, it provides 1) an overview of the project's scope of work and objectives, 2) a description of the approach taken by the contractor to meet those outcomes desired by AID/Rep, and 3) our assessment of what worked and what could have been done better in executing an ambitious set of interrelated activities under a challenging set of circumstances.

A review of the history of this project shows, if nothing else, that DAI fielded a team of thoughtful, patient, and extremely flexible individuals who took on a complex set of assignments and did everything in their power to accomplish what they set out to do. What DAI accomplished over the past three years was far more than run an AID financed development project. Rather, an institution was created which trained, managed and supported a staff of primarily Afghan professionals who were dedicated to serving a new generation of farmers emerging after years of conflict.

In the absence of a host government counterpart agency and a country in which the impact upon beneficiary farmers could be monitored no less observed, ASSP provided the best of what could be expected from a properly functioning ministry of agriculture. Where it was possible to work, project extension agents carried with them for demonstration purposes "packages of technology" designed to assist Afghan farmers to improve the productivity of their land. While the project worked to stimulate an effective demand for modern agricultural inputs and practices, the project experimented with various means of meeting this newly created demand in which Afghan traders and transporters played a key role. And while ASSP worked to increase food production for domestic consumption as well as export, it systematically gathered information on agricultural production in order to improve our understanding of the problems and opportunities for rehabilitation.

Little went according to plan. ✓ The assumption that an Afghanistara free from Soviet invaders would be free to get on with the business of rebuilding never quite worked out. The project's activities were beset with problems as fighting between rival groups and a general breakdown in law and order plagued the work inside Afghanistan right up until and including the closing days of ASSP. The politics of a bilateral aid program also contributed to

the overall complexity of achieving the project's stated objectives. Moratorium on cross-border activities, threats either real or perceived against those associated with the US financed assistance, controversy over role that USAID should play in supporting the private sector as part of a solution to rebuilding Afghanistan, our problem with poppy, and in the end a shifting of priorities away from this troubled country toward places where aid might be used more effectively, did little but divert a great deal of attention on the part of ASSP management away from the technical task of increasing food production. | ?

This report by design focuses upon the accomplishments of ASSP over the past three years. It is a story of adaptation on the part of the project, its staff and management to a rapidly changing work environment. While the obstacles encountered were numerous, and in many cases needed to be seen first hand to be believed, ASSP always looked for what could be done rather than dwell on what could not. If what survives this project is not the tractors, computers and fertilizer stocks procured with project funds, but simply this attitude of finding solutions whereby problems are turned into opportunities, then ASSP will have made an important contribution to Afghanistan's future.

II. AGRICULTURAL DEVELOPMENT AND TRAINING COMPONENT

INTRODUCTION

Agricultural Development and Training (ADT) is one of the components of the Afghanistan Agricultural Sector Support Project/Private Sector Agribusiness (ASSP/PSA) program. This component was designed to introduce, test and demonstrate improved agricultural seeds and machinery for Afghanistan. The ADT component officially started April 1, 1990 when it assumed personnel and agricultural equipment from Volunteers in Technical Assistance (VITA). Prior to the ASSP/PSA, VITA had the responsibility for agricultural assistance for Afghanistan for USAID under the Afghanistan Agricultural Sector Support Project/Agricultural and Rural Rehabilitation (ASSP/ARR). ASSP/ARR from April 1, 1990 continued working in the reconstruction of roads and irrigation structures. M

The ADT component hired personnel to work in selected provinces in Afghanistan. Qualified personnel were sought out who either lived in or were from the areas selected for extension activities. Extension agents were hired and trained to carry out the various agricultural activities targeted for ASSP/PSA. Specific programs were developed in cereal crops, horticulture, farm machinery, and poultry. Pakistan based staff also developed and conducted agricultural technical training and produced various extension materials. *too
VITA?
MOA
RWA/M*

The main emphasis in cereal crops was to select, test, introduce, and develop seed multiplication programs for improved varieties of wheat, maize and rice. Pakistan 81 and Pirsabak 85 were the two main Pakistani varieties promoted for fall planting in the lower elevations and for spring planting at the higher elevations. Atay 85 was imported from Turkey, tested, and successfully introduced as a winter wheat for the higher elevation areas in Afghanistan. New maize varieties obtained from CIMMYT in Mexico were compared to the improved Pakistani varieties. The varieties adapted to the lower elevations from Mexico compared favorably to those found in Pakistan. None of the varieties tested matured as early as the native Afghan local varieties. From limited testing in Baghlan and Nangarhar, Basmati 385 rice appeared to be an acceptable introduction for these provinces.

In horticulture, new nurseries and orchards were installed, an apricot drying program started, a pilot drip irrigation system installed, and new vegetable seed introductions were made with special emphasis on potatoes. Two nurseries were started in Pakistan to serve as a source for new trees for Afghanistan and also as training sites for nursery and orchard operators. There were nurseries also started in Afghanistan and nurserymen trained to operate them. A major effort was made to establish new fruit

orchards in the provinces of Logar, Wardak, Ghazni, Paktika, and Kandahar. A special program was developed to demonstrate proper methods of drying apricots to allow the apricot orchard owners another alternative for marketing their product. A pilot drip irrigation project was installed in Pakistan for training and evaluation. It was decided not to expand this program into Afghanistan. New vegetable seeds were purchased from Pakistan and tested in Afghanistan. Diamant an imported potato from Holland to Pakistan was successfully tested and introduced in the provinces of Wardak, Logar, Paktika, Ghazni, Bamiyan, and Parwan. Through a sub-contract with High Value Horticulture, various consultants were brought to Pakistan and in a few cases traveled to Afghanistan for technical backstopping and to conduct specific horticulture training programs.

To counter the labor shortage caused by the war, agricultural machinery was purchased in Pakistan and shipped to Afghanistan to be field tested and demonstrated. Special emphasis was given to provide farm machinery for land preparation for planting and for harvesting wheat (reaping and threshing). Massey-Ferguson model 240 and 375 tractors were used as farm power demonstration units. Tine tillers, mold-board plows, disk plows, disk harrows, seed drills, cultivators, small grain reapers, seed cleaners, maize shellers, and both tractor and self-powered wheat threshers were introduced and tested.

A pilot poultry program was conducted to evaluate different methods of providing young poultry to Afghanistan. The Egyptian breed, Fayoumi, was found to be hardy and an efficient food finder. Incubating eggs in Afghanistan at this time was considered to be not feasible. Several successful trips were made to Nangarhar with young 6 to 8 week old chicks.

Technical agricultural training was a major activity of the ADT component. All of the permanent ADT field staff participated in an annual winter training program in the months of January and February. During this time technical skills were updated and program plans developed for the coming year. Many of the permanent Afghan staff stationed in Pakistan performed major roles in the winter training programs. A mid-year update session was also usually conducted in August for the senior staff stationed in Afghanistan. As the Pakistan based staff increased in proficiency, more training programs were developed for other NGO personnel and Afghan agriculturist.

Various extension materials were developed by ADT staff for use by field staff and other NGO's in Afghanistan. A pesticide users training manual was translated in Farsi. There were several silk screen posters designed and printed in Farsi and Pushtu depicting a pertinent agricultural development message. A series of crop production pamphlets was started. Various consultants also prepared technical reports which were published, several in Farsi.

SCOPE OF WORK

Through the life of the ASSP/PSA project, the Scope of Work for the ADT component went through some minor changes. The complete Scope of Work under which the ADT component was working is listed as ANNEX 1. Guidelines for the ADT component from this Scope of Work are presented here.

The main objectives set out for the ADT component were to restore agricultural productivity by field testing and guiding Afghan farmers in technology transfer through demonstrations in the use of improved seeds, seedlings and other planting materials, fertilizer, draft power, post harvest and marketing, farm machinery, poultry and crop production.

The Contractor through the ADT component was to work toward restoring agricultural productivity by working at locations (a) within the Agricultural Rehabilitation Scheme (ARS) where ASSP assistance has been provided for infrastructure rehabilitation, (b) served by selected market bazaars where agricultural commodities and equipment are being supplied, and (c) of special project activities in the field of agriculture authorized by the AID Representative.

Specifically, ADT was charged to develop programs to:

1. increase food and cash crop production,
2. demonstrate agricultural technologies,
3. implement a strategy for agricultural extension activities,
4. implement a strategy for seed multiplication,
5. phase out the on-going program to rehabilitate and promote horticultural crops,
6. test and demonstrate draft power and farm equipment and machinery for tillage, threshing, and planting operations, and
7. support special agricultural activities approved by AID/Rep.

In the performance of the above tasks, the ADT component should use a specific criteria in the selection of new sites. Sites should be chosen which have a high agricultural production potential within areas where refugees will be returning. The ADT sites should coincide when possible with the 16 Agriculture and Rural Rehabilitation (ARR) offices. Sites should be chosen which permit close collaboration with local Shuras or other community organizations.

The ADT was to do internal record keeping and reporting, develop and conduct training programs, and develop strategies and plans for execution.

ORGANIZATION OF ADT COMPONENT

The ADT component started activities on April 1, 1990 when it assumed equipment and personnel from the Afghanistan Agricultural Sector Support Project/Agriculture and Rural Rehabilitation (ASSP/ARR). ADT was coordinated by an Afghan Director and an expatriate Advisor. Staff were located in Islamabad, Peshawar and Quetta, Pakistan and in the various provinces of Afghanistan. The Quetta staff performed administrative, logistical, and warehousing functions while the Peshawar staff were mainly technical in nature. In September of 1991 the majority of the Peshawar based operation of the ADT component was transferred to Islamabad. The majority of the Afghan staff did not move to Islamabad until March of 1992 when the winter training and planning sessions ended. A limited number of staff were kept in Peshawar for coordination of training programs and to support cross-border activities until the close of the project. Staff terminations began on December 31, 1992 and were completed on April 30, 1993. *Handwritten: } sends to project?*

The core Afghan managerial staff located first in Peshawar and finally in Islamabad were responsible for the specific technical areas of cereal crops, farm machinery, horticulture, poultry, and training. Extension personnel were charged with overall programming and coordination. Staff planned the individual programs, were responsible for identifying procurement needs, followed up on procurement and shipments to Afghanistan of the various commodities, and received the reports of the activities from the field. They also actively participated in training programs and in the production of extension materials.

With the project in full operation there were 91 Extension Agents (11 which served as supervisors), 26 machinery operators, 30 contracted apricot extension workers and nurserymen, and 28 guards working in 28 locations out of 21 offices located in 14 provinces. Of these, 4 were new office locations in 1992 in the Northern provinces. Each province had a supervisor who was responsible for all activities in his province and was linked to the main office in Islamabad through zone supervisors who made regular scheduled trips from Islamabad to the areas of their responsibilities.

During 1991 and 1992 there were fifteen different trips made by consultants to assist the ADT component. Most of the trips made by these consultants coincided with major training programs conducted by ADT. Local staff assisted in the presentations and in the process became better qualified to conduct future training sessions independent of the consultants. In many cases the consultants also assisted in preparing articles and extension materials. Eight of these trips were made under a sub-contract with High Value Horticulture (HVH). Details on trip timings and report titles are given in ANNEX 2.

ADT Staffing

The following staff were employed by the ADT component with the corresponding responsibilities:

Pakistan Based Management Staff-----	21
Director	Arif Noori
Deputy Director-Administration	Saadat Husain
Deputy Director-Cereal Crops	Dr. Nabi Aslamy
Deputy Director-Extension	Abdullah Naik
Northern Area Coordinator	Abdul Rahman Mannan
Training Coordinator	Qasim Yusufi
Horticulture Coordinator	Anwar Malham
Machinery Coordinator	Abdul Ghafary
Extension Coordinator	Dadullah
Cereal Crops Agronomist	Mir Ayub
Crop Protection Specialist	Seyed Habib
Poultry Specialist	Mohd Kabir Sayar
Training Assistant	Mohd Humayoon
Zone Supervisor-Logar & Wardak	Aziz-ud-Din Mir
-Ghazni & Paktika	Pir Mohammad
-Helmand	Mohd Ibrahim
-Kandahar	Abdul Rehman
-Baghlan, Kunduz, Takhar	Khalil Ullah Fakhri
-Balkh & Samangan	Mir Shafiud Din
-Parwan & Bamiyan	Aga Jan
Regional Representative in Quetta for all ASSP/PSA components	Lt.Col(Ret)Saadullah
Pakistan Based Monitors-----	16
Pakistan Office Staff(Peshawar and Quetta)-----	10
Pakistan Warehouse Guards-----	16
Afghanistan Province Supervisors-----	11
Abdul Karim	Helmand
Wali Mohammad	Maroof, Kandahar
Abdul Rehman	Panjwai, Kandahar
Mohammad Arif	Kwaja Mulk, Kandahar
✓ Abdul Jabbar	Paktika
Poyenda Mohammad	Ghazni
✓ Wali Ahmad	Logar
Mohd Nasir Nabiyar	Wardak
Mohammad Anwar	Parwan
Latif-ur-Rehamn	Nangarhar
Mir Hamza	Baghlan
Afghanistan Extension Agents-----	80
Afghanistan Machinery Operators-----	26
Afghanistan Guards-----	28
TOTAL ADT EMPLOYEES-----	208
Afghanistan Apricot Extension Workers Contracted-----	22
Afghanistan Nursery Workers Contracted-----	7

ADT Work Sites in Afghanistan

Staff in Afghanistan in most cases worked in areas in which they were familiar. There were seventeen offices from which the agents worked. In some areas an extension agent carried out ADT activities using his house as a base of operations. In the summer of 1992, new agents were hired and sites selected in the Northern provinces in an attempt to expand the program North of the Hindu Kush.

Office Locations-----17

Shamalan	Helmand
Darweshan	Helmand
Kwaja Mulk/Kandahar City	Kandahar
Panjwai	Kandahar
Maroof	Kandahar
Sharan	Paktika
Andar	Ghazni
Jaghatu	Ghazni
Qarabagh	Ghazni
Asphandi	Ghazni
Saidabad	Wardak
Chalk	Wardak
Kolangar	Logar
Chalk	Logar
Ghorband	Parwan
Behsood	Nangarhar
Sarak-i-Mamorin	Baghlan

Additional Extension Work Sites-----7

Marja	Helmand
Malger	Helmand
Jaghatu	Wardak
Day Mirdad	Wardak
Baraki Barak	Logar
Khroshi	Logar
Bamiyan	Bamiyan

New Office Locations-----4

Talaghan	Takhar
Aibak	Samangan
Mazar-i-Sharif	Balkh
Kunduz City	Kunduz

Total work sites in Afghanistan-----28

SUMMARY OF ADT PROGRAM ACTIVITIES

A. Introductions of Improved Seed Varieties

Field demonstration plots were used to introduce and show to farmers the benefits of improved varieties of wheat, maize, rice, potatoes, and other vegetables. Besides competitive bidding procurement through RONCO, seed multiplication programs in Pakistan for wheat and maize and in Afghanistan for wheat, maize, rice, and potatoes were used to increase the seed supply of the improved varieties for Afghanistan. For new seed observations and introductions there was no charge to the cooperating farmer for the inputs used. When larger multiplication programs were developed the farmers were usually charged for the seed and fertilizer (in most cases DAP) as a package and at a subsidized rate.

Wheat: From prior experiences the improved Pakistan wheat varieties, Pakistan 81 (Pak 81) and Pirsabak 85, were found to be well adapted to the lower elevation wheat growing areas of Afghanistan. These two facultative wheat varieties were developed by Pakistan scientists working with genetic material of the "green revolution" wheats originally developed under the direction of Dr. Norman Borlaug from CIMMYT. To insure that a high quality wheat seed was going to Afghanistan, ADT developed a monitoring and quality control process. After a procurement order was given to a particular seed company, ADT personnel inspected the seed fields, monitored the processing, sampled the final processed seed for germination and purity testing, monitored the storage and later the loading of the trucks for shipment and upon delivery resampled and had the seed tested before actual acceptance was taken of the wheat seed. When prolonged storage was necessary during the cross-border moratorium, cold storage warehouses were arranged for the wheat seed and ADT personnel monitored the condition of the wheat during storage.

By the completion of the project, the ASSP had purchased a total of 2,943 metric tons of improved wheat seed from Pakistan sources for Afghanistan. The following table estimates the potential impact of this improved wheat seed using the following assumptions:

- (1) Seeding Rate of 150 kg/ha
- (2) Yields of 91 seers/jeerib (3.2 MT/Ha)
- (3) Value of wheat is 1029 Afs/seer (\$156/MT)
- (4) One dollar is 938 Afghanies
- (5) 33 percent of the wheat production is due to the improved seed.
- (6) 20 percent of production is saved for seed

Impact of ASSP/PSA Wheat Seed Multiplication Program

Year	MT of Improved Seed		Hectares planted Imp.Var.	Wheat Produced	
	ADT Annual Program	Seed from Farmer Multiplication		(MT)	Mil \$
1989	185	0	1,233	3,946	0.61
1990	445*	789	8,227	26,326	4.10
1991	513**	5,265	38,523	123,274	19.23
1992	<u>1800***</u>	<u>24,654</u>	<u>176,368</u>	<u>564,380</u>	<u>88.04</u>
TOTAL	2,943	30,708		717,926	111.98

- * 200 MT distributed by MCI in collaboration with ADT
- ** Distributed through FAO and SCA
- *** Purchased for fall, 1992. Due to continual conflict, 982 tons of this wheat is currently being stored in Afghanistan.

The estimated contribution over the period of 1989 to 1992 of the 2,943 tons of improved wheat seed to Afghanistan is an additional 236,915 metric tons (MT) of wheat (33 % of 717,926 MT). At the above prices the value of this wheat would be almost 37 million dollars. Assuming an annual per person grain requirement of 200 kg, this 239,069 MT of wheat is enough to meet the estimated annual requirement for grains for almost 1.2 million people. In 1992, the area planted to improved varieties could reach 176,000 hectares, an area equal to approximately seven percent of the total irrigated, arable land of Afghanistan.

