

Project: National Agriculture Development
 Activity: Crop Improvement
 Sub-Activity: Research (3060002.1)
 Project No: 390-11-199 193
 FY: 1969-1970

33p.

A. Activity Targets

- I. To increase the capabilities of the KGA to plan, administer and conduct a research program designed to increase production of wheat and other crops of importance to Afghanistan.
- II. To improve the physical and managerial resources necessary for conducting a research program.
- III. To plan and conduct research designed to increase the production of wheat and other priority food crops and increase farmer income through better utilization of production inputs.
- IV. To improve and enlarge the technical, managerial, and operational capabilities of the research and supporting staff through pre-service, in-service and academic training programs.
- V. To promote closer coordination of line agencies (research, extension) and agri-business in increasing production through the timely availability of information and production inputs.

B. Course of Action

Target I - Administration and Planning

1. Develop a "Long Term Research Plan" for wheat and other important food and industrial crops.
 - a. Establish research goal or goals.
 - b. Identify type, scope, and size of research program.

- c. Program manpower requirements (numbers, types, training, timing, placement, and role of personnel.)
 - d. Program logistic support and facilities requirements (research and manpower support)
 - (1) Transportation
 - (2) Equipment
 - (3) Supplies
 - (4) Stations
 - e. Establish budget requirements
2. Modify research organizational structure, identify area and scope of responsibility, budgeting procedures, and procedure for release and control of funds.
 3. Develop a "Central Research Council" responsible for coordinating planning, evaluation, reporting, publication and release of all research and research data.

Target II - Research Facilities

1. Evaluate present physical facilities (stations, greenhouses, laboratories, etc.) now available for research or the support of research on a national scale.
 - a. Inventory - suitability of location and soil type, uniformity, area available, potential for expansion of activities, supply of irrigation water, specific problems, etc.
 - b. Manpower - present and projected requirements.
 - c. Equipment - on hand and required.
2. After determining priorities outline specific development work plans (total development plus yearly) for each station and/or facility.
 - a. Role of personnel:

- (1) Manager
 - (2) Aid Advisors
 - (3) Other Afghan technicians
- b. Physical requirements:
- (1) Building
 - (2) Roads
 - (3) Water development
 - (4) Land development
 - (5) Equipment
 - (6) Research and foundation seed increase.
- c. Land classification, use and management plans.
- d. Personnel staffing and training

Target III - Research Program

Depending on the availability of RGA and USAID resources, research will be conducted at the Central Research Station (Darul Aman), five Regional Stations (Herat, Mazar-i-Sharif, Kunduz, Jalalabad, Kandahar) and a minimum of three sub-stations (Chazni, Baghlan, Bamian) plus the HAVA Bolan Station for determining methods for securing maximum yields of wheat and maximizing farmer income. Research also will be carried out to conserve or protect the commodity when once produced (harvesting, storage, etc.). A close working and cooperative relationship will be maintained with research personnel of the Helmand-Arghandab Valley Region, Faculty of Agriculture of Kabul University, FAO and other research groups in Afghanistan.

1. Irrigated wheat (Agronomic)
 - a. Uniform varietal trials.
 - b. Inter-action of varieties and chemical fertilizers.*

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- e. Effect of method used and time of application of fertilizer.
 - d. Effect of soil types and management. *
 - e. Effect of method, rate, and depth of planting.
 - f. Effect of date planting.
 - g. Effect of irrigation (number, rate, method of application).*
 - h. Methods of and effect of weed control. *
 - i. Effect of minor elements. *
2. Dryland Wheat and Other Dryland Crops
- a. Conduct dryland wheat trials (varieties, fertilizer, management).
 - b. Investigate adaptation potentials of other dryland crops (sorghums, millets, etc.).
3. Wheat (Quality)
- Study specific characteristics of varieties and/or production inputs on quality and variety acceptability.
- a. Winter hardiness
 - b. Protein content and quality
 - c. Baking Quality
 - d. Grain - straw ratio
 - e. Lodging and straw stiffness
 - f. Disease incidence and resistance

* Activities delayed until technical support and assistance is available through AID or other donor source. AID positions abolished result BALPA. Competence not available in RGA.

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4. Wheat and Other Food Crops (Economic)**

- a. Cost-benefit studies of the various inputs and identification of optimum practices and/or combinations for production.
- b. Identification of maximum potential production locations and areas for maximum return on production input investment.
- c. Identify and evaluate requirements for production support inputs (credit, marketing, storage, etc.).
- d. Investigate alternate or double cropping opportunities and rotations.

5. Wheat (Machinery and Storage)**

- a. Investigate and carry on research/testing directed toward the adaptation and improvement of indigenous equipment for improving cultural and harvesting techniques.
- b. Test and evaluate small powered equipment for possible mechanization of areas unsuitable for large equipment.
- c. Study farm management adaptations necessary for maximizing use of large powered agricultural equipment.
- d. Determine potential for the local manufacture of equipment.
- e. Make a study of and if possible, offer improvement on farmer and bulk storage facilities.