The Pak 81 and Pirsabak 85 wheat varieties were well adapted when planted in the fall at the lower elevations, but did not have sufficient winter hardiness to survive the harsh climate of the higher wheat growing areas in Afghanistan. For this reason the ASSP sponsored a trip to Turkey and in consultation with the Swedish Committee for Afghanistan (SCA), one ton of Atay 85 was imported to Pakistan for Afghanistan in 1990. This one ton was planted in 1990 in the Swat area of Pakistan in cooperation with the SCA. There were 13 tons of this wheat harvested in the summer of 1991. From this harvest, 6 tons were planted by ADT/ASSP/PSA extension agents in the fall of 1991 in the provinces of Logar, Wardak, Ghazni, and Paktika. The total production harvested in the summer of 1992 was 59.78 tons (see following table). Of this 6.966 tons was kept by ADT personnel for supervised multiplications planted in the fall of 1992. The balance was made available for farmer to farmer exchange.

Extension agents have reported that the farmer acceptance for this variety has been very good and that most of the 1992 harvest was planted for seed production in the fall of 1992.

Demonstrations/Multiplications and Production of Atay 85 Wheat
in 1991 and 1992 in Afghanistan

	Kgs of seed planted		Number of seed Demos/Multiplications		Production (kilograms)
	1991	1992	1991	1992	1991
Ghazni	1500	1163	10	12	6,800
Paktika	1500	2254	8	10	2,630
Logar	1500	1428	16	16	24,650
Wardak	1500	2121	16	13	22,860
Total	6000	6966	50	51	59,780

Afghan agriculturist suspected and later observed that the facultative wheats, Pak 81 and Pirsabak 85, will do well in the higher elevations of Afghanistan if planted as a spring wheat. Demonstrations and seed multiplications were conducted in 1992 by ADT staff for the spring planting of these wheats at the higher elevations of Logar, Wardak, Paktika, and Ghazni. Although under these conditions these wheats will not yield as well as the Atay 85, they do better than the local varieties and are resistant to current rust strains. This provides the wheat growers of these areas another alternative for producing wheat in the harsh climate areas.

Maize: A maize program was initiated in May, 1991. Small samples of improved genetic material were obtained from CIMMYT to be observed and compared with improved open-pollinated Pakistan varieties in Afghanistan. Three varieties, Population 845, Batan 8686, and Across 8786, were selected to be observed in the higher elevations (Parwan, Ghazni, Logar, Paktika, and Wardak) and two varieties, Duc Trong (Pop 31) and Tlatisapan (Pop 45), were selected for the lower elevations (Helmand, Kandahar, and Nangarhar). Because it was thought that they did not possess any advantageous characteristics for Afghanistan and also to simplify the comparison process, Batan 8686 and Across 8786 were discarded from the higher elevation 1992 planting comparisons. The Pakistani varieties EV-II (1991 & 1992) and Arun II (1992) were selected for observation at the higher elevations, and Shaheen and Kissan, white varieties, and Sunheri and Sarhad Yellow, yellow varieties, were selected for observations at the lower elevations.

Fifty-six (56) observation trials were harvested of the 85 planned for the two years 1991 and 1992 (29 from the lower elevations and 27 from the higher elevations). Population 845 from CIMMYT appeared to have better cold tolerance than the Pakistani varieties at the higher elevations. Results from two years also

indicate that the CIMMYT varieties may not have a short enough growing season for the higher elevation areas in Afghanistan. The following two tables summarize the results of the data from the two years, 1991 and 1992.

Yields of Improved Maize Varieties vs Local Grown at Different Locations in Afghanistan for the years 1991 and 1992

<u>Province</u>	<u>Year</u>	<u>Trials</u>	<u>Best Variety</u>	<u>Yields in Metric Tons/Ha.</u>		
				<u>Best Variety</u>	<u>Ave of 4 Improved</u>	<u>Local</u>
Kandahar (cold)	1991	4	EV-II	4.8	4.2	2.3
	1992	3	P 845	5.9	5.1	4.0
Parwan	1991	2	B 8686	5.5	4.8	1.7
Ghazni	1991	4	P 845	4.0	3.1	1.4
	1992	1	EV-II	5.3	3.6	1.6
Helmand	1991	8	Sar Yel	12.4	10.2	9.1
	1992	8	Sunheri	5.7	5.5	3.7
Kandahar (warm)	1991	4	Sar Yel	9.2	6.8	2.0
	1992	2	Pop 31	5.9	4.8	4.2
Nangarhar	1991	4	Kissan	3.4	3.0	2.7
	1992	3	Kissan	4.2	3.5	2.7
Paktika	1992	3	EV-II & Arun II	7.8	6.9	3.3
Logar	1992	4	EV-II	4.8	3.8	2.8
Wardak	1992	4	Arun II	5.3	4.0	3.9

As can be seen from this table, the yield of the best variety and the average of all the improved varieties is usually much better than the local variety grown. The higher yields of the local variety in the province of Helmand indicates a high level of agricultural interest in this area.

The weighted averages of the different varieties over all the locations for the two years were arranged in order of descending yields and are presented as follows:

<u>Variety</u>	<u>Yield (tons/ha)</u>	<u>No of locations</u>
Sarhad Yellow	7.8	26
Kissan	6.7	29
Pop 31	6.1	29

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Sunheri	5.5	10
Pop 45	5.1	44
Arun II	5.1	15
Local(low ele)	4.7	29
Pop 845	4.5	27
E V II	4.5	27
Across 87	3.9	12
Batan 86	3.5	12
Shaheen	3.3	3
Local(high ele)	2.6	27

As can be seen from the average yields of the local varieties, the lower elevations provide much better environments for maize production. The best improved variety yielded over 3 tons per hectare better than the local at the lower elevations (Sarhad Yellow) and over 2 tons per hectare at the higher elevations (Arun II).

From the maize seed brought from CIMMYT (3 to 5 kilograms), the balance not used for observation trials in Afghanistan was kept in Pakistan to be multiplied under closely supervised conditions. In collaboration with Dr. Salim of the Cereal Crops Research Institute (CCRI) located at Pirsabak, seed multiplications were conducted in Madayan and Pirsabak. From this multiplication of four CIMMYT varieties a total of 1.6 tons of seed were obtained in 1991. A winter planting multiplication was arranged in D.I. Khan in 1991. From this multiplication, a total of 17.4 tons of seed were obtained. There were 30 tons purchased from the Maize and Millet Research Institute at Sahiwal and 30 tons purchased from Cargill making a total of 77 tons of improved maize seed from purchases and multiplications in Pakistan available for distribution in Afghanistan in 1992. 6029 jeribs of maize were planted with 1215 farmers for maize multiplication in Afghanistan in the spring of 1992. From the 1992 spring plantings, 1,130 tons of maize were harvested for seed, which, if all planted in the spring of 1993, would provide improved seed for 113,000 jeribs of land.

Rice. Farmer acceptance of Basmati 385, a Pakistani rice has been good in the provinces of Baghlan and Nangarhar. In 1991, the average yield of the Basmati rice in Baghlan was 3.8 tons per hectare as compared to 2.3 for the local check. In Nangarhar in 1991 the rice crop looked good but grain yields were drastically reduced due to hailstorms prior to heading and during grain filling. Ten tons of this variety were purchased to be distributed in 1992 for demonstration and multiplication. In the province of Nangarhar, 185 jeribs of this rice were planted with 137 farmers. The average yields of the 1992 multiplications were 5.0 mt/ha and 5.2 mt/ha for the demonstrations. In 1992 because of fighting along the delivery route, the delivery of the seed to Baghlan and Takhar was delayed and no plantings were possible.

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Potatoes. A potato program was initiated in 1992. There were a total of 30 observation trials planned for the provinces of Logar, Wardak, Ghazni, Paktika, Bamyian, and Parwan using the variety Diamant. Comparisons were made with the local practice of producing potatoes. 27 comparison demonstrations were harvested from the six provinces. The average yield of the diamant potatoes which received chemical fertilizer was 27.1 metric tons per hectare. The local potato varieties yielded 20.0 tons when fertilized with chemical fertilizer and 19.3 tons when grown under "normal practice" conditions. Normal practice conditions usually means the addition of substantial amounts of farmyard manure. *hr*

New agronomic practices were also introduced which allowed the farmer to improve his yields with no capital investment. The staking of good plants for seed potatoes was an example of these new management introductions. 30 demonstration locations were developed where extension agents went into the potato fields with farmers and marked the best looking potato plants, i.e. those with the best color, vigor, taller, and showing few or no disease symptoms. The potatoes from these plants were harvested and stored separately to be planted the following year for seed. In this way the farmer can improve the seed he has with no additional capital cost.

The third potato program was an evaluation of the current potato storage conditions in Afghanistan. Of the six provinces with potato programs, surveys were completed in the provinces of Wardak, Ghazni, Logar, and Bamiyan. This survey was conducted to provide background information to determine if improving potato storage in Afghanistan would be a worthwhile project should the program continue. The results of this survey were not available for the 1992 fourth quarter report so will be reported here. The potato storage pits were from 1 1/4 to 3 meters wide and from 1 1/4 to 16 meters long with a capacity of 2 to 10 tons. The potatoes were covered with 30 to 100 centimeters of straw, wood and soil depending on the winter temperatures. In some cases, a chimney of 30 centimeters diameter was used for ventilation, but many times no ventilation was provided. The pits were normally located on sandy or sandy loam soil located in or near the house yard. The potatoes were usually kept in storage from late October to March. The tubers were wet when the pits were opened but usually there was no free water at the bottom of the pits. Average losses during storage were reported to vary from 5 to 30 percent. The sprouts were usually 5 to 10 cm long when the tubers were taken from the pits. The potatoes were usually planted within 5 days from the opening of the storage pits.

B. Agricultural Machinery Program

New machinery manufactured primarily in Pakistan were introduced and evaluated in Afghanistan to help alleviate the *✓*

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current labor shortage. Through the end of 1992 the following equipment had either been purchased or made available by VITA for the ASSP/PSA.

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Type of Machinery	Current location		Total
	Afghanistan	Pakistan	
Tractor powered wheat thresher	55	2	57
Small self-powered Mughal wheat thresher	-	21	21
Small self-powered Batala wheat thresher	12	-	12
Walk-behind grain reaper	18	-	18
Maize grain sheller	11	5	16
Hand maize sheller	2	-	2
Maize row planter with fertilizer	4	-	4
Maize row cultivator with fertilizer	4	-	4
Seed cleaner for grain	4	2	6
Chisel plow	8	1	9
Machinery repair kits	3	7	10
Massey-Ferguson model 240 tractor	19	1	20
Massey-Ferguson model 375 tractor	9	15	24
Moldboard plow	35	-	35
Three bottom moldboard plow	-	15	15
Disk plow	9	-	9
Disk harrow	24	-	24
Tine tiller	27	30	57
Front dozer blade for tractor	9	-	9
Trailers	35	1	36
Jib crane	9	-	9
Tractor mounted grain reaper	26	-	26
Grain seed drill	15	-	15
Rear blade for tractor	3	-	4
Motorcycle	61	4	65

In most cases the farm machinery was demonstrated during those time periods when the particular field operations were in process. Different wheat threshers were field tested. The threshers which were manufactured by Batala in Pakistan were the first choice of the agents and farmers. Different ways were tried to provide farmers access to the machinery when it was not in use. The policy finally adopted was to use the machinery as much as possible on multiplication plots and when not in use, rent it to farmers first come, first served at the going local rate.

Extension workers have noticed that there is an increase in the numbers of farm machinery in their areas, especially wheat threshers. Although hard to measure there are definite long term benefits for both Afghan farmers and Pakistan manufacturers from this program.

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C. Importation and Distribution of Fertilizer

When the PSA component was terminated in the fall of 1991, a fertilizer distribution system was set up but not completely implemented to make available the remaining 8000 metric tons of diammonium phosphate(DAP) to farmers in 1992. If completed, this would have brought the total amount of DAP distributed by ASSP to 23,600 tons. The following table is an estimation of the impact of the DAP fertilizer: ✓✓

23,600 METRIC TONS DIAMONIUM PHOSPHATE (DAP)
(All applied to either Improved or Local Varieties)

Wheat Type	Area Planted (Hectares)	No DAP Average Yield (MT/Ha)	DAP Yield Increase Percent	Expected Fert. Yield (MT/Ha)	Wheat Due to DAP (MT)	Value of Increased Yield (Dollars)
Improved	188,800	2.50	25	3.125	118,000	26,314,000
Local	314,666	1.50	15	1.720	69,226	15,437,513

- Assumptions:
1. Sufficient urea available and applied
 2. Application rates of 125 and 75 kg/ha for the improved and local wheat, respectively
 3. All irrigated
 4. Value of grain is 223 dollars/ton
 5. 25 and 15 percent yield increases from DAP applications on improved and local wheat varieties, respectively.

- Comments:
1. At \$300/ton(375 Rs/50 kg bag), DAP cost \$ 7,080,000 or a benefit:cost ratio of 3.7 to 1
 2. 118,000 additional tons of wheat would provide estimated annual grain requirement of 577,000 people.
 3. The 118,000 additional tons of wheat from 23,600 tons of DAP fertilizer is a 5 to 1 ratio. The Swedish Committee for Afghanistan(Fertilizer, Fourth Report, February, 1990) estimates the ratio for fertilizer use to be 6 and a Chemonics report, Agricultural Input Mobilization for Afghanistan, November, 1988, estimated it to be 4.

ASSP also imported and successfully distributed 5500 tons of urea fertilizer. ✓

D. Horticultural Programs

Historically, horticulture has been very important for Afghanistan. Nurseries and orchards are established many times in areas not particularly adapted for cereal crops. Fruits and nuts have been major export crops for Afghanistan. A revised HVH subcontract was improved in late 1991. Through this subcontract, ADT received technical assistance in the nursery and orchard management, post-harvest technology, and vegetable programs.

Nurseries: There were 7 nurseries established with the assistance of ASSP. In 1992 these nurseries have provided for the first time part of the trees for the orchard establishment program in Afghanistan. Dr. Jim Cartwright, HVH consultant, made an inspection trip to Afghanistan in November, 1992. From this trip he reported that there were 75,138 trees ready for distribution, 89,730 fruit trees which had been budded and 227,524 trees to be budded. These 7 nurseries now in private ownership have the potential to deliver 146,789 new trees per year for new orchard establishment.

Orchards: A major emphasis for the provinces of Logar, Wardak, Ghazni, Paktika, and Kandahar has been the establishment of new fruit orchards. When Dr. Cartwright made his inspection trip to review the nurseries, he also made a spot inspection of the new orchards. He reported that in general, the orchards that he had seen had been well established and were well taken care of. The following table shows the trees shipped from Pakistan to Afghanistan and the number of orchards established by ASSP.

Trees Shipped and Area and Number of Orchards Established by ASSP

<u>Year</u>	<u>Number of Trees Shipped</u>	<u>Number of Orchards Established</u>	<u>Total Area (Jeribs)</u>
1989	1,580	14	14
1990	123,658	644	1,107
1991	140,826	684	1,395
<u>1992</u>	<u>30,714</u>	<u>335</u>	<u>338</u>
TOTAL	287,701	1,677	2,854

When in full production, the 1,677 new orchards are estimated to produce 28,500 tons of fruit annually. The value of this amount of fruit at current prices is estimated to be 4.7 million dollars.

Apricot Drying: Twenty-three Afghan agriculturists were hired through subcontracts with Afghan Traders who would provide markets for the dried apricots. These people were trained to show Afghan producers how to treat fresh apricots with the fumes of burning

elemental sulfur before the fresh apricots are dried. Assistance from High Value Horticulture was provided for the production, processing, and marketing of dried apricots and raisins. The apricot extension workers reported conducting 276 demonstrations for a total of 4,140 apricot growers. It is estimated that the value of the final product will be doubled with an investment of approximately one dollar per ton if this relatively simple process is used. The strength of this program was the training and demonstrations conducted in Afghanistan. ✓

Vegetables: Also with the assistance of a High Value Horticulture consultant, a vegetable program was started in 1992. The objectives of this program were to introduce improved varieties and to teach proper vegetable production. Seventy-three of the 117 plots planned were conducted for summer plantings to introduce improved seed of cucumber, okra, cauliflower, carrot, and tomato. These demonstrations were carried out in 11 provinces. For the fall plantings, there were 96 demonstrations planted of the 100 plots planned for the lower elevation areas. Of the 118 demonstration plots for the higher elevation areas, 90 were planted. From the first years results, the cauliflower and carrots were not better than the local varieties. The okra and cucumbers appeared to be better and there was no consensus on the tomatoes. }

Drip Irrigation: Pilot drip irrigation systems were installed in Kandahar, Afghanistan and in Dara, Pakistan. The system in Afghanistan was installed in conjunction with the nursery in Maroof. The system in Pakistan was installed at the same site as the Dara nursery. The system in Afghanistan effectively doubled the area which could be irrigated with the same amount of water. The system in Pakistan was used for training the ADT extension workers. h

E. Training

There were 28 different training programs conducted by the ASSP program for their staff and other NGO's. This input provided over 23,000 man-days of training. The following table gives a breakdown of the different training programs:

*

<u>ADT Training Profile</u>				
<u>Date</u>	<u>Function</u>	<u># of people</u>	<u>Days</u>	<u>Man-Days</u>
ADT Technical Training				
Aug '89	Staff Training	25	14	350
May '90	Wheat Thresher Operation	17	21	357
May '90	Tractor Operation	14	21	294
Aug '90	Locust & Senn Pest	22	60	1320
Dec '90	Field Staff Training*	43	75	3225
Dec '90	Nursery Operation	8	45	360
May '91	Tractor & Thresher	12	30	360

	Operation			
Jun '91	Apricot Drying	29	30	870
Jul '91	Extension Program	19	28	532
	Orientation**			
Oct '91	Community Participation	15	5	75
Dec' 91	Field Staff Training	110	70	7700
Jan' 92	Machinery Staff Training	26	45	1170
May' 92	Apricot Drying I	22	5	110
Jun' 92	Apricot Drying II	34	7	238
Jul' 92	Nursery Operation	13	6	78
Jul' 92	Mid-year Program Eval I	7	10	70
Aug' 92	Mid-year Program Eval II	11	10	110
Aug' 92	Vegetable Production I	13	6	78
Aug' 92	Vegetable Production II	24	6	144
Oct' 92	Post-harvest Technology	34	6	204
Nov' 92	Ag Tech Update I	64	30	1920
Nov' 92	Ag Tech Update II	128	30	3840
Other ADT Training				
Mar '90	Orientation & Mgmt.	30	2	60
Nov '90	AID Project			
	Implementation Course	3	10	30
Training of ADT Administrative Staff				
Apr '91	Making Meetings Work	3	2	6
Apr '91	Office Administration	3	8	24
May '91	Report Writing	2	12	24
Jul '91	Managing Yourself & Your	3	4	12
	Team			
Oct '91	Office Administration	3	5	<u>15</u>
TOTAL				23,576

* Including 40 hr. SCF/UK Agriculture Statistics course

** Including 20 hr. SCF-UK Community Participation course

Annually a winter training program was conducted during the months of January and February when agricultural activities in Afghanistan were very slow. During these training sessions national and international consultants were brought in to assist local staff. In this time period, plans for the upcoming year were developed and goals set for the major activities. A mid-year session was also held for two to three weeks in July and August to provide feedback and refine plans for the fall programs. Other training programs were held throughout the year which covered specific topics. At the end of 1992, two major training programs were held. The first included 64 Afghan agriculturists working in Kabul who were nominated for an update training session by the Kabul Shura. The second program was held for 128 Afghan agriculturist nominated by 20 Non-governmental Organizations (NGO) and local Shuras from 20 different provinces. Both training

programs provided updates in agriculture on topics of seed multiplication programs, new research activities, and farm machinery manufacturing in Pakistan.