6. Food Crops Other Than Wheat

- a. As resources permit research and testing other food crops which either are now being produced in sizable quantities within Afghanistan or require foreign exchange or are possible foreign exchange earners.

(1) Corn

** Activities delayed until technical support and assistance is available through AID or other donor source. AID positions abolished result BALPA. Competence not available in RGA.

- (2) Rice
- (3) Barley
- (4) Edible vegetable oil crops
- (5) Edible pulses (in cooperation with Regional Pulse Improvement Project).
- (6) Vegetables
- (7) Fruits
- (8) Fiber crops other than cotton.

7. Wheat (Breeding)***

- a. Strengthen the participating breeding program and exchange of plant materials with Rockefeller Foundation, Pakistan, India, and other interested groups.
- b. Establish a wheat germ plasm bank.
- c. Collect, propagate, and evaluate existing germ plasm lines in Afghanistan.
- d. Develop a breeding program consistent with Afghanistan's needs and availability of world wide resources.

Target IV - Training

1. Pre-service training

- a. In cooperation with the Faculty of Agriculture, Kabul University staff and students, and with MAI and FAO, hold an annual (or more frequent) one-day discussion-seminar on research: its place and need for developing agriculture in Afghanistan.

*** AID activities very restricted - limited to utilization of equipment ordered in prior years and on high seas. Activity reduction result BALPA.

2. In-service training

- a. On a yearly basis hold a one-week seminar evaluating on-going research and plan for the next year's research program.
- b. On a yearly basis hold a one-week short course on experiment station management.
- c. On a yearly basis hold a two- to three-week short course on experimental design and analysis.
- d. On a daily basis carry out on-the-job training of Afghan research personnel through joint Afghanistan-U.S. participation in planning and operating the research program.

3. U. S. and Third Country training

In line with the structure of the organization and workload requirements develop a schedule for training personnel for key positions within the research organization and carry out such training as is possible.

Target V - Coordination

1. Develop with the Extension Service and Agri-business a system and program for making research results and research literature available to all for their eventual presentation to the farmer.
2. Provide technical backstopping services to the personnel of the Extension Service and Agri-business

C Progress to Date

1. Institutional Development

- a. Basic legislation establishing the Agricultural Research Organization in the Ministry of Agriculture and Irrigation (MAI) was promulgated in April of 1963. In March of 1966, the Ministry Organizations for Research and Extension were placed under the administration of a President for "Agricultural Research and Extension."

- b. Research stations - Work continues toward developing the Central Research Station (Darul Aman) at Kabul and 5 MAI Regional Experiment Stations and one Helmand-Arghandab Valley (HAVA) station:

Jalalabad (Aishan Bagh)
Kandahar (Kokoran)
Kunduz
Mazar-i-Sharif
Herat
Bolan (HAVA-funded project 000)

The MAI Central and 5 Regional Stations have a total land area of 323 acres. In FY 67, 183 acres of land was leveled and leveling initiated on another 96 acres. Five thousand three hundred and fifty meters of irrigation canals were rehabilitated, relocated and improved. Five hundred and seventy meters of flood control ditches and drains were dug. Two thousand, three hundred meters of station roads were relocated and improved.

During FY 68 an additional 110 acres have been leveled with major emphasis placed on Jalalabad, Mazar-i-Sharif and the Central Research Station, Darul Aman. Three thousand, eight hundred meters of station roads have been relocated and/or improved. The bulk of this improvement occurred during the last half of the year with the addition of four bulldozers with scrapers and discs and 2 International 306 tractors with scrapers and land planes. These improvements represent between 22 and 25,000 cubic yards of earth moved. This was done by completely inexperienced drivers during an in-service or on-the-job training program and has resulted not only in station improvement but a cadre of drivers capable of doing rough land leveling with minimal amount of supervision.

Other improvements are the complete fencing of the Kunduz Station and the initiation of fencing on the Central Research Station, Darul Aman, representing approximately 3,000 meters of fence. Over 8,000 undesirable or misplaced trees and shrubs have been removed from within stations.

- c. Nearly all equipment (farm equipment) for the Regional Experimental Stations has been either assigned, delivered or placed on order. Each station now has about 90 percent of its equipment

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complement. Storage and maintenance facilities are only about five percent complete. The training of operators and maintenance personnel is underway (see Development Services section).

2. Demonstrations

Of 797 "Wheat Demonstration Plots" planted in the fall (1966) and spring (1967) by the Ministry of Agriculture and Irrigation, 352 were put in with the cooperation of AID personnel connected with the Regional Experiment Stations.

The "Demonstration Effort" in 1967-68 was assumed by the Extension organization with only minimal assistance from research personnel. Research efforts were expanded to include "Farmer Test Plots" (research plots placed on farmers' lands so farmers could see and register impression of new varieties) During the fall of 1967 forty of these plots were put out (attempt to have one per province). Continue 1968-69.