The results of this training are hard to measure. Many different Afghans have had opportunities to interact with international consultants and dedicated Pakistani technicians from a variety of disciplines. The last two training programs were particularly satisfying in that the participants had previously not had access to training opportunities. These people, which represented a significant portion of the trained agriculturists in Afghanistan, now have some idea where they can go for technical backstopping resources. A dialogue was started between the Pakistan and Afghan agriculture technicians that will be extremely useful whenever a serious effort is made to reconstruct and develop Afghan agriculture. Although the main goal of the training programs was to enhance the technical knowledge of the participants, several other positive results were achieved in the process. The act of planning the programs served as a team building exercise. Several broad based orientation training were absorbed by ADT. Each department presented their program as well as technical information pertinent to their specialty. In addition to internal ADT team building, there were many positive and productive relationships developed between the Afghan and Pakistani agricultural specialist.

F. Pilot Poultry Project

A pilot poultry project was set up to determine the best way to introduce improved breeds in Afghanistan. After an incubation study was conducted in Peshawar, it was decided to stay with the introduction of live chickens instead of in-country incubations. The Fayoumi breed has proven to be very hardy and a good egg layer. Since peace has been declared, the options are better for moving live chickens into Afghanistan. Four trips were made to transport and sell 4,300, 8 week old chickens in the province of Nangarhar. Demand was high and 433 families from 21 villages purchased the chicks at an average price of 285 Afghanis. Short courses were given on the care of these chickens when they were sold.

G. Agricultural Extension Materials

ADT staff prepared extension materials for use in the training programs and by field workers in Afghanistan. There was essentially no material available in Farsi on agricultural topics. The silk screen posters were designed and critiqued by the Afghan staff and then printed in cooperation with the Educational Sector Support Project implemented by the University of Nebraska at Omaha (UNO). The pamphlets were written by ADT staff in consultation with other Afghan agriculturists and printed locally. The training manuals were either a translation from a previously published manual or an adaptation of a consultant's report.

Most of the silk screen posters and pamphlets were distributed in Afghanistan during 1992. Those leftover as the project neared completion were distributed among various NGOs working in agriculture and AKBAR. The various topics of the silk screen posters, pamphlets, and training manuals produced by ASSP are listed in the following table. In several cases, the publications were put in a "camera ready" format in either English or Farsi, but there was insufficient time available for the final printing. #

Extension Materials Prepared by ADT/ASSP/PSA Staff

<u>Topic</u>	<u>Copies</u>
<u>Silk Screens</u>	
Improved vs Local Wheat Varieties	3000
Exchanging Improved Wheat Among Farmers	3000
Reaper vs Hand Harvesting of Wheat	3000
Mechanical vs Bullock Threshing of Wheat	3000
Row Planting of Rice	1300
Staking Good Potato Plants for Seed	3000
Row Planting of Maize	3000
<u>Pamphlets</u>	
Maize Production in Afghanistan	2000
Potato Production in Afghanistan	2000
Safe Use of Pesticides	7500
Poultry Management (Farsi)	0
Pests and Diseases of Wheat (Farsi)	0
Farm Machinery Safety	1000
Rice Production in Afghanistan	1000
Producing High Quality Grapes & Raisins (Farsi)	0
Vegetable Crop Profiles (English)	0
<u>Training Manuals</u>	
Training Program for Pesticide Users	1000
Nursery Management Manual (English)	0
Pest and Disease Control in Vegetables (Farsi)	0
Apricot Drying Procedures (English)	0
Potato Production in Afghanistan (Farsi)	0

The various materials prepared were distributed by local extension agents in their areas and also were given to various other organizations working in agriculture in Afghanistan. The following table shows the distribution of the various silk screens produced by the ASSP/PSA:

Distribution of Seven Silk Screens Produced by ADT

<u>Province</u>	<u>Advantages of wheat</u>				<u>Row rice</u>	<u>Row maize</u>	<u>Staking potatoes</u>
	<u>seed</u>	<u>reaping</u>	<u>threshing</u>	<u>exchange</u>			
Baghlan	250	500	400	250	300	150	300
Takhar	350	240	400	250	300	150	150
Wardak	200	150	150	150	-	150	300
Logar	200	150	150	150	-	150	300
Ghazni	200	150	150	150	-	150	300
Parwan	50	50	50	50	-	-	300
Helmand	150	320	250	250	-	-	50
Panjwaye	100	50	100	100	-	-	50
Kwaja Mulk	100	50	100	100	-	-	50
Maroof	50	50	50	100	-	-	50
Nangarhar	50	50	50	100	200	-	50
Bamaiyan	50	50	50	100	-	-	158
Samangan	200	200	200	200	-	100	-
Kunduz	200	200	200	200	350	100	-
Balkh	200	200	200	200	-	100	-
Paktika	150	50	50	150	-	100	200
NGO/AKBAR	320	470	300	280	60	1660	660
Misc. Dist.	180	70	150	220	90	190	82
TOTAL	<u>3000</u>	<u>3000</u>	<u>3000</u>	<u>3000</u>	<u>1300</u>	<u>3000</u>	<u>3000</u>

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1992 WORK PLAN AND RESULTS

ADT developed a set of goals for the 1992 cropping year. Ambitious targets were set, realizing that there were many factors outside the control of ADT staff which would influence the years progress. These goals were set for specific programs in **Wheat, Maize, Rice, Potato, Machinery Demonstrations, Horticulture, Plant Protection, Irrigation, Poultry, Training, and Extension Material Production.** Presented below is a summary of the targets and the results achieved in the 1992 program year. A more detailed accounting of the 1992 activities and explanation of the results is provided in Annex 3.

<u>PROJECT</u>	<u>PLANNED</u>	<u>DONE</u>
Wheat		
1. Multiplication of Pak 81/Prsbk 85 Wheat Seed		
a. Tons purchased	600	1800
b. Tons distributed for planting	600	818
c. Jeribs planted	6,667	12,483
2. Atay 85 Wheat Seed Multiplication		
a. Farmers with program	29	51
b. Jeribs planted	116	199*
3. Atay 85 Wheat Demonstrations	23	0
4. Additional Demonstrations	100	68
5. Spring planting Pak 81/Prsbk 85 Demos	64	140
6. Seed Multiplication of Spring Planting of Pak 81 and Pirsabak 85 Wheat (jeribs)	433	590
7. Additional Wheat Seed Demonstrations	0	0
8. Distribute Wheat Seed North of Hindu Kush		
a. Tons north of the Hindu Kush	200	88
b. Tons distributed en route		0
233		
c. Tons stored in Afghanistan	0	982
9. Provide 200 tons wheat seed to MCI and Coordinate the Distribution	200	200
Maize		
1. Maize Seed Multiplication		
a. Jeribs of maize planted	17,200	6,209
b. Tons maize seed purchased	60	60

c. Tons maize seed produced	45	17
2. New Variety Demonstrations	45	28
3. Improved Maize Practices Demonstrations	41	0
4. Additional Maize Seed Demonstrations	0	0

Rice

1. Jeribs of Basmati 385 Seed Multiplication	286	185
2. New Variety Rice Demonstrations	14	3

Potatoes

1. New Potato Seed Introductions	30	27
2. Improving Local Seed Demonstrations	30	30
3. Survey of Potato Storage Practices	6	4

Machinery Demonstrations

1. Power-Take-Off (PTO) Threshers	65	103
2. Self-Powered Threshers	60	27
3. Mold-Board Plow	20	51
4. Row Planting of Maize	25	0
5. Drilling Wheat	19	0
6. Walk-Behind Reapers	120	62
7. Maize Shellers	90	30
8. Seed Cleaning	50	0
9. Other Tillage	0	50
10. Tractor Reapers	0	33
TOTAL DEMONSTRATIONS	449	356

Horticulture

1.	New Orchard Establishment	300	335
2.	Streamline Afghanistan Nurseries (returned to landlords)		
3.	Continuation of Apricot Drying Program		
a.	Apricot drying demonstrations	0	276
4.	New Vegetable Seed Introduction		
a.	Spring/Summer Introductions	117	73
b.	Autum/Winter Introductions	218	186

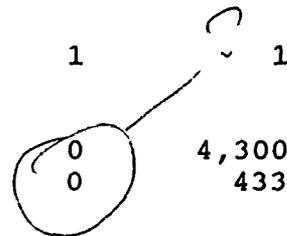
Plant Protection Programs

1. Train 1600 New Orchard Owners on safe use of Hudson back-pack sprayers
2. Distribute Pesticide Training Manual



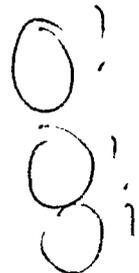
Poultry

1.	Pilot Egg Hatching Program	1	1
2.	Distribution of 6-8 week old chicks		
a.	Chickens distributed	0	4,300
b.	Families receiving chicks	0	433



Training

1.	Summer Supervisor Training Programs	2	2
2.	Apricot Drying Training Programs	1	2
a.	Personnel trained in session I	0?	22
b.	Personnel trained in session II		34
3.	New ADT Extension Agent Training		
a.	Recruit for training(persons)	15	20
b.	Training sessions for new personnel	1	1
4.	Training in Afghanistan		
a.	Afghans trained in Afghanistan	0?	0
b.	Afghans trained in Pakistan		192
5.	Vegetable Extension Workers Training		
a.	Personnel trained in session I	0?	13
b.	Personnel trained in session II	0?	24
6.	Nursery Training Program(people)		13



7. Post-harvest Technology (people)

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Extension Materials

1. Crop Production Pamphlets	8	
a. Published		2
b. Written in Farsi/ready for publication		3
c. Written in English		1
2. Silk Screens	4	1
3. Training Manuals		
a. Written in Farsi/ready for publication		2
b. Written in English		2

0'

PROJECT CLOSE DOWN ACTIVITIES

The ADT component prepared the following list of activities to be completed in the close down of the ASSP/PSA program :

mean

1. Leaders Training Program -----12-08-92
2. Agriculturists Training Program -----12-21-92
3. Backpack-Sprayer Training -----12-17-92
4. Privatization of Nurseries -----12-31-92
5. Thresher Repair -----12-31-92
6. Fall Wheat Seed Distribution -----12-31-92
7. Spring Wheat Demonstration -----12-31-92
8. Extension Materials Publication -----11-30-92
9. Demonstration Trial Results -----01-31-93
10. Final Report (originally 3-31-93) -----04-30-93

Activities 1, 2, 3, 4, 5, 6, and 8 were completed and reported on in the 1992 4th quarter report. Item 9 has been dealt with in sections IV and V of this report.

Activity 7, the wheat seed for the spring wheat demonstrations, had been delivered to Wardak, Ghazni, and Paktika as reported in the 4th quarter report. The wheat seed in Ghazni was distributed prior to the extension agents reporting for closing their accounts in January of 1993. The wheat seed in Wardak was granted to the SCA since they received the farm machinery from that province. This wheat seed has been sold by SCA and former ADT staff to farmers in Wardak. Since at this time there is no definite solution for the transfer of agricultural machinery in Paktika, that wheat seed is still there. At the time of writing this report, VITA representatives with a former ADT employee are attempting to transfer the machinery and wheat seed to VITA.

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The major activity of the ADT component during the period January through April of 1993 has been the disposition of the farm

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machinery in Afghanistan. After considering a variety of alternatives presented by ASSP, AID/Rep decided that the machinery in Afghanistan should be given to other organizations working in similar programs in areas if not immediate at least as close as possible to where the ADT centers were located. Upon consultation with the Afghan staff, the following organizations were recommended and approved by AID/Rep to receive the equipment in the corresponding areas:

<u>LOCATION</u>	<u>RECEIVING ORGANIZATION</u>
Kandahar	Mercy Corps International
Helmand	Mercy Corps International
Wardak Province	Swedish Committee Afghanistan
Logar Province	International Rescue Committee /
Andar, Ghazni	Swedish Committee Afghanistan
Qarabagh, Ghazni	Swedish Committee Afghanistan
Aspandi, Ghazni	Afghan. Assist. France (AFRANE)
Jaghathu, Ghazni	Norweigen Committee Afghan.
Paktika	International Rescue Committee
Nangarhar	Swedish Committee Afghanistan
Parwan	Vol. in Technical Assistance

A major part of the termination and closedown strategy was to attempt to keep the technology package alive. Emphasis was placed on finding organizations working in agriculture in Afghanistan who were not only interested in receiving the machinery and equipment, but also would want the surplus wheat seed, fertilizer, and trained ADT field staff. At least in some of the ADT working areas, the momentum recently generated would not be lost, but could be built upon. This goal appears to be possible for the programs in Helmand, Kandahar, Wardak, Nangarhar, and parts of Ghazni.

Successful transitions of equipment were possible to the above corresponding organizations in **Kandahar City**, Kandahar, **Shamalan** and **Darweshan**, Helmand, **Saidabad** and **Chak**, Wardak, **Aspandi** and **Qarabagh**, Ghazni, **Besood**, Nangarhar, and **Ghorband**, Parwan. In the province of Kandahar, MCI is negotiating an agreement with the local Shura in **Panjwai** and resolving a tractor dispute in **Maroof**. *W*

In the province of Ghazni, a local commander has had custody of the equipment at **Jaghathu** and refuses to release it to the **Norweigen Afghanistan Committee**. The former project employee who worked in this area relied on this particular commander to protect the machinery he was using for demonstrations and multiplications *W*

in his area. When it became obvious that the ASSP program was closing, he decided to keep the equipment under his control.

In **Andar**, a former ASSP/PSA employee has decided to keep the machinery for his area and not turn it over to the SCA. This particular employee had been under suspicion by the ADT Director. The supervisor had been instructed to bring the employee to Peshawar to meet with the senior supervisory staff. The employee has been uncooperative and refused to come to Pakistan.

The machinery assigned to the province office of **Paktika** is in an area where there is not a strong local Shura and the relations of the local commanders with the ASSP supervisor have not been good. Representatives of the International Rescue Committee (IRC) after visiting the site, concluded that it would be difficult to work in the area and very difficult to take the machinery from there. Currently, representatives from VITA are making a trip to the area with a former ADT employee now employed by VITA to try and take possession of the equipment and eventually dispose of it in an organized manner.

There is also lingering confusion in the disposition of the farm machinery in **Logar**. After detailed discussions with representatives of both IRC and VITA, it has been suggested that the former ADT province supervisor for Logar is unwilling to release the equipment. A fact finding trip is now in Logar consisting of representatives of the SCA and the former ADT Wardak province supervisor currently employed by the SCA.

DISCUSSION AND OBSERVATIONS

The value of equipment lost

Conducting a cross-border agricultural extension program in a country at war is a particularly challenging task. If a program similar to this one is planned, it needs to be stated and realized from the beginning that it will not be possible to conduct business as usual. Many of the rules and regulations which apply to "normal" situations are not applicable for a cross-border program. There are a few lessons learned and general observations which may be useful for future programs of this type. The topics for this kind of a discussion can be outlined as pertaining to communication, planning, logistics, monitoring and reporting, working environment, general security, and poppy policy.

Maintaining good communications with field staff is paramount to a good program. Even with good communication, i.e. monthly trips, there is still more reliance on-site problem solving than would be under normal conditions. Routine, daily, radio contact would be ideal for properly managing a program of this type. Even then, project management is relying on someone else to report and evaluate progress in the field.

It became evident with the lack of reliable communication, that more time was needed for program planning. By trying to anticipate problems and discuss them prior to sending the personnel to Afghanistan, we found that ADT planning improved. On-site personnel can make better decisions and become better problem solvers with increased time spent on planning. In retrospect, this process develops stronger extension agents since they realize that the program rests entirely on their shoulders. On the downside, the programs of those persons not capable of managing this type of situation probably suffer more than if they had closer supervision.

Impromptu and regular scheduled monitoring trips to the work sites by senior Pakistan based staff provided two important functions. It was a constant reminder to personnel working in the field that their work was important to senior staff who wanted to know how things were going and also that someone else would be reporting on their performance. This does not need to be confrontational if all those involved realize it is a team effort with each member having definite responsibilities.

One of the more serious problems in this program was the logistics of moving materials from Pakistan to the work sites. Once the materials, seed, fertilizer, and equipment including vehicles, were in the area where the project was working the chances of something negative happening greatly decreased. There are several methods of improving the chances of goods being received at particular areas. Paying for protection and safe passage along with using heavily armed guards are methods being used in many cases successfully to insure that commodities arrive at their planned destinations. A better method, in retrospect, would be to develop work sites as the project moves into Afghanistan. In other words, shipments of commodities would never travel through an area where the project did not have ongoing activities. In almost all cases where goods were taken, the rationale for taking them was "why should someone else get what is not available to us here?". The strong honor system in Afghanistan usually resulted in the commodities being distributed in the area where they were taken and the commanders were looked upon as being providers for their constituency.

Another serious consideration of this project was the working environment and determination and evaluation of the working sites. Since most people were recruited to work in areas where they were from and had strong community ties, if a site was to be changed it meant changing personnel also. Thus, if a particular site was to be closed, the currently employed ADT personnel would need to be either transferred to areas in which they were not familiar or they would be terminated, both poor alternatives. Because of this problem and the difficulty in moving equipment out of an established area, activities were kept going in certain areas where relations were not good with local community organizations. In comparison, where there were good working relations, usually

cultivated by the extension agents who were also bringing in commodities, programs could run smoothly almost as if there were no political problems.

The general security of Afghanistan during the life of this project changed on almost a daily basis. It varied from conditions when expatriate staff felt they would be able to move freely in most areas in Afghanistan to incidents of hostage taking which forced the closing of all ASSP cross-border activities. Since many of the sites had originally been determined by security considerations, when these conditions changed ie Kandahar, field staff were in a dilemma to stay or pull out. In the early part of 1992, it appeared that it may be possible to expand the program to the Northern provinces. By late summer and fall, conditions had changed which all but prohibited the movement of materials to this area. AID/Rep's policy of stopping all assistance to areas where commodities had been taken, although understandable, made it difficult to maintain the sort of continuity needed for long term development projects. If USAID is going to work in environments such as current Afghanistan it may be worthwhile to re-evaluate how it reacts to these situations. } ?

The policy of leaving an area when poppies are found to be growing needs to be reconsidered. Most USAID poppy eradication programs are predicated on the philosophy of crop substitution. Extension workers inside Afghanistan report that the chances are much greater of a farmer planting an alternative crop if improved technologies are available such as new wheat seed and horticulture crops. This is especially the case in areas of extensive agriculture where there is a shortage of labor. Crop substitution may not be as economical as poppy, but to our knowledge, poppies have never been eradicated by leaving the area. Even more frustrating for ADT field staff was having a ban on an area because of poppy growth, when in actuality, poppies were not growing in those areas where project activities were underway.

One of the great strengths of the ADT program was its personnel. A cadre of trained, dedicated Afghans were at the point of making real contributions to Afghan agriculture. The staff in Islamabad/Peshawar were capable of preparing and conducting a training program on a variety of agricultural topics on a moments notice. Along with the personnel in the PPA Publications and Outreach Department, the pieces were in place to produce major quantities of educational materials in Pushto and Farsi. There was a good working relationship among the field staff, the traveling supervisors and the Pakistan based technicians. Visiting consultants consistently remarked about the positive attitude and willingness to work of the Afghan staff. Many times when asked to put in additional time the staff asked not why, but where and when. One had the feeling that in spite of all the hardships these people were going through, they felt good about coming to work and making their contribution to rebuilding Afghan agriculture. Whenever) ?

there is a renewed effort in agricultural development for Afghanistan, a project would be fortunate to be able to find a group of people such as was available in ADT.

ANNEX 1

ADT SCOPE OF WORK

The ADT component, which includes agriculture development, will serve individual farms, contract seed growers and small groups of informally organized farmers with agricultural services and production inputs. This component will also be dedicated to providing assistance to small-scale community or group owned, managed and jointly used agriculturally related facilities.

A. Objectives

The ADT component focuses on restoring agricultural productivity through field testing and guiding Afghan farmers in technology transfer through demonstration in the use of:

- Improved seeds, seedlings and other planting materials
- Fertilizer
- Draft power
- Post harvest and marketing
- Farm machinery
- Poultry
- Crop production

The principal focus of this component shall be on field testing and demonstration of agricultural inputs and equipment, including improved seeds, tractors, threshers and irrigation equipment, and fertilizers, and on developing an indigenous grain seed and seedling tree production capacity. The Contractor as approved by the AID Representative will coordinate with appropriate Government of Afghanistan (GOA) offices/Ministries, international agencies, NGOs, local government and farmers organizations in this process.

B. Tasks

a. Restoring Agricultural Productivity

The effective supply and use of agricultural inputs has been greatly reduced due to conflict in Afghanistan. It is estimated that the genetic yield potential of the wheat seed in use has deteriorated to as little as one third of its original genetic potential. Abandoned fields have become overgrown with shrubs and weeds, and the soil has become compacted and difficult to till. As many as 90% of the oxen may have been killed and draft power is in short supply. In most areas, it has been reported that fertilizer, particularly phosphates, continue to be in chronic short supply.

The Contractor will work toward restoring agricultural productivity in rural Afghanistan through three independent but linked channels: (A) the locations within Agricultural Rehabilitation Scheme ARS areas where ASSP assistance has been provided for infrastructure rehabilitation; (B) the locations served by selected market bazaars where agricultural commodities and equipment are being supplied; and (C) special project activities in the field of agriculture authorized by the AID

Representative. Such activities could be coordinated with the GOA, additional Afghan NGOs and other donor organizations, when requested by AID/Rep.

The Contractor will perform the following tasks:

(1) Where security and local access allow intensified agricultural rehabilitation, the Contractor will develop programs to increase food and cash crop production in those areas where ARS units have been working and other locations as described in this scope of work. The Contractor will focus on land served by improved infrastructure and will also provide assistance on a broad basis to the Afghan agricultural sector. This effort will concentrate on food production and reintroduction of cash crops which will feed or create cash income for a returning refugee population, and will develop a program which will include, where appropriate, mechanized seed bed preparation, improved seed, fertilizer, harvesting, processing, storage for home consumption and marketing of surplus production. The establishment of any new ADT offices will require the approval of the ARD office.

(2) The Contractor will field test and demonstrate agricultural technologies with cooperating Afghan farmers served by ADT field staff. This will include those inputs that are presently being commercially distributed under APP-supported programs, increasing the knowledge of the cost-effectiveness of modernizing agricultural production. In addition, the Contractor will test those inputs that might result in a significant improvement in agricultural production but are not yet in common use in the production area.

(3) The Contractor will develop and implement a strategy for agricultural extension activities, in relation to activity (2) above. The strategy will include a chosen methodology for providing agricultural extension information to key farmers, and detailed plans for implementation.

(4) The Contractor will develop and implement a strategy for seed multiplication. Wheat will receive the principal focus of project efforts; however, the Contractor shall also study and prioritize the need for provision of other seeds including corn, rice, potatoes and vegetables.

(5) The Contractor will develop and implement a strategy phasing out the on-going program to rehabilitate and promote horticulture crops in Afghanistan. The Contractor will develop and effective distribution program for fruit tree seedlings utilizing the Afghanistan and Pakistan private sectors and will begin to privatize all orchards and nurseries to participate farmers in Afghanistan. Efforts in the horticulture activity will be implemented through the ADT field staff with technical advice and support provided through the amended High Value Horticulture (HVH) subcontract.

(6) Shortages of draft power, farm equipment and machinery for tillage, threshing, and other agricultural operations are critical constraints to increasing agricultural productivity in Afghanistan. The Contractor will test such technology as one of the principal elements of the ADT. Tractors and related equipment are very widely accepted and in high demand in Afghanistan. The Contractor should therefore give emphasis to tractor related mechanization over oxen draught power where it makes sense to do so. It is anticipated that seed drills and other agricultural equipment such as threshing machines will also need to be tested and adapted to local conditions. The ADT staff will use this equipment to assist cooperating farmers in the preparation of seedbeds, harvesting and processing of their crops.

(7) The Contractor will support those special agricultural activities which are approved by AID/Rep. This might include assistance in farmer training undertakings, for example of tractor operators, or other special activities that are agreed to by the ARD office. The Contractor will maintain liaison with the GOA, Ministry of Agriculture, as specified by AID/Rep, or with other organizations carrying out agricultural rehabilitation in Afghanistan.

3. ADT Planning

Planning for new and continuing ADT locations must be flexible enough to take advantage of the changing political and economic situations in Afghanistan. It is important that the new locations have substantial impact on national productivity as well as the local economy. Selection criteria for ADT locations will include:

- a. Productivity of the Area: The most agriculturally productive locations within areas where refugees will be returning should receive priority so that both infrastructure rehabilitation and agricultural demonstration will help those regions to maximize food production and in selected high production areas which have the potential to produce surplus agricultural commodities for food deficit areas.

- b. Agriculture and Rural Rehabilitation: ADT sites will coincide wherever possible with the Agriculture and Rural Rehabilitation (ARR) 16 field offices being implemented in a separate contract.
- c. Community Political Organization: project design calls for close collaboration with shuras or other local community organizations for effective planning and implementation; only those areas in which organizations exist, or are likely to become functional, will be suitable locations for ADT teams.
- d. Poppy Areas: ADT teams will not be located in areas in which it is known that poppies are grown, unless the local community government (shuras and/or commanders) actively seeks assistance in reducing poppy production.

Based on these criteria, the Contractor shall recommend ADT areas to be added or deleted. The analysis of each ADT area shall be reflected in an annual planning document in a form and format developed by the Contractor and approved by the ARD office.

The Contractor will develop an agricultural productivity strategy to guide the overall agricultural rehabilitation strategy. This will include an examination of the agricultural potential for each ADT area and the comparative advantage of the principle crops in each area. The Contractor shall investigate the market potential for these crops and advise on strategy for agriculture rehabilitation efforts.

4. Internal Record Keeping and Reporting

The Contractor shall maintain a data base of physical and financial progress on each ADT component activity. The Contractor will coordinate this effort with other project components.

5. Training

The Contractor shall prepare annual training plans for AID/Rep approval. The training plan shall be accompanied by a training needs assessment which shall include, but not be limited to, a

list of all field, headquarters personnel and participating farmers, a summary of their education and skill levels, and an assessment of the additional training and skills needed.

The training plan shall be keyed to contract objectives with detailed timing of training sessions. In addition to group training by the Contractor's senior field staff, the Contractor shall identify specialized technical training resources available in Pakistan in agriculture, accounting, management, and other skills which are needed for specific purposes in the ADT areas. As

necessary, for each technical area needed in the ADT areas(e.g., wheat seed production, use of seed drills, etc.), the Contractor shall prepare a specialized tailored training for implementing personnel. Available training capability in Pakistan can be subcontracted when appropriate.

All training supported by the project shall be completed prior to the expiration date of the contract.

6. Strategy and Plans

Within 30 days of contract execution, the Contractor will submit to the Mission for approval an ADT strategy and work plan for the remainder of the contract period (i.e., December 31, 1992). The strategy will detail how the ADT objectives are to be achieved. The work plan will include an implementation schedule for ADT activities, a budget for financial requirements, estimates of direct procurement, if applicable, and a research and extension agenda.

ANNEX 2

ADT CONSULTANCIES

The following consultant trips were made to Pakistan during 1991 and 1992 for the ADT component. Included with each trip is the title and publication date of the consultant's report.

	<u>Consultant</u>	<u>Arrival date</u>	<u>Departure date</u>
1.	Edward Rice	April, 1991	May, 1991
2.	Garry Robertson (Potato Production in Afghanistan, August, 1991)	July, 1991	August, 1991
3.	Edward Rice (Maize Progress Report, August, 1991)	July, 1991	August, 1991
4.	John M. Conje (Agricultural Extension System for Afghanistan, Dec, 1991)	October 22, 1991	December 17, 1991
5.	Eugene E. Saari (Assessment of Wheat Production, January, 1992)	January 11, 1992	January 31, 1992
6.	Garry Robertson (Potato Program Development)	February 4, 1992	February 21, 1992
7.	David Parsons (Vegetable Program, March, 1992)	February 27, 1992	March 27, 1992
8.	Jim Cartwright (Fruit Program, March, 1992)	February 27, 1992	March 19, 1992
9.	Leighton Smith (Viticulture Raisin Program, May, 1992)	April 20, 1992	May 10, 1992
10.	Michael Tsamparlis (Apricot Program, June, 1992)	June 1, 1992	June 24, 1992
11.	Jim Cartwright (Fruit Nursery Management, July, 1992)	July 7, 1992	July 28, 1992
12.	David Parsons (Vegetable Program Second Report)	July 21, 1992	August 28, 1992
13.	Leighton Smith (Post Harvest Technology Training Course and Apricot Project Evaluation Report, October, 1992)	September 28, 1992	October 15, 1992
14.	Rodney Fink (Training Strategy for Agricultural Workers in Afghanistan, November, 1992)	September 29, 1992	October 30, 1992
15.	Jim Cartwright (Nursery and Orchard Evaluation)	November 13, 1992	November 27, 1992

A. WHEAT

1. **Commercial Pirsabak 85 Wheat Seed Multiplication:** It was planned to purchase 600 tons of improved wheat seed to be distributed in Helmand and Kandahar(200 tons), given to MCI(200 tons) and distributed in the Northern provinces(200 tons). It was later decided to put more emphasis towards the Northern provinces and in actuality, 800 tons of Pirsabak 85 were purchased from Cargill and 1000 tons of Pak 81 were purchased from Pioneer. The accounting for this seed is as follows:

- 230 tons distributed in Helmand and Kandahar
- 200 tons were given to MCI
- 88 tons distributed in Baghlan
- 201 tons distributed by Commanders in Laghman
- 32 tons taken by a commander in Parwan
- 40 tons sent to Wardak, Ghazni, and Paktika for spring
- 27 tons given to USAID Pakistan
- 982 tons stored in Afghanistan for 1993 distribution.

A target planting for wheat seed multiplication of 6,667 jeribs was set. In total, there were 12,483 jeribs of land planted for seed multiplication of improved wheat seed with 3,127 farmers.

2. **Atay 85 Wheat Seed Multiplication:** A target of 116 jeribs of land for seed multiplication of this variety was set for 29 farmers from the provinces of Logar, Wardak, Ghazni, and Paktika. In actuality 6,966 kilograms were distributed to 51 farmers. With a seeding rate of 35 kg per jerib, this should be sufficient seed to plant 199 jeribs of land.
3. **Atay 85 Wheat Seed Demonstrations:** A target of 23 comparisons of Atay 85 was set for Logar, Wardak, Ghazni, and Paktika. Since the ASSP/PSA program was scheduled to not continue past December 31, 1992, there were no separate Atay 85 demonstrations established. All of the Atay 85 wheat seed controlled by ADT extension agents was utilized for multiplication programs. The multiplication fields can also be used for demonstrations. There were 43 demonstrations and multiplications planted during the fall of 1991. The average yield of Atay 85 from 88 jeribs of land was 3.36 tons per hectare.
4. **ADT Supported Wheat Seed Demonstrations:** 100 demonstrations to compare improved wheat seed with local were planned for Nangarhar, Helmand, and Kandahar provinces. In reality, 30 demonstrations were harvested from the 1991 plantings which also included a fertilizer comparison. Since the project closed December 31, 1992, the wheat seed was distributed for

the 1992, fall planting but no specific arrangements were made for the summer 1993 harvest. Results of the 30 comparisons from Helmand and Kandahar are in the following table.

Location	Wheat Yields in Tons per Hectare			
	Improved variety		Local variety	
	with fertilizer	without fertilizer	with fertilizer	without fertilizer
Darwaishan(10)	4.50	3.24	1.89	1.33
Shamalan(10)	4.57	3.23	2.04	1.41
Panjwai(10)	3.17	1.48	1.31	1.08
Average	4.08	2.65	1.74	1.27

- 5. Compare Early Spring Planting of Pirsabak 85 and Pakistan 81 with Local Wheat Varieties:** Sixty-four(64) demonstration-observations were planned to compare Pirsabak 85 and Pak 81 with local varieties planted either in the spring or fall. There were 140 trial plantings of Pirsabak 85 and Pak 81 in the provinces of Ghazni, Paktika, and Parwan. The average yields of the trial plantings were lowest in Ghazni (1.35 tons/ha) and highest in Parwan(3.74 tons/ha). The average yields from Paktika were inbetween at 2.71 tons per hectare. There were also 68 different wheat yield comparisons made in the provinces of Logar(28), Parwan(18), Gazni(5), and Wardak(17). In these comparisons, fertilized improved wheat varieties were compared with fertilized and unfertilized local wheats. The average yield of the improved wheat varieties(Atay 85, Pirsabak 85, Pak 81, and Besostaya) was 3.62 tons per hectare, an average of 58 observations. This compared to yields of 2.02 tons per hectare from the fertilized local variety(44 observations) and 1.46 tons per hectare from the unfertilized local variety(45 observations).
- 6. Multiplication of Pirsabak 85 as a Spring Planted Wheat:** Planting the facultative wheats, Pirsabak 85 and Pak 81, in the higher elevation areas had been introduced as an acceptable practice. ADT developed a goal of planting 433 jeribs of these wheats for seed multiplication purposes. 590 jeribs were planted as shown in the following table.

Province	Number of jeribs planned	Actual number of	
		farmers	jeribs
Ghazni	100	107	124
Paktika	83	60	116
Logar	117	101	190
Wardak	100	91	140
Parwan	<u>33</u>	<u>30</u>	<u>20</u>
TOTAL	<u>433</u>	<u>389</u>	<u>590</u>

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7. **Additional Wheat Seed Demonstrations:** This category was included with no definite targets to provide extension agents some flexibility for new projects in their areas if they felt there was a particular demonstration needed. None were planned that we are aware of.
8. **Distribute 200 tons of Pirsabak 85 Wheat Seed North of the Hindu Kush:** 1303 tons of Pak 81(1000) and Pirsabak 85(303) were purchased for shipment to the Northern provinces of Afghanistan. 88 tons were distributed in Baghlan to 1,753 farmers in 206 villages. 233 tons were taken and distributed by commanders in the provinces of Laghman and Parwan. The remaining 982 tons have been stored in Kabul and Jalalabad for 1993 distribution.
9. **Provide 200 tons of Pirsabak 85 Wheat Seed to MCI and Coordinate a Distribution Policy for Southern Wheat Areas of Afghanistan:** 200 tons of wheat seed were purchased and delivered to MCI at Quetta, Pakistan. By mutual agreement a 50 kg bag of improved wheat seed and a 50 kg bag of diammonium phosphate(DAP) were sold to farmers in the Southern Provinces as a package for Rs 9000. To qualify for this subsidized price, farmers had to agree to follow recommendations of the extension personnel, purchase urea for the wheat crop if available locally at a reasonable price, and to make the production available to other farmers for seed for the following year.

B. MAIZE

1. **Commercial Maize Seed Multiplication:** Sixty tons of maize seed was purchased and 17 ton produced in Pakistan seed multiplication programs for a total of 77 tons available for distribution. All but 3 tons stored at Cargill were shipped to Afghanistan for distribution in 1992. As noted below, the target of planting 17,200 jeribs was not reached. There were 6,209 jeribs planted and 1,692 jerib harvested for seed purposes.

<u>Province</u>	<u>Number of jeribs planned</u>	<u>Actual number of</u>	
		<u>farmers</u>	<u>jeribs planted</u>
Nangarhar	2200	532	962
Helmand	10700	370	3650
Kandahar	2500	170	1290
Logar	200	49	145
Wardak	100	-	-
Parwan	200	7	25
Takhar	200	20	62
Paktika	-	42	50
Ghazni	-	25	25
TOTAL	<u>17200</u>	<u>1215</u>	<u>6209</u>

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2. **Maize New Variety Demonstrations:** There were 45 new variety demonstrations planned. In actuality, 28 were completed. In 1991, there were 28 of 40 new variety demonstrations completed.

<u>Province</u>	<u>Demonstrations</u>		<u>Maize yields (MT/Ha)</u>		
	<u>Planned</u>	<u>Completed</u>	<u>Improved variety</u>		
			<u>Best</u>	<u>Average</u>	<u>Local</u>
Nangarhar	4	3	4.20	3.52	2.73
Helmand	8	8	5.76	5.50	3.71
Kandahar	8	5	5.92	5.00	4.17
Ghazni	4	1	5.37	3.60	1.61
Paktika	3	3	7.85	6.94	3.36
Logar	6	4	4.81	3.89	2.80
Wardak	4	4	5.33	4.05	3.91
Parwan	4	0	-	-	-
Takhar	4	0	-	-	-

The weighted averages of the different varieties over all the locations arranged in order of yield are as follows:

3. **Improved Maize Practice Demonstrations:** A target of was set for 41 demonstrations comparing row vs broadcast seeding of maize. These were to be carried out with and without fertilizer. Extension agents reported resistance by the farmers in making rows. These demonstrations were not done.
4. **Additional Maize Seed Demonstrations:** This category of demonstrations was set up to provide flexibility for the extension agents. If they had requests for improved seed to be compared with local varieties, they could at their discretion respond to the requests. None were done.

C. RICE

1. **Basmati 385 Rice Seed Multiplication:** A target of 286 jeribs was set for the area to be planted for Basmati 385 rice seed multiplication for the provinces of Nangarhar (126 jb), Takhar (30 jb), and Baghlan (130) jb. The seed did not make it in time to Baghlan and Takhar. In Nangarhar there were 185 jeribs of rice planted with 137 farmers. A total of 187 tons of rice were produced for an average yield of 5 tons per hectare.

2. **New Variety Rice Demonstrations:** There were 14 demonstrations planned for the provinces of Nangarhar (5), Takhar (4), and Baghlan (5). Because of problems enroute, the rice seed arrived too late for planting in Takhar and Baghlan. There were 3 demonstrations completed in Nangarhar.

D. POTATOES

1. **New Potato Seed Introduction:** A potato specialist was brought in to provide guidance to establish a potato program for Afghanistan. He recommended the introduction of Diamant, a Holland variety imported by Pakistan. There were a total of 30 introduction/observation trials planned for the provinces of Logar, Wardak, Ghazni, Paktika, Parwan, and Bamiyan. The results of the 27 trials harvested are given in the following table.

Province	Number of trials		Potato yields in MT per Ha		
	planned	planted	With fertilizer Diamant	Local	Local var. & practices
Ghazni	5	4	36.7	27.0	15.3
Paktika	5	4	17.1	15.5	11.5
Wardak	5	5	32.4	22.1	23.5
Logar	5	5	23.8	19.2	17.2
Bamiyan	5	5	31.6	22.6	24.8
Parwan	5	4	17.8	12.2	-
Total	30	27			
Average Yield			27.1	20.0	19.3

2. **Improving Farmers Local Potato Seed Demonstrations:** In each of the six provinces (Logar, Wardak, Paktika, Ghazni, Bamiyan, and Parwan) there were five demonstrations of the seed plot technique. This demonstration teaches farmers to mark their best plants during the growing season and at harvest time to keep the production from these plants separate for seed for the following year. 253 farmers were taught this technique in 1992 in the above 6 provinces.
3. **Evaluating Potato Storage in Afghanistan:** Surveys were planned to be conducted in the same 6 provinces to evaluate the current potato storage methods and to estimate storage losses. Surveys were completed in the provinces of Logar, Wardak, Ghazni, and Bamiyan. In general the pits were from 1 1/4 to 3 meters wide and from 1 1/4 to 16 meters long with a capacity of 2 to 10 tons. The potatoes were covered with 30 to 100 centimeters of straw, wood and soil depending on the winter temperatures. In some cases, a chimney of 30

centimeters diameter was used for ventilation, but many times no ventilation was provided. The pits were normally located on sandy or sandy loam soil located in or near the house yard. The potatoes were usually kept in storage from late October to March. The tubers were wet when the pits were opened but usually there was no free water at the bottom of the pits. Average losses during storage were reported to vary from 5 to 30 percent. The sprouts were usually 5 to 10 cm long when the tubers were taken from the pits. The potatoes were usually planted within 5 days from the opening of the storage pits.

E. MACHINERY INTRODUCTIONS AND DEMONSTRATIONS

The following table gives the number of the different types of machinery demonstrations planned to be conducted in 1992 in the different provinces.

The Number of Different Kinds of Machinery Demonstrations Planned for Individual Provinces in 1992 in Afghanistan

	<u>Pk</u>	<u>Kd</u>	<u>Nn</u>	<u>Gh</u>	<u>Hd</u>	<u>Lr</u>	<u>Pn</u>	<u>Wk</u>	<u>Total</u>
P.T.O. Threshers	10	15	0	10	10	10	0	10	65
Self-power Thresher	10	0	10	10	0	10	10	10	60
M.B. Plough	0	10	0	0	10	0	0	0	20
Row-plant Maize	0	15	0	0	10	0	0	0	25
Drill Wheat	2	6	0	2	5	2	0	2	19
Walk Behind Reapers	20	15	10	20	15	10	10	20	120
Maize Shelling	0	15	10	0	20	25	10	10	90
Seed Cleaning	0	10	0	10	10	10	0	10	50
Other Tillage	0	0	0	0	0	0	0	0	0
Tractor Reapers	0	0	0	0	0	0	0	0	0
TOTAL	42	86	30	52	80	67	30	62	449

The following table gives the number of different types of machinery demonstrations conducted during 1992 by the extension agent in the different provinces.

The Number of Different Kinds of Machinery Demonstrations Conducted Individual Provinces in Afghanistan in 1992

	<u>Pk</u>	<u>Kd</u>	<u>Nn</u>	<u>Gh</u>	<u>Hd</u>	<u>Lr</u>	<u>Pn</u>	<u>Wk</u>	<u>Total</u>
P.T.O. Threshers	-	6	-	42	10	33	-	12	103
Self-power Thresher	-	-	-	5	-	-	10	12	27
M.B. Plough	-	6	-	18	10	11	-	6	51
Row-plant Maize	-	-	-	-	-	-	-	-	0

Drill Wheat	-	-	-	-	-	-	-	-	0
Walk Behind Reapers	-	8	16	12	0	11	5	10	62
Maize Shelling	-	6	-	-	20	4	-	-	30
Seed Cleaning	-	-	-	-	-	-	-	-	0
Other Tillage	-	6	-	35	-	-	-	9	50
Tractor Reapers	-	4	-	6	15	-	-	8	33
TOTAL	0	36	16	118	55	59	15	57	356

F. HORTICULTURE PROGRAMS

1. **New Orchards for Afghanistan:** ADT personnel planned to establish 300 new orchards in 1992 utilizing material from the Pakistan and Afghanistan nurseries. The plans were for Kandahar (34), Logar (117), Wardak (143), Paktika (2) and Ghazni (4). The extension agents reported that there were 37 new orchards established in Kandahar, 111 orchards in Logar, and 226 orchards in Wardak for a total of 374 for 1992.
2. **Streamlining Nurseries in Afghanistan:** A goal was set for 1992 to reduce the size of the Afghan nurseries to 10 jeribs. Since the program closed, all of the nurseries were privatized i.e. turned over to the landlords.
3. **Continuation of Apricot Drying Program:** At the beginning of the year goals were set in the apricot drying program to conduct demonstrations and then evaluate samples of the dried apricots from the demonstrations conducted by the contracted apricot agents. Seventeen of the twenty-three agents reported in October that 276 apricot drying demonstrations were held which were attended by 4,140 apricot growers.
4. **New Vegetable Seed Introduction:** In 1992 with the assistance of Dr. David Parsons, High Value Horticulture consultant, a vegetable program was started. Dr. Parsons visited Pakistan twice in 1992, the first trip was in February and the second in July and August. The objectives of the consultancies were training ADT personnel, providing technical material, and setting up summer and winter vegetable demonstration plots. There were 117 demonstrations planned for spring and summer of 1992. In actuality, there were results reported for 73 demonstrations in the provinces of Ghazni, Logar, Wardak, Bamiyan, Parwan, Paktika, Takhar, Nangarhar, Helmand, and Kandahar. Although results were not available, it has been reported that 96 of the 100 planned winter demonstrations were planted in Helmand, Kandahar, and Nangarhar and 90 of the 118 planned demonstrations for Logar, Wardak, Ghazni, Paktika, Baghlan, and Takhar were planted.

The outline for the vegetable program and vegetable crop profiles were published after Dr. Parsons first trip, **Vegetable Program**, March, 1992. In September, 1992, the **Vegetable Program Second Report** was published after Dr. Parsons second trip. He has also prepared a manual on the pests and diseases of vegetables which has been translated into Farsi, but not yet published.

G. PLANT PROTECTION PROGRAMS

1. **In-Country Training for Sprayer Use:** A plan was developed to provide Hudson backpack sprayers to approximately 1600 old and new Afghanistan orchard owners. Included in the plan was a training program to be conducted in Afghanistan for the use of the backpack sprayers prior to their being distributed to the orchard owners. There were 1232 sprayers distributed to orchard owners in Wardak (800), Ghazni (420), and Paktika (12). Sprayers were not sent to Logar because of the O/AID/REP ban on commodities to this province. Training sessions were held by ASSP/PSA Pakistani staff in the provinces of Wardak, Logar, and Ghazni.
2. **Distribution of Pesticide Training Manual:** No specific targets were set for this program.

H. POULTRY PROGRAM

1. **Pilot Egg Hatching Program:** In December of 1991 a trial egg hatching trial was conducted in Peshawar. Five hundred eggs were purchased and incubated in a borrowed 500 egg capacity incubator. Discounting the 140 infertile eggs, the staff achieved an 82 percent hatchability. It was concluded that it would be difficult to approach this result in the uncontrollable conditions in Afghanistan.

I. TRAINING

1. **Summer Supervisor Training:** A training and program update was programmed for supervisory staff during the months of August and September. This was done.
2. **Apricot Drying:** An update training program was planned for the 23 contract field workers and selected ADT extension staff. Two separate sessions were held during 1992 for these workers.
3. **New Extension Agent Training:** A target was set to hire and train 10 to 15 new extension workers for high impact areas of Helmand, Kandahar, and north of the Hindu Kush. 20 new extension agents were hired, trained, and assigned to Baghlan, Takhar, Kunduz, Samangan, and Balkh provinces.

4. **Training in Afghanistan:** A goal was set to develop a plan for increased training in Afghanistan. Conditions did not permit increased training in Afghanistan, but two major training programs were planned and conducted bringing 64 and 128 Afghans to Peshawar.
5. **Vegetable Extension Workers:** A goal was set of recruiting 5 to 10 new extension agents to work specifically with vegetables. Later it was decided to provide additional training to a select group of currently employed extension agents enabling them to be responsible for the vegetable program. Two training courses were held in August of 1992 for this purpose. The course was made available to personnel from other NGO's. A total of 37 people attended the two training courses, one in Peshawar and one in Quetta

J. EXTENSION MATERIAL PREPARATION

1. **Crop Production Pamphlets:** A target of producing eight new crop production pamphlets in Farsi was set for 1992. In 1991, three pamphlets were published, **Growing Corn in Afghanistan, Growing Potatoes in Afghanistan, and Safe Use of Pesticides.** The eight new topics proposed were wheat, machinery use, poultry production, rice, fruits, vegetables, irrigation practices, and storage of agricultural commodities. Two were actually published in Farsi, **Importance of Safe Operation of Farm Power and Machinery and Growing Rice in Afghanistan.**
2. **Silk Screens:** Four new silk screen posters were planned for 1992 to add to the five printed in 1991: **Row Planting of Rice, Improved vs Local Wheat Varieties, Reaper vs Hand Harvesting of Wheat, Mechanical vs Bullock Threshing of Wheat, and Exchanging Improved Wheat among Farmers.** Two new silk screens were printed in 1992, **Staking Good Potato Plants for Seed and Advantages of Row Planting of Maize.**
3. **Visual Aids:** A general goal was set to develop additional types of agricultural extension materials which could be used for in-country training and extension presentations. None were developed.
4. **In-country Extension Presentations:** A general goal of conducting more in-country presentations was set. There was machinery evaluation trips, a plant protection training trip, a post-harvest training program in Kandahar, and various orchard management presentations made by staff and consultants from Pakistan.

III. PLANNING, PROGRAMMING and ANALYSIS COMPONENT

Introduction

From the outset of the project, The Planning, Programming and Analysis component (PPA) was conceived as the *strategic planning and guidance* arm of ASSP. The intent was to provide direction for agribusiness activities under the PSA umbrella and later to direct the technology packages to be delivered by the ADT component as parts of a coordinated support program for the agricultural sector in Afghanistan. By collecting agricultural market and production information it would be possible to direct needed resources and interventions at the right time and the right locations as an integrated solution for rehabilitating the agricultural sector.

The time required to develop the necessary information with a reliable degree of accuracy made it difficult for PPA to operate using a "rational-comprehensive" planning approach. For this reason, the component employed many of the techniques used as part of rapid rural appraisal to provide a "reconnaissance" of conditions inside Afghanistan in order to program project resources and activities. A great deal of information was developed based upon theoretical samples, the use of knowledgeable informants such as traders and transporters, and consensus of expert opinion which was effectively used in providing the guidance required by the project's two major operational components, the Private Sector Agribusiness and Agricultural Development and Training component.

By the summer of 1991, it was time to make use of the more scientific approaches toward gathering information about Afghanistan's agriculture that had been initiated earlier but needed time to mature and bear fruit. Specifically the use of (remote sensing, area frame sampling, commodity price surveying, and farmer interviews) allowed for the development of a more systematic knowledge base with a transparent methodology as to how this information was collected. The objective became one of providing this knowledge to a far larger audience of policy makers, planners, and organizations engaged in implementing programs and projects. This shift in focus was to change the nature and characteristics of PPA through the remainder of the project's life.

Revised Objectives

Beginning in the fall of 1991, the objectives for the PPA Component was to provide information services to a defined client base including the ADT Component of ASSP,

O/AID/REP, and other projects and programs working on Afghan development. These services included, original data collection, identification and exploitation of secondary data sources, data analysis and interpretation, monitoring and impact evaluation of agricultural sector development on a routine basis or in response to special requests where specific studies are called for. While it was not until several months later when these revised objectives were codified in a new scope of work and subsequent contract modification, it was necessary for changes to begin at once if these new objectives for PPA were to be achieved.

If a strategic planning and management capability was to be developed for Afghanistan, consideration should be given to redefining the overall purpose of PPA from one of *exploration* and *inquiry* concerning alternative approaches for supporting the agricultural sector in the absence of an effective government, to one of providing sectoral statistics and planning analysis to a recognized government attempting to rebuild the nation. Such a change in purpose would have significant implications for staffing, management, organization of work, and resources available under PPA. ✓

Recognizing that the project had a considerable head start toward meeting these new objectives for PPA, the last quarter of 1991 saw the continuation of several initiatives already under way, with the production of several key information products.

- Price Surveys. PPA through its Market Information System (MARIS) data collection, analysis and reporting system, continued to collect and report on key prices of agricultural inputs and products based upon interviews and surveys on both sides of the border. These prices provide insights into supply and demand of these commodities and provide early indicators of problems in the agricultural sector. Additional analysis on select trends was used to formulate recommendations on policy change as well as programming of development assistance. Commodity price reports were to continue on a quarterly basis, with changes in format and contents guided by the recommendations of a user task force, as described below.
- Informant Interviews. The use of key informants is an important tool for collecting information about agriculture in the absence of more systematic reporting and survey capability. The challenge, in light of the move of the project's headquarters to Islamabad, was one of maintaining and at the same time expanding this resource, while organizing and using this information to supplement information collected from other sources.
- Ground Truthing. This activity, while on hold due to the ban on cross-border activities in the fall of 1991, was originally intended to develop signatures for interpreting satellite images taken of Afghanistan. While the work was incomplete, some 50 sites had been visited and surveyed, yielding a good deal of important and current agronomic information. This database was to be explored, the information evaluated, and combined with information already

collected by ASSP and other development projects. The results published in map, graphic and tabular form were used to increase awareness of conditions at the locations already visited.

- Crop suitability model development and refinement. Working with our subcontractor Earthsat, PPA developed models for new crops being proposed by ADT to identify potential locations. Particular emphasis was placed on incorporating into the models information that allows not only natural potential to be identified, but also include economic, infrastructure, social and political considerations into the models to better understand potential effect of new crop initiatives.
- Contingency planning for fertilizer and wheat seed distribution. All planning for distribution of these inputs was done in consultation with PPA. Staff accessed our databases to provide information on economic, social and physical variables that will affect the impact of location, timing and input quantity decisions.
- Ground cover assessment of land use types. We anticipated that the ground cover assessment, being done with the assistance of our subcontractor Earthsat, would be completed by the end of the year. This information would provide yet another overlay of land use characteristics on top of other geographically referenced information, building upon our understanding of the problems and opportunities for agriculture.
- Assessment of irrigation facilities. The preliminary work on analysis of changes in irrigated agriculture using remote sensing were being concluded by our subcontractor Earthsat. These initial results were to be presented in a summary report along with maps and an underlying database which would suggest areas for additional investigation and analysis.
- Publication of graphics/map series. PPA was to begin a quarterly publication of topical map series featuring information displayed in graphical or map formats with explanations and references to the body of underlying data. The purpose was one of alerting potential users of the availability of this data and the formats in which it can be examined and used.

Added to this list of ongoing activities, a series of new initiatives were called for in order to achieve the newly agreed upon objectives for PPA.

1. The first requirement was the development of a new agenda and approach for PPA which required an in-depth review of where the component is and what it has accomplished to date. Toward this end, the following activities were carried out:

a. **Review of Available Resources: Sub Contracts, Informal Networks, and Project Staff.** PPA boasts an impressive array of human resources, available in-house amongst its staff, through two sub-contracts with GIC and Earthsat, and from a vast network of associates and colleagues working with other organizations. A review of in-house capabilities is concluding with an understanding being developed of its human resources. Next, a visit to our two subcontractors in the US, to understand what they are doing, what their capabilities are, and explore how PPA might better use and manage these resources was undertaken.

b. **Review of Existing Data and Methodology.** PPA had conducted numerous data gathering exercises, created a variety of databases as mechanisms for storage and retrieval, engaged in some analysis and interpretation of this data, and done some information presentation and distribution. Following an evaluation of these activities, suggestions for change and improvement included the following:

- systematize the various data gathering activities for purposes of being able to generalize from the data being collected. There was a need for an overarching method for information generation. Remote sensing should be used to stratify land use types, which are then subjected to random sampling to determine various land use characteristics. It was time to move from *exploratory* to *representative* sampling.
- systematize the collection, storage and application of anecdotal information about events in Afghanistan. This required a method for collection and appropriate systems for entry, analysis and retrieval.
- formalize networking with other Afghanistan development and relief efforts to share information, cross check data, avoid duplication of efforts, and capture activities in information system for planning purposes. This suggested the need for a liaison position on the PPA staff.
- develop newsletters, brown bag seminars, occasional papers, additional information bulletins, including direct user access to databases. Just as analysts use wordprocessing, statistical and other analytic software directly, so too should they be interacting with geographic information systems. Until this happens, these systems will be underutilized and lack the guidance from users that can make this a useful tool.
- create a user task force to set agenda and priorities for data collection and analysis work of PPA consisting of representatives from ADT, AID/REP, NGO community, other donors

- provide timely information for ADT programming. The effort would focus on the identification of critical ADT decisions to be made in the next planting season and provision of information regarding likely implications. Efforts focused on supplying information relevant to the social and economic impact of locating initiatives such as potatoes, corn, wheat, horticulture, vegetable and livestock within Afghanistan.

c. **Review of Information Systems: Hardware and Software.** Since project inception there have evolved a set of requirements different than what was originally understood for the hardware and software needed to support PPA's information management functions. For example, there was no software for analysis of survey results, notwithstanding the fact that the project had conducted six major survey exercises to date. Similarly, the GIS software performed poorly for lack of a mass storage device properly sized to the disk access requirements placed on it by the software. PPA lacked the ability to provide projected as well as printed output of its geographically presented data. The former requires simple projection equipment attached to computers which allow groups of people to work with the information. Problems with printing are related to the difficulties in supporting a plotter which is one-of-a-kind in the country. These and other issues were identified and solutions suggested and implemented.

2. Second, a revised operations plan was developed to meet the challenges of a new mission for the PPA component. The task here was to assess and clarify critical functions, responsibilities and internal reporting, along with identification of staff needs and revised job descriptions. Improvements were sought in communication (meetings etc.) as well as day to day supervision of work taking place at multiple locations. High on the agenda were several improvements in the human resources available to PPA:

a. **Recruitment of Afghan Agricultural Planners and Statistician Trainees:** An emphasis was proposed on institution building by incorporating young Afghans in technical and analytic roles within PPA as apprentices.

b. **Development of on-the-job training program for Planner Trainees:** Using models for on-the-job training of young professionals in planning analysis, a program was to be formulated which involved the trainees in work that is both useful for PPA while contributing to their understanding of the conceptual, analytic, and presentational tools that are employed in programming and planning.

c. **Replacement of Permanent Agricultural Sector Monitoring Capacity:** The withdrawal of PSA Bazaar Representatives following the discontinuation of that component by AID/Rep, required that alternate means be established for

collection and reporting of critical ag. sector data. In an effort to maintain this capacity, PPA developed a training program for periodic data collection, monitoring and observation targeted toward the ADT Extension Agents

3. Third, was the development of a proposed *agenda* for agriculture sector analysis. The following areas of inquiry were to be PPA's focus in calendar year 1992.

a. Food Balance Analysis: Continuous monitoring and evaluation of the cereal crops subsector was to provide estimates on production of cereals by location. The information would be available to guide project activities/inputs to those areas showing greatest potential. Data was to include area under cultivation, the use and availability of agricultural inputs, yields, total production, and post-harvest losses. Market prices of cereals as well as other foods continued to be collected as well.

Information collection would be based upon remote sensing, field level surveys and interviews of farmers and merchants. The project's ADT Extension agents reported on crop related developments in their respective areas. Survey teams were to carry out interviews and randomized field level investigations to supplement periodic reporting.

Data on area, input use, localized production constraints and grain prices were to be utilized in a geographic model for estimating production and its spatial distribution. Outputs expected were periodic reports on grain crops including variables affecting production such as weather, insecurity, infestation, and other constraints. This information would enable ADT to better target project level activities/inputs on those areas showing great potential and where specific obstacles for cereals production are shown to exist. The long-term benefits would be to establish a mechanism to analyze production constraints and facilitate informed and timely response on the part of public and private sector agencies.

b. Agricultural Inputs Assessment: This activity was to focus on critical inputs for increased agricultural production including improved seeds and root stock, agri-chemicals, fertilizer, machinery and implements, fuel, draft animals and labor. Through market interviews both in Afghanistan and Pakistan, the prices, quantities, variety, and availability of agri-inputs were monitored and reported on a periodic basis. In addition, exchange rates were monitored as they affect both agricultural imports and exports as well as influencing the medium of exchange for goods and services.

Outputs being considered might include periodic reports in local languages with widespread distribution, aimed at improving market information. Long-term benefits of this activity would be information available for estimating grain production with adequate lead time for policy and programmatic responses. Despite the early closure of the PSA component of the project, AID/Rep maintained interest in identifying possible interventions in the private sector to enable it to play a constructive role in the process of rehabilitating the agricultural sector and restoring production. Studies done under this activity would suggest possible areas of USG financed assistance.

c. Farming Systems Research: A review of recently completed FSR studies was conducted to develop programmatic and policy implications from this work. Pending the outcome of this review, additional work in FSR was to be considered.

d. Organizational Assessment: A post-war Afghanistan will function through a Ministry of Agriculture, with its extension, research, fertilizer, storage, subsidy/distribution and import/export units, Ministry of Irrigation, and a Central Statistics Office. ASSP must understand the capacities and develop strategies for assisting these organizations to meet the demands that will be placed upon them. Outputs anticipated was a report assessing adequacy of existing organizations for the task of post-war redevelopment and strategy options for building capacity where it falls short of requirements. The long-term benefits of this work would be to allow discussion to begin on the "institutional" aspect of a post-war AID/Afghanistan program and the extent that this constitutes an impediment for development assistance.

e. Agricultural Business/Infrastructure Inventory: Conduct an inventory and assessment of the condition of processing, storage, fertilizer production, workshops/equipment manufacturing, wholesale/retail markets in terms of their ability to support agricultural production. This might include Afghanistan's urea fertilizer production facilities among other agribusiness operations. Data was to be gathered by field survey and interview, possibly in conjunction with another international organization that can work cross-line from Kabul. ASSP had already a comprehensive database detailing services and facilities at key bazaars. The scope and breadth of this initial work was expanded to cover other aspects of the agricultural infrastructure.

Toward an Analytic Agenda

Following detailed consultations, agreements were reached with AID/Rep on an analytic agenda thus establishing priorities for PPA in the final year of the project with a view toward activities that might continue through a planned extension after December 1992. The discussion was wide ranging in scope with several actions/activities indicated to be taken on our part. A summary of the discussion, the issues to be resolved, and highlights of the conclusions reached provide an essential backdrop for evaluating the results that the project achieved.

1. Wheat Availability Analysis

We began by reviewing the Preliminary Report on 1992 Wheat Availability prepared by Earthsat. The fundamental problem with the study is that it was done in Washington DC, divorced from any access to the all important "reduction factors" that would make its conclusions on wheat availability from the 1992 harvest meaningful. In its first iteration, the results suggested a total wheat production of 2.6 million metric tons, which when the grain requirements of the current population are taken into consideration, leaves a surplus of 460,000 metric tons. That Afghanistan could produce at its pre-war levels is impressive but most unlikely given current circumstances.

We focused upon what the purpose of the report should be and decided that of outlining the methodology, indicating the types of results we can expect and their utility for making policy and programming decisions, and a process for refining the estimates would be sufficient. The report satisfies the first two requirements, but fell short of providing an implementable plan that will get the reduction factors entered into the model to yield results that are understood and accepted as reasonable. It was agreed that it serves no useful purpose to disseminate an initial wheat availability estimate that requires substantial adjustment to account for a variety of real world factors.

There were several problems with our forecasting of wheat availability.

- Potential users of the output were unfamiliar with the process used to arrive at the estimates. The fact that the PPA field team was unable to answer many of the questions put forth by AID/REP, did not help the situation.
- Earthsat/DAI staff in Washington, except at a general level as seen in the report, were not communicating the critical data requirements, actions and methods that will enable the necessary reductions to be made from the first iteration of the model. PPA field staff were unclear enough about the model and its workings so as not to be able to take the lead on this.

- The people doing the modeling had the least access to field data necessary to refine its data inputs. Conversely, the PPA and ADT field staff with the greatest access to data on conditions inside Afghanistan, had the least understanding of how this data might better inform the model.

If we were going to use this method for wheat forecasting there needed to be discussion of its strengths and weaknesses and a strategy for overcoming the problems inherent with specialization, organization and distance. Endorsed in the Mid Term Evaluation Team's report, a workshop on wheat availability forecasting appeared to be desirable and a necessary activity to improve the outcome of this activity. As a start, a copy of a summary of the CROPCAST model was distributed to O/AID/REP as well as the ASSP field team to become familiar with this particular approach.

While this event was being organized, the field team was to work with Earthsat/DAI Washington based staff to identify critical data inputs concerning 1) **wheat yield**, coinciding with the upcoming Afghan wheat harvest where we will want surveyors in the field to observe the quality and quantity of the wheat crop, and 2) **area under cultivation** through ground truthing to refine estimates of amounts and locations of irrigated and rainfed agriculture. Even if this is all we ever get, these two pieces of information will improve the model's estimates.

With respect to the report itself, it served as an internal working document. No purpose would be served by making still more changes in the draft so distribution was limited to O/AID/REP and ASSP/PSA staff. Workshop participants might be given copies as an introduction to the current estimation effort.

To help address some of the operational difficulties we faced with a bifurcated PPA, the GIS advisor being recruited was asked to review our difficulties resulting from the split of the operation between Islamabad and Washington, and to make recommendations for change and improvement. These recommendations were delivered in June of 1992.

2. Agricultural Inputs Assessment

As suggested above, work on providing additional data to better inform our modeling efforts on wheat availability were to take most if not all of the field staff resources currently available. Keeping an eye on the crop calendar is crucial if yield data is to be gathered at the right time and results provided in a timely fashion for O/AID/REP. Ground truth and quality control work to refine estimates of land under irrigated and rainfed agriculture is also time consuming and demanding in terms of manpower requirements. Still, there are important programmatic requirements for better information on key constraints in agriculture where private commercial activities can provide solutions.

PPA was being called upon to identify those areas where ASSP/PSA can intervene in a constructive fashion that enables the private sector to better serve the needs of agriculture. Among the areas identified in earlier studies by ASSP/PSA and other projects that appear most promising are the following:

- Farm Power/Mechanization
- Wheat Processing/ Reduction of Post Harvest Loss
- Marketing and Transport of Surplus Wheat to Consumers
- Prospects for Trade between Afghanistan and the Newly Independent States of the Former Soviet Union.

After reviewing this list and giving some thought to other areas where the private sector can be assisted in meeting perceived needs in agriculture, study designs and scopes of work were prepared covering each of the above areas, giving emphasis to the need to identify viable initiatives to assist the private sector. Some work has been done on these areas suggesting problems and opportunities for improvements. ASSP/PSA saw the need to

review this work and suggest packages of initiatives that could be undertaken within the scope of ASSP/PSA. We proposed to access subcontracts with Agrisystems and possibly GIC to provide expertise in carrying out the above studies and framing appropriate recommendations.

3. Developing a Regionalized Approach to Agricultural Rehabilitation

While not discussed as a specific part of the analytic agenda, it was time to begin to narrow our focus for development purposes on those areas in Afghanistan having the greatest agricultural potential where an integrated package of inputs can be delivered, subject to access and security considerations. The information being collected by PPA and our ability to examine it in a spatial dimension allows for these areas to be identified, their agricultural systems better understood, and the necessary resources programmed to rapidly boost food production.

We proposed to use our imagery and survey capability to identify these areas as targets for coordinated multi sectoral project inputs. This would prove useful for O/AID/REP and other donors in targeting development assistance where the greatest impact on food production can be realized. The results of this assessment were used as the basis for launching a program, implemented by the ADT component for selected provinces in the northern part of the Afghanistan where pre-war wheat production contributed a great deal toward meeting the country's food requirements.

Building PPA Capacity

In October 1991 in response to a change in the components objectives, PPA was re-organized into four operating units with a small management and coordinating office headed by the component director. The units included the following:

- Strategic Planning
- Agricultural Statistics
- Information Systems
- Publications and Outreach

Each unit was responsible for executing a series of specific functions that relate to those carried out by another unit within the PPA component.

Strategic Planning: Responsible for development of sectoral as well as multisectoral development scenarios, strategies, plans, programs and project interventions. These activities will require working closely with other O/AID/REP projects, those of other donors, as well as other governments and organizations as might be appropriate.

Agricultural Statistics: Responsible for development of data gathering methods, their execution, management, analysis and reporting of information. Included are field surveys, remote sensing, modeling, and informant interviews. Analysis to include reporting on current ag. sector conditions and trends, discovery of underlying causes behind observations, forecasting, and interpretation of agricultural phenomena.

Information Systems: Supports work of other units. Serves as a resource to advise on options for data processing, information management, and presentation. Manages the hardware, software, and technical people required by other operating units. Provides training, customized programming and software development, data security, access and automation support to all office activities.

Publications and Outreach: Provides for dissemination of information generated by the project in appropriate formats. Included are professional quality publications, maps, reports, data, graphics, and video as well as seminars and other forums intended for information exchange.

To carry out these functions there was a realignment of existing staff and new positions were authorized. While some of the positions authorized were never filled, the following positions were identified as being important for each unit to operate along with the hiring designation:

<u>Position</u>	<u>Designation</u>
Management and Coordination:	
Planning Advisor/Deputy Chief of Party	LTTA
Administrative Assistant	LH/5-7
Strategic Planning:	
Director	LH/9-10
2 Senior Ag. Planners/Economist/Agronomist	LH/7-10
Senior Infrastructure Planner/Engineer	LH/7-10
Senior Human Services Planner/Health/Education	LH/7-10
6 Planner Trainees	LH/4-6
Secretary	LH/3-4
Agricultural Statistics:	
Director	LH/9-10
3 Analysts/Ag. Statisticians/Economists	LH/7-10
6 Statistician Trainees	LH/4-6
3 Survey Supervisors	LH/6-8
30 Surveyors	LH/4-5
Secretary	LH/3-4
Information Systems:	
Director	LH/9-10
2 Programmers	LH/5-6
1 Computer Trainer/Trouble Shooter	LH/4-5
3 GIS Technicians	LH/4-6
2 Digitizer/Data Entry Operators	LH/3/4
1 Hardware/Software Technician	LH/4-5
Secretary	LH/3-4
Publications and Outreach:	
Director	LH/9-10
Advisor	OSPH
2 Wordprocessors	LH/3-4
1 DeskTop Publishing Operator	LH/3-4
1 Xerox/Binding Technician	LH/3
1 Commercial Artist	LH/4-5
1 Cartographer/Draftsman	LH/4-5
1 Photo Technician	LH/4-5
1 Computer Graphics Operator	LH/4-5
Secretary	LH/3-4

Legend of Designations:

OSPH-Off-Shore Program Hire

LTTA-long term technical assistance position

LH/1-10-local hire/salary grade

Staff in the PPA component has been both a recipient as well as provider of training. Training is best discussed under the several different categories of employees within the component. The discussion that follows incorporates those staff members in the Information Services Unit, formerly a part of Finance and Administration, but folded into PPA in the fall of 1991.

1. Surveyors and Monitors

While individuals have come and gone and titles changed, the number of staff in this category has remained fairly stable at approximately 30 people. These staff have been provided the following training over the past two years:

- Training in simplified survey and monitoring techniques including observation, reporting, and validation and cross-checking of results. Courses offered by Save the Children (UK) have been used for this purpose.
- Training in team building, communication skills, and community participation have been provided to the surveyors, also using Save the Children, International Rescue Committee, and other NGO's offering short courses on these subjects.
- Training in basic mathematics have^s been organized by ASSP/PSA using instructors hired under contract for this purpose.
- Training in fundamentals of agriculture has been provided as part of the ADT winter training program to all surveyors and monitors. The purpose has been to better familiarize these staff with the object (Afghan agriculture) of their information gathering exercises.
- Informal, on-the-job training using survey exercises, pre-tests of survey instruments, and most recently case studies of past survey's in an effort to learn from past efforts for the purpose of change and improvement.

2. Analysts

The smallest group of staff, that of analysts responsible for design of PPA studies, development of data gathering approach, interpretation of information and report writing,

has received primarily on-the-job training with limited short course exposure. The people in this category ranged from one to three people, supplemented by short term advisors from DAI, Earthsat and GIC.

- **Computer Software Training:** Short courses were arranged in Lotus 1-2-3, Dbase III and IV, Harvard Graphics, and orientation to our GIS software, provided by Earthsat in its two training sessions conducted in-country.
- **On the Job Training:** Short Term Advisors, from DAI and GIC as well as the resident director of PPA and the Deputy Chief of Party worked closely with our small group of fairly junior analysts to provide guidance in the development of the MARIS commodity price tracking system, analysis of fertilizer prices, topical studies of exchange rates, wheat price movements, area frame sampling, agricultural statistics and other specialized analysis.

3. GIS Technicians

PPA has maintained three full time GIS technicians and trained another three individuals at a lower level to do digitizing of base maps. As of this writing there has been a complete turnover of GIS technicians. The later group have not received formal training, instead they have been trained by their predecessors.

- **Earthsat Short Courses:** Earthsat sent a two person team, accompanied by DAI's liaison staff member to provide two one-month sessions in the use of the Arc Info Software. The training was conducted in Peshawar.
- **US Orientation:** Several staff members including the Director of Information Services, the PPA Advisor, the DAI Liaison with Earthsat and DAI's home office backstop staff member attended an orientation to Arc Info and the use of remote sensing at the University of Nebraska.
- **On the Job Training:** Current staff in the GIS section provided day to day instruction and supervision of the work of new people joining PPA to be trained as GIS technicians.
- **Self Learning:** All GIS staff spent considerable time using the manuals and tutorials to self-learn most of the advanced features that had never been covered in the formal training. Much of this work was done after office hours and on weekends.
- **Formal US Training:** The director of Information Services attended the formal two week course authorized by the manufacturer of the software. This is the most thorough and comprehensive training provided to anyone working

with the GIS system. The training was followed by a one week study visit to Earthsat to develop a better understanding of how remote sensing data are incorporated into a geographic information system.

D. Information Unit Staff

Staffing levels in the information units has ranged from three to eight people. While most staff are hired with requisite skills, some training has been provided:

- **Short Courses:** Using several local commercial computer schools, training has been provided in Dbase III and IV, Advanced Lotus 1-2-3, Programming in DBase, and Advanced WordPerfect. In addition, English language training has been provided to those staff members who need better communication skills.
- **On the Job Training:** Emphasis has been placed on undoing the bad habits that Pakistani/Afghan computer hackers come to us with. Training in systems analysis, programming protocols and standards, computer security, copyright law, and other procedures necessary to protect data and make maximum use of hardware and software have been provided by short term and resident advisors.

In terms of the training provided by PPA staff to others, the following are most important:

- The Market Information System (MARIS) staff who were later consolidated into the Agricultural Statistics Unit, participated in training for ADT staff, organizing a series of interviews with ADT extension workers on topics of grain production, marketing, crop calendars, and horticultural crop diversity. Extension workers' responses provided a variety of information useful for ADT program planning.
- MARIS staff also briefed ADT extension workers on the plans for fall fertilizer distribution and their role as field monitors in selected bazaars.
- The Information Services Unit organized training for approximately 100 people to enable them to better use computers to carry out their responsibilities. This training included staff in all components and units within the project and focused on the following: Wordprocessing, Database software and applications, DOS operating system, Computer Graphics.
- The Information Services Unit provided training in Arc Info to interested staff members from MCI, AID/Rep's DC&A Unit, as well as other Afghan

cartographers who will work with FAO's Remote Sensing and GIS project which is currently based in Rome.

Building a Geographic Information System

To continue the process of building capacity in Islamabad in order to operate, manage, and make the most use of our information system on Afghan agriculture, we proposed a strategy in early 1992 that would provide an immediate assessment of where we are and where should be going and some assistance in making the changes that are required in the shortest time possible.

Given the questions that we were trying to answer about food availability and constraints to agricultural redevelopment, we proposed to do what the evaluation team endorsed... to bring out a consultant on a short term basis to critically review what we have been doing, understand what we want to accomplish, and provide advice on the best way to get there.

We proposed and received approval to bring Professor Barry Haack, to Islamabad for three weeks beginning the last week of May 1992. Professor Haack is an experienced user of data collected through remote sensing and analyzed using GIS technology. He was to review the methods and approach being used by Earthsat and develop with us a strategy for making the most of our investment in GIS and imagery that has already been procured. He also assess our need and capability to center more of the analytical work here rather than at in the Washington DC metropolitan area.

Following the review made by Professor Barry Haack of our GIS operations in the spring of 1992, we received from AID/Rep a verbal endorsement of his recommendations along with specific approvals to procure required hardware and software. With the assistance

of our subcontractor **Earthsat**, we proceeded to improve upon several past deliverable products, continue with the training and process of technology transfer, and explore new applications of the GIS technology.

1. Refinement of Earlier Deliverables

Two products were revised to improve both the accuracy and utility of this work. These include a) the Helmand-Argandab Valley Irrigation Change Study, and b) the nationwide LandCover Assessment. With a better understanding of how this information will be used by ASSP and AID Rep as reflected in the revised Scope of Work and Barry Haack's recommendations for quality control to overcome problems of method and interpretation, these two studies were delivered in final form in the first quarter of 1993. If demand for

copies of these studies is any indicator of the usefulness of this analysis, both would be considered to be exceptionally important and relevant products.

2. Consolidation of Ongoing Activities

An initiative was necessary to preserve and protect much of the work that has gone on in development of this geographic information system. This culminated in the completion of the Data Dictionary. This is an index of the many "layers" of data, maps and graphic presentations that have been developed and are available for others to use. Work was done simultaneously in Islamabad and Washington to complete this product.

3. Technology Transfer

Having agreed that this is an important objective for ASSP/PSA and of the GIS component in particular, project management initiated the approval process for several activities:

a. The first was a series of training modules planned to be given in Islamabad. The participants will be our GIS staff and trainees combined with those from MCI. In total we expected 10-12 participants, the large majority of which will be Afghan. We intended to use our GIS facilities, data, and imagery from Afghanistan to give the training an applied flavor. We intend to tap four sets of resources to assist in the training.

- First, our in-house trainer was providing training in the DOS operating system, basics of PC operation, as well as electronic spreadsheets and databases.
- Second, one staff member from Earthsat was to be brought to Islamabad toward the end of October to provide training at the intermediate and advanced levels in Arc Info (the GIS software).
- Third, for two weeks in the month of November we planned to call on Barry Haack to provide training in photo interpretation (use of air photos and satellite imagery), and the fundamentals of map reading and composition.
- Fourth, we proposed to call on a team from ICIMOD in Kathmandu to present a series of case studies on GIS applications in other member countries with mountainous conditions. This was planned for December.
- Fifth, based upon earlier approvals, we were going to bring out a consultant, working directly under Barry Haack's supervision, to follow on from the training by engaging our staff and trainees in work that supports the new

initiatives planned for PPA. We had identified an excellent candidate and hoped to have this person available sometime in November.

b. The second initiative was that of combining the methods employed by CROPCAST that employ satellite derived data with those that we are currently using. Here we proposed to further refine our forecasting methods for wheat and other strategic crops by holding a workshop perhaps late in early December where we will bring a staff member from Earthsat out to Islamabad to meet with our staff.

Unfortunately, changes in AID/Rep priorities precluded ASSP from launching these *technology transfer* initiatives. In the end, only a handful of Afghan and Pakistani project staff received on the job training along with a few professional Afghan cartographers.

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4. New Initiatives

Several new activities were begun or made it to the planning stage:

a. The most important of these activities is the refinement of the agricultural landcover classification of the LandCover Assessment work mentioned in #1 above. DAI home office staff with its senior GIS advisor Barry Haack, worked with Earthsat to further subdivide the "irrigated" and "rainfed" classification into "active" and "inactive" categories. We also worked on a better classification of the large "other" land cover category. Combined, these refinements gave us a better idea of land currently under cultivation, as well as land that can potentially be cultivated when and if other factors of production are present.

b. A second activity, planned but not approved, was a pilot study for an agricultural change assessment and a forest change assessment. One of the principal values of repetitive satellite imaging is change assessment. The monitoring of change can support project planning, project evaluation and resource monitoring. Once information requirements have been defined and baseline established, resource conditions may be easily and inexpensively monitored. With the launch of Landsat 6 later in 1992 there was expected to be greater coverage available of Afghanistan at even greater resolution making it far more useful for provincial and project level analysis. This combined with new legislation that will greatly reduce the cost of imagery and make this source of information far more useful. The purpose of these pilot efforts are to test and refine the methods for doing this work under the very complex and heterogeneous conditions found in Afghanistan. This would have positioned AID Rep so that once this new satellite resource is available and program planning is underway, this methodology will be ready to apply.

PPA made a great deal of progress toward implementing the recommendations made by Barry Haack, our senior GIS advisor as contained in his report Assessment of the Geographic Information System Component of the Afghanistan Agricultural Sector Support Project, July 1992. There are many pieces that must fit together in order to carry out the

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modifications and improvements that Barry suggested. Taken together these lead in the short term to better GIS products and could have, over a longer period of time, helped with the transfer of spatial analysis tools and techniques to Afghans. A summary of the changes and improvements that were implemented is useful for the design and management of future projects aimed at improving the information resources on Afghanistan.

1. As a start, we contracted for the services of a GIS professional, Dr. Barry Haack, on an as needed basis through December 31, 1992. Access to Barry from the field as well as our home office and subcontractor was facilitate by the use of electronic mail. This made him directly accessible for consultation when the field team required his advice.

Barry worked with Earthsat to redefine their role in the remaining months of the contract, with special emphasis on completing those changes and improvements that have been identified as being required in several of their deliverables. Specifically he was engaged in the following:

- a. Review of Earthsat's plans to carry out the quality control and interpretation on the Landcover Assessment;
- b. Work with DAI and Earthsat staff to address the various critiques of the Helmand Argandab Valley Irrigation Change Study, its methodology, presentation and conclusions. Jim Wolf of DAI was brought in to provide his expertise on irrigation in this part of the world;
- c. Advise Earthsat on our requirements for training in Remote Sensing and Photo Interpretation and participate in course development;
- d. Explore alternatives for training in the use of GIS with the intention of transferring these skills to Afghan technicians;
- e. Establishing ties between the project and other organizations involved in similar GIS/Remote Sensing Applications to facilitate a sharing of resources and knowledge in this rapidly changing and complex field.

Simply stated, Professor Haack was cast in a role where he could be an effective liaison between the policy and planning issues that the project was addressing relative to Afghan agriculture and the emerging technology that can help address some of these concerns.

2. Earthsat appointed its executive vice president, Mr. David Thibault, as the manager to oversee work under this contract. Having the attention of their senior management provided the project with a responsive point of contact within Earthsat who is able to understand our requirements, direct resources and make things

happen. Mr. Thibault visited Islamabad in late August of 1992 to review with us our requirements and his plans for delivering the products we had identified. One positive development is that he is added a well regarded and fairly senior GIS technician to his staff to ensure availability of the best possible personnel to address our needs. The project officer had an opportunity to meet with Mr. Thibault to express AID/Rep's concerns so they could be addressed in our planning.

3. With the assistance of Barry Haack we explored various options that would bring other specialized resources to bear in completing the various analytic, training, and systems development tasks that we have agreed to relative to the GIS. Discussions took place with ESRI, the manufacturers of the ARC Info software, FAO's Remote Sensing operation in Rome, the International Center for Integrated Mountain Development (ICIMOD) in Kathmandu, and the Asian Institute of Technology (AIT) in Bangkok.

4. DAI home office support was expanded to include the active involvement of our Director of the Environment and Water Resources Group, Mike McGovern. Mike, a civil engineer by vocation, worked closely with David Thibault at Earthsat and Barry Haack to direct the resources back in the US as required to support the ASSP/PSA field team.

5. Several changes were also made in our program hire field staff working in PPA to better employ the spatial analysis capability that we are building.

a. We shifted Mr. Faheem Ahmed, the British citizen hired as a field operations supervisor, to the Planning Unit in the role of Land Use Planner. Faheem is a geographer, trained in land use and resource planning, and equipped with many of the spatial analysis skills that we required in PPA.

b. We added another Afghan digitizer to our staff, installed locally constructed light tables, and provided a revised agenda with new priorities for getting data off of maps into a digital computer readable format. Priorities are based upon the needs of our planners, economists, and other analysts as they carry out the studies that have been agreed upon, based largely upon the revised and recently signed scope of work.

c. We completed the process of cataloguing our database and the graphic presentations prepared to date. It is crucial to understand the source of this data,

how it was collected, aspects such as scale, levels of aggregation, processing and dates when collected, and definitions of the categories used to organize the data if it is to be useful to analysts.

6. On-the-job training for our staff continued using a variety of exercises in which data has been manipulated with the help of GIS tools to discover relationships and explore working hypothesis relating to the agricultural sector. Our analysts in the Planning and Agricultural Statistics units were given exposure to the powerful analytic tools available to them so that they can incorporate these into the design of their studies.

Improving Upon the Market Information System

In April 1992 the Agricultural Statistics Unit conducted a review of the Market Information System (MARIS) including a survey to ascertain the volume of travelers at border crossings, their place of origin and their familiarity with the prices of agricultural products and inputs¹.

In the course of examining the current system both its strengths and weaknesses were identified and a number of changes made in order to improve both the geographical coverage and accuracy of the price data being collected. Among the most notable changes were the following:

- Increase in the number of border crossing points visited to maximize geographic coverage.
- Increase in the frequency of visits to border points from one to two visits per month.
- Focus interviews with travelers on trader/merchants who have proven to be more knowledgeable about prices rather than more casual travelers or drivers.
- Modify the reporting format for presentation of price data to focus on key input prices, wheat, and exchange rates. In addition the price bulletin is now a monthly rather than quarterly publication.

Several other minor changes and improvements were introduced including revision of the survey forms and the commodities themselves that are of interest, retraining of surveyors, improved supervision of field work, new procedures for collection and tabulation of results, the use of ADT extension agents to provide bazaar level reporting to cross-check the price information gathered from travelers, as well as computer automation of the monthly updating of tables, charts and graphs.

¹ A Review of MARIS, Agricultural Statistics Unit, Program Planning and Analysis Component, ASSP/PSA, April 1992.

In response to conditions that continue to evolve inside Afghanistan, it was also time to consider yet an additional set of changes to our collection methodology which we believe will provide more valuable information on supply and demand conditions for key commodities.

The essence of our proposal was to modify our method for price data collection from one that relies on *traveler interviews* to *surveyor observations* in the key market towns inside Afghanistan. A change of this sort made the information that we report even more valuable as a leading indicator of changing market conditions. This change was begun early in the spring by using monthly reports from our ADT extension agents. Now with the volume of travelers reduced and access for our surveyors improved, we believe that reliable and timely data on commodity prices requires direct observation using monthly bazaar level surveys.

Our intention was to collect price data from the 12 provinces that historically contained more than half the country's population. The collection would be done every two weeks with the data feed into the monthly Commodity Price Bulletin. We developed procedures for sampling within each market town as well as refining the list of commodities on which price data are collected.

Accomplishments

Listed below are some of the more important uses of the information already developed and the lines of inquiry that have been started but have yet to be completed.

1. Food Security: Understanding the food situation in Afghanistan is conceptually a simple matter but getting the information required has proven to be anything but easy. ASSP/PSA has developed the baseline data along with a methodology proven under field conditions that provides several, but not all of the key variables in the food security equation that have been profoundly changed through a decade of war.

Resource Base: The first statistically reliable estimates of land under cultivation ever done for Afghanistan have been completed for *six* of the twelve key provinces that historically are believed to account for almost 70% of the country's wheat production. Using a modified area sampling technique with the help of satellite imagery, the project has produced estimates - within a 20% confidence interval - on the amount of land under cultivation, for the most important cereal crop.

Productivity: For *two* of these provinces we now have the requisite information on wheat yield per unit of land. This information comes not from anecdotal information, as has been previously the case, but based upon randomly selected measurements of the wheat crop growing at the time of harvest on

farmers fields. When combined with our latest information on land under cultivation, we begin to get the first reliable estimates of the country's food production.

Weather: Incorporating meteorological data such as temperatures and rainfall into mathematical models, we have, through our subcontractor the Earth Satellite Corporation, access to their patented CROPCAST model. With better information on hand regarding crop yields and areas under cultivation, it is now possible to better calibrate the model and revisit its underlying assumptions as it is applied to a complex and diverse farming system as is found in Afghanistan.

Population: We all continue to suffer from population statistics that are hopelessly distorted by years of migration brought about by conflict. We have captured the best available data on the subject, from Tom Eighmy's extrapolations and modified-by UNHCR's latest information on refugee movements in a computerized database which is referenced by locality that allows the information to be used, for among other things, to estimate food requirements.

Price Movements: The project has developed a database containing price movements of key commodities between 1987 and 1992. The information covers both consumer and producer products such as wheat, meat, fuel and fertilizer prices. The information is based upon an evolving methodology which, in the last half of 1992, involved bi-weekly observations made in key bazaars inside Afghanistan. Changes in price, adjusted for seasonal fluxuation, serve as a check on food needs assessment done with incomplete data on acreage and productivity, a paucity of knowledge on storage, transport and marketing arrangements, uncertainty regarding imports along Afghanistan's porous borders, as well as unreliable information concerning the population that must be fed.

There is more to be done but an important start has been made. Any organization dealing with this subject who claims to have a handle on the situation without the benefit of the above information is either a lot smarter than we are or are flying by the seat of their pants. Since there is a viable alternative, given the costs associated with under or overestimating food relief requirements, it is worth while to improve our understanding of the situation.

2. Narcotics Control: Just as our methods for measurement of wheat provide a means for making statistically sound inferences about province-wide acreage and yields, we can use this same approach for estimating production of other crops.

Wheat Planting/Wheat Production Surveys: These two surveys identified the extent of poppy growing in the 6 provinces surveyed with varying degrees of reliability. Modifying the procedure for drawing random samples to account for the less than ubiquitous nature of poppy cultivation combined with changes in the timing of the survey to coincide better with localized planting or harvest dates would improve the reliability of the estimates and allow for more confident generalization and inference. There exists a sound base to build upon and this can easily be combined with survey work on wheat using an approach that has been field tested.

GIS as an Analytic Tool: ASSP's analysis to identify areas of Afghanistan where returning migrants and a history of poppy cultivation may combine to overcome labor constraints on production was made possible by the use of the GIS technology (see *Agricultural Developments in Afghanistan*, November/December 1992, pp. 20-21). Overlaying data, modeling and simulation where the data are believed to be good enough are powerful tools for analysis.

3. Opportunities for Expanding Agricultural Production: Several approaches have been developed to identify opportunities for increasing agricultural production.

Irrigation Change Assessment: Using a combination of satellite imagery combined with ground visits, ASSP/PSA has developed a method for rapid and reliable assessment of irrigation potential, identifying the requirements for rehabilitation, and the benefits in terms of increased production from such an investment. Based upon our pilot study of the Helmand/Argandab Valley Irrigation System in which USAID invested about \$120 million over a 25 year period, it is possible now to identify other such areas in a cost-effective fashion for the purposes of targeting public investment in the most productive portion of the agriculture sector.

Landcover Assessment: The first nation-wide survey conducted with data obtained from satellite imagery taken in 1990-91 has been completed. The data has been provided to AID/Rep and the FAO and a report describing the methodology, a summary of the statistics by land use type, as well as maps for each of the provinces and agro-ecological regions are being completed. This work has identified both irrigated as well as rainfed agricultural lands and further differentiated between irrigated land currently under cultivation and that which is for some reason no longer in production. Further analysis of this data by ground survey work to identify the constraints keeping this land idle and by comparing this data to more recent data obtained by the FAO for 1992 will suggest opportunities for increasing the extent of cropped agriculture.

Survey of Cultural Practices: Developing a better understanding of the relationships between the farmer, his land, and the use of inputs such as water, fertilizers, improved seed, and various forms of farm power is essential in order to identify interventions for intensifying production. Experience with two such surveys as described in ASSP publications will enable other organizations to move ahead rapidly in the development of this information on a much expanded geographic scale without encountering the methodological problems that plague efforts at trying to understand indigenous farming practices.

4. Implementing a Development Strategy: While formulating a strategy requires a more generalized and an abstract level of understanding, its execution has more specific and detailed information requirements. With UNORSA and now AID/Rep contemplating their strategies for Afghan rehabilitation and development, information on conditions across the various sectors is critical. Here the information developed as part of the Afghan GIS allows for analysis to uncover relationships, monitor changes and evaluate results. The incidence of population can be compared with programs and projects aimed at providing social services. Prioritizing infrastructure reconstruction can be done based upon populations served, the locations of producing and consuming areas, and the resulting trade flows. Information in a form that is easily accessed and manipulated is critical to successfully translating a strategy into actions on the ground. While much data has been collected, AID/Rep has at its disposal the means to organize, and process that data into useful information.

Outputs

Many of the accomplishments discussed above are documented in one or more reports that have been delivered to AID/Rep. For future reference, it is useful to summarize the reports, databases and other deliverables provided by the PPA component of ASSP.

Data Dictionary and Archive

Over the past three years, ASSP/PSA has expended considerable time and resources in obtaining data from various sources. In some cases, data was purchased from vendors, as was the case with satellite imagery. In other cases data was enhanced by our subcontractor, the Earth Satellite Corporation, by running it through their copyrighted process for interpreting raw data obtained from space. Lastly, there was data that ASSP/PSA collected by itself, analyzed, and reported through periodic publications. Taken together there has been accumulated a vast quantity of data, which if made available to experienced professionals, has great potential for providing valuable information on Afghan agriculture.

In order to organize, document and turn over most of this information to AID/Rep and the community of interested donor organizations, development practitioners and researchers interested in Afghanistan, a document called the **Data Dictionary** has been prepared. The dictionary as it has evolved is divided into four volumes. The first two have been produced by our project staff in Islamabad. The third volume has been completed in Washington by our subcontractor the Earth Satellite Corporation. The last volume, a bibliography of reports and documents including printed maps, was also prepared by the field team in Islamabad. ✓

- Volume I provides a summary of the computer databases that have been built by the field staff in Islamabad. Included are data from the surveys that have been conducted on land under cultivation, crop yields and farmer cultural practices. The data from our commodity price surveys covering the years 1987 through 1992 are included in these databases as are all the data digitized from maps of Afghanistan and stored in computer files. In **Level I**, this volume provides a brief description of each database, followed in **Level II** by a more detailed listing of the data type, along with copies of the survey instruments used in its collection, in many cases maps showing the locations from which the data was collected, and in **Level III** a directory showing the physical location of the computer files in our data archives which reside on three 44mb Bernoulli cartridges.
- Volume II provides a directory of "presentations" created largely from the above mentioned data, over the life of the project. These images were developed to transform data into useful information. Many of these graphics have appeared in reports, bulletins and other deliverables provided to AID/Rep and elsewhere in the donor community. Included is a section of "graphic images" created using the software package Harvard Graphics and a section of "map compositions" created with the GIS software ARC INFO. Under each section of Volume II, we list the name of the presentation along with information on the physical location (one of three 44mb Bernoulli cartridges) of the computer files in our data archives.
- Volume III provides a description of spatial data created from satellite imagery and maps with the assistance of Earthsat. Included here is the Landcover Analysis, coverage of the 1:100,000 map rectified images of Afghanistan, other false color images printed at various scales for select locations, as well as a smaller databases developed as part of specific GIS applications. In each case, a description of the data, source, dates collected, type and other salient characteristics are provided.
- Volume IV includes a bibliography of all reports and printed materials produced or collected by ASSP/PSA.

All of the data and information products mentioned in these four volumes have been provided to the Office of the United States Agency for International Development, Representative for Afghanistan (O/AID/Rep). We have referred persons interested in accessing these materials to AID/Rep. Specific questions regarding the sources, quality, coverage or dates of this data can be forwarded to Development Alternatives home office in Bethesda, Maryland.

Commodity Price Bulletins

Quarterly reports on commodity prices including exchange rates between the Afghani, the rupee and the US dollar were issued and widely circulated through the fall of 1991. Beginning early in 1992, a monthly bulletin replaced the quarterly reporting format in order to give more timely information on commodity price trends to the international donor community.

Survey Reports

Survey Reports I through VIII provided detailed information on markets in the eastern parts of Afghanistan as well as on agricultural resources in selected areas of project interest. Periodic reports were issued to present the findings of ASSP's efforts at getting better information on land area under cultivation and wheat yields. In the fall of 1992 Balkh and Jawzjan Provinces were featured and in the January of 1993 the results from survey work in Herat, Ghazni, Khandahar, and Helmand provinces was published. Information on cultural practices was reported on in March of 1993 based upon area frame sampling work in these later four provinces.

Helmand-Argandab Irrigation Change Assessment

The final report on changes in land under cultivation and likely infrastructure related factors affecting irrigated agriculture was submitted in March 1993. This analysis was conducted using a combination of satellite imagery and ground observations and represents a path breaking effort to incorporate these approaches with the help of a multi-disciplinary team engaged in image interpretation.

Afghanistan LandCover and LandUse Assessment

The final report on Afghanistan land cover was delivered in April 1993. This report documents ASSP's efforts at constructing an up to date inventory covering the use of the land as of 1990-91. The document reports on summary land use statistics for each province and displays this information on province maps.

Project Newsletter

ASSP published on a monthly basis from February through December 1992 a publication intended to report on project activities and to share information related to Afghan agriculture with the community of interested persons and their organizations.

Future Assistance for Afghan Agriculture

By the end of February 1993 the activities of the PPA component of ASSP/PSA were concluded. It was under this component that the collection of original data on Afghan agriculture was conducted, and with the help of GIS technology, the work of better understanding the distribution and amounts of land under cultivation, crop yields, cultural practices, and commodity prices were begun. With the conclusion of the project, a team of analysts, computer technicians, and surveyors was disbanded. With the scattering of these exceptionally well trained and motivated people and the dismantling of the organization that enabled them to work together as part of a productive enterprise, the development community is faced with the loss of an important asset needed for more effective short term relief, rehabilitation and future development of Afghanistan.

In the absence of a functioning government in Afghanistan, ASSP/PSA management has spent a great deal of time trying to identify prospective donor organizations to continue the task of developing basic statistics that reflect the changed conditions in Afghanistan about which we know so little. Project management explored opportunities with several of the UN organizations as well as with other AID/Rep contractors. Notwithstanding three months of intense efforts, no one has been able to put together a thoughtful proposal that explains *why these activities should continue, how they will be maintained and how the transfer of this technology to a future government in Afghanistan might take place.*

It remains unclear why an operation as valuable as PPA could not be continued despite widespread sentiment that such a loss should be avoided. The outcome, for the time being at least is that of setting aside an investment of over \$2 million and the loss of a resource that until recently, a growing group of users have taken for granted. While there are obviously problems associated with bureaucratic inertia, it appears that the overtly technical nature of this activity itself made it difficult for people who are not planners, economists or other potential end users of the information developed by ASSP/PSA to get beyond the haze created by complex methods and analytic tools in order to see how this information is useful, and not just for its own sake.

Now as well as in the future, there is a need for the type of information that has been developed by ASSP. With the progress that the project made, it is unfortunate that we allowed the learning that has taken place, development of human resources and management structure to be (lost).

Having raised the practical applications for the work already done or in various stages of completion, we were unable to arrive at a magic formula for maintaining what was built up not to mention expanding it in line with the potential that many development professionals working on Afghanistan believed to exist. DAI's management believes so strongly in the importance of this information that it had discussed an arrangement whereby the company would continue to pay the salary of the former Information Services Unit director if AID/Rep would lend to us the hardware and software just to keep the information collection accessible and functioning. This is perhaps one notch above leaving the data resources to AID/Rep's DC&A unit where all the hardware, software, and information products have been sent for safe keeping. DAI's suggestion would at least provide a trained systems professional who could operate the information system. Even if AID/Rep had agreed to this interim measure, this sort of salvage operation would simply not be enough. While it saves much of the data already collected and maintains some amount of accessibility, it allows too much to slip away. The loss of ASSP/PSA's ability to collect original data, to continue to develop new applications, and provide insights on Afghanistan's most important sector makes this a suboptimal solution.

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At one time, the UN seemed to offer the best chance of continuing with this work. Their continued interest in Afghan reconstruction combined with modest funding of the running costs suggested a logical home for continuation of these activities. Now, in the closing days of the project, it appears that the UN was unable to come through with an implementable proposal. As of the writing of this report, the last chapter in this disappointing story has yet to be written. Interest in working with the information developed by ASSP and continuing the process of improving our understanding of Afghan agriculture still exists. One can only hope that initiative will be taken and that reasonable people will respond in a positive way.

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IV. FINANCE AND ADMINISTRATION

In general, Finance and Administration (F&A) played an important roll in project activities. The nature of ASSP demanded more efficient and qualified F&A. F&A provided the most efficient service to the other component in order to achieve project goals. At times they faced with challenging tasks, and were carried out without any hesitation.

The closeout period was of course a great challenge for the entire component. An extremely smooth closeout testifies to the professional abilities of the F&A staff. Project Manager was proud of their performance and commend all of them for a job well done.

The Finance and Administration component was consisted of three major offices, Finance, Administration, and Personnel.

A. FINANCE

Finance designed and maintained an accounting system to track different fund receipts and disbursements through several bank accounts.

In total there were four fund sources.

- * TA budget
- * Program budget
- * Reflow funds
- * PL 480 sales

To manage these funds a total of thirteen bank accounts were utilized.

- | | |
|---|------------------|
| 1. Grindlays Bank, Peshawar | - TA Budget |
| 2. Grindlays Bank, Islamabad | - TA Budget |
| 3. National Bank of Pakistan, Peshawar | - TA Budget |
| 4. Habib Bank Ltd., Islamabad | - TA Budget |
| 5. Grindlays Bank, Peshawar | - Program Budget |
| 6. Grindlays Bank, Islamabad | - Program Budget |
| 7. National Bank of Pakistan, Peshawar | - Program Budget |
| 8. Habib Bank Ltd., Islamabad | - Program Budget |
| 9. Grindlays Bank, Quetta | - Program Budget |
| 10. National Bank of Pakistan, Chaman | - Depot Account |
| 11. Habib Bank Tehkal Bala, Peshawar | - Reflow |
| 12. Habib Bank Ltd., Quetta(transitory) | - Reflow |
| 13. Habib Bank Ltd., Quetta(transitory) | - PL480 |

All the bank accounts except for number 2,6, and 8 have been closed. The remaining funds have been transferred to the main accounts. Bank statements for the remaining three accounts been obtained. The remaining balances of Rs.2,331,390/- program funds were handed over to the Controller, AID/REP on Sunday, April 25, 1993. The remaining amount of Rs.8,625/- (US\$553.01) has been held in our Program account at Bethesda, MD. USA. for payment of employer's contribution of FICA and FUTA etc. for Offshore and Local hire (Program funded) American/Green Card holders. This amount will be accounted for by DAI, Bethesda, with their final settlement.

SUMMARY OF PROGRAM FUNDS:

Total Advance received:		Rs. 230,776,000
Program to date expenditure:	Rs. 210,341,247	
Logistic Support, Feb 93:	94,738	

Total expenses:		201,435,985

Balance unspent		Rs. 2,340,015
At ANZ Grindlays Islamabad	Rs. 1,906,872	
At HBL Islamabad	424,518	
At FNBM Bethesda	8,625	

Total cash in bank		2,340,015

Difference		-0-

All ASSP employees have been paid their final dues. There are no outstanding unresolved issues.

SUMMARY OF REFLOW FUNDS:

Total revenue		Rs. 77,463,978
Disbursements:		
Bank Charges	Rs. 29,139	
Transferred to VITA	24,000,000	
Transferred to MCI	5,700,000	
Transferred to ASSP/PSA	47,734,839	

Total Disbursements		* 77,463,978

Balance		-0-

*: All these funds were granted to the above organizations by AID/Rep. Contracting Officer.

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FINANCIAL RECORD:

All TA financial and related record are being sent to DAI, Bethesda for storage.

All Program and Reflow funds records are being shipped to DAI, Bethesda MD. for storage.

B: ADMINISTRATION

Commodities/machinery logistics, local procurement, motor pool management and general services were major functions of the Administration.

Since, November 1992, The Administration office started its closeout activities by handing over the commodities to RONCO inside Afghanistan and Pakistan. We closed five of ASSP warehouses at Peshawar, Quetta and Chaman. All the commodities, machinery and other stores were handed over to RONCO. All warehouse staff was relieved. Local procurement were reduced to a minimum due to closeout. With the exception of two (still being used by the project) all vehicles have been handed over to RONCO or otherwise accounted for to AID/REP.

Office buildings and staff houses at Peshawar and Islamabad have been handed over to USAID. Office inventory at Peshawar, Islamabad, Quetta and Chaman has been taken over by RONCO. Quetta and Chaman office buildings were returned to their respective owners.

C: PERSONNEL

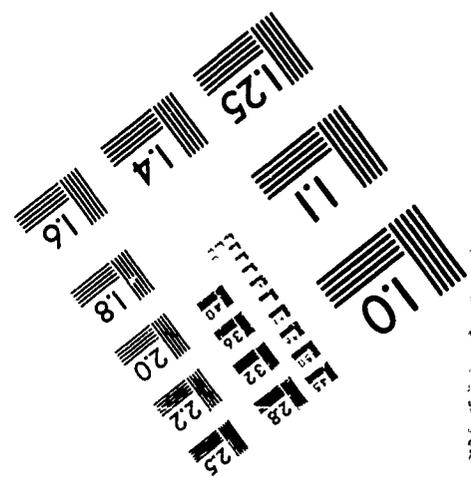
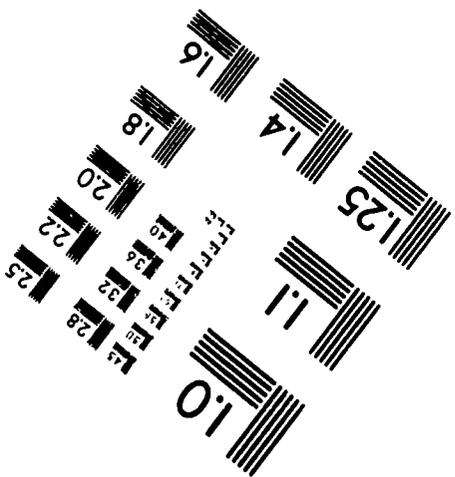
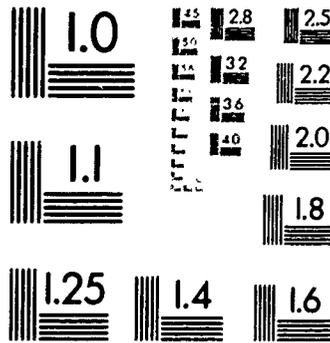
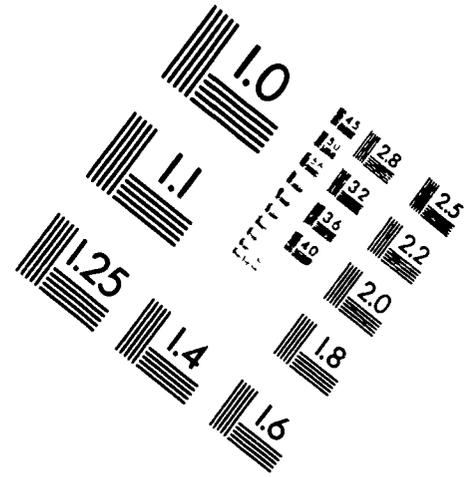
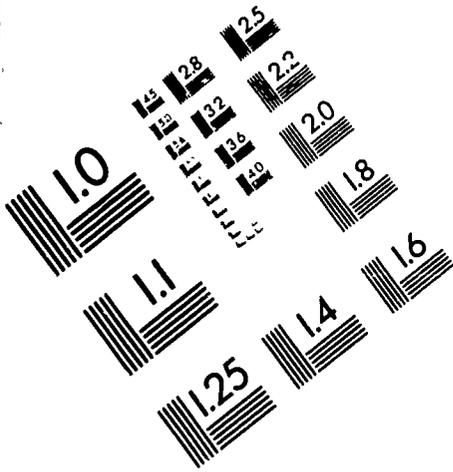
DAI/ASSP came into existence in September 1989 and continued until the April 1993. During this period ASSP processed 506 Afghans and Pakistani personnel for employment. This figure does not include Long-Term and Short-Term Technical Assistance staff members. ASSP was initially made of four components (i) ADT: Agricultural Development & Training, (ii) PPA: Program Planning & Analysis, (iii) PSA: Private Sector Agribusiness and (iv) F&A: Finance & Administration. PSA activities were discontinued after a short period of time and most of the staff members were either absorbed in ADT or PPA components. Nationality wise, a breakdown and the percentage for the three components of staff processed through our Personnel office is as follows:

	ADT	PPA	F&A	Total	Percentage
Afghans	318	67	20	405	80%
Pakistanis	32	15	54	101	20%

The Finance and Administration staff are thankful to AID/Rep. Contracting Office, Controller's Office and Project Office, USAID, EXO's staff and all others who extended their utmost cooperation to make our job easy and successful.

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IMAGE EVALUATION TEST TARGET (MT-3)



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