3. Seed Production

On a space-available basis the Experiment Stations in 1966-67 grew 335 acres of improved wheat, seven acres of corn, fifteen acres of sugar beets and three acres of vegetable crops for seed. Efforts in 1967-68 continued at the same level but wheat seed production was re-oriented toward foundation seed production of improved varieties. With one exception, local wheat seed production was removed from the Station lands.

4. Research

- a. Uniform Wheat Trials - Five uniform research trials (variety 16, date of planting, method of planting, forage cutting, fertilizer) were planted in the fall of 1967 at seven Regional Experiment Stations and three sub-stations. These plantings are the first of their kind within Afghanistan. Appearance of plots indicates that they will yield first meaningful data on a national scale. To date observations indicate: (1) Date of planting is more critical factor in yield and stand than previously thought; (2) Response to fertilizer is apparent, however, the economics of application rate must be identified. It is apparent research in minor elements (sulphur, manganese, zinc, iron) must be done before true response levels can be determined. This work will

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probably be delayed until technical support of soils specialist is available.

- b. Variety Trials - Research trials and observation plots indicate possible successful utilization of top yielding Mexican varieties (about 10). Additional work and observations are under way to try to reduce number and utilize varieties performing well over a larger geographical area; this being done to ease or facilitate seed production.
- c. Varietal Observation -
- (1) 1956-57 - 459 varieties or lines evaluated at Darul Aman. Yields varied from 15.8 to 81.2 bushels per acre. Many of the exotic dwarf wheats far exceeded the yield of local varieties.
 - (2) 1957-58 - Approximately 180 lines of winter wheat and over 700 lines of spring wheat are being evaluated at Darul Aman.
 - (3) Participation with FAO rust nursery continues.
 - (4) Varietal observation trials at Kandahar, Jalalabad, Kunduz, Baghlan, Herat, and Bost were planted in the fall of 1957 (49-79 lines involved).
 - (5) 1957-58 - Breeding nursery at Darul Aman contains over 400 lines.
- d. Winter Hardiness - Trials were planted at Bamiyan and Ghazni in the fall of 1957 to measure winter hardiness factor (29 varieties at each location).
- e. Spring Wheat Variety Yield Trials - Initiated in spring of 1958-- total of 30 varieties at Darul Aman.
- f. Dryland trials - Initiated for first time in fall of 1957 at four locations (Kabul, Baysical, Mazar-i-Sharif, Herat). Trials include variety (5), rate of seeding, fertilizer rate and date of planting. This is the first year of a ten-year program. Under dryland conditions yield depends or is affected, to a very high degree, by availability and timeliness of moisture. This is the reason for long-term research.

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- g. Corn Trials - FY 67-68 results indicate major emphasis must be placed on short-season varieties or lines before further research work would be of value. FY 68-69 work will be confined to variety observations.
- h. Rice Trials - FY 67-68 results inconclusive. Indications are that variety IR-8 did not perform well because not early maturing enough. Trials to be continued at three locations (Kunduz, Bost, Jalalabad) for further evaluation.
5. Machinery -
- The rabi drills (oxen drawn) introduced from Pakistan in 1957 were given limited use for fall demonstrations. Results were moderately good and warrant further work if time and personnel can be made available. Use of drill allowed seed rate to be drastically cut, enabled quicker emergency before loss of surface moisture, however, winter kill indicates more concern for date of planting must be observed.
6. Administration and Planning
- Progress was limited because of shifting or lack of RCA personnel and staff reduction of AID research personnel. This continues to be high priority for long-term success but must wait until immediate basics are under control.
7. Training
- a. FY 67 - Three USAID/Rockefeller participants trained in Mexico in the field of "Wheat Research and Production" have returned and have been assigned as "Station Managers and Regional Research Technicians" to the Darul Aman National Research Center, Kunduz Regional Experiment Station and Herat Regional Experiment Station.
- b. FY 67 - One USAID/Rockefeller trained Corn Research Specialist in Mexico has returned and is assigned to Nangahar Regional Research Station as Corn Research Specialist.
- c. FY 68 - Participants have been selected: Practical Station Management: Three.

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D. Funding Requirements

1. U. S. Contributions (thousands of dollars)

	DH No.	\$ Amt.	Technicians				Commodities	Participants		Other Costs	
			PASA		Contract		Direct or Contract	Direct or Contract			
			No.	\$	No.	\$	\$ Amount	Number	\$ Amt.		
end yr.		end yr.		End yr.			New Ext.				
FY-68	9	269	-	-	-	15*	62	8	3	58	2
FY-69	9	236	-	-	-	15**	20	6	-	48	7
FY-70	10***	269	-	-	-	15**	10	6	-	48	5

* PIO/T - Summer Research Program, two Washington State graduates (June, July and August)

** Provision of short-term consultants with research specialties not possessed by staff members or other assistance groups.

*** FY-70 addition in direct hire technicians is position of Soils Advisor Research.

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2. RGA Contributions

During past years a fairly detailed RGA budget was available; however, this year (FY 88) the 1947 budget has not yet been finalized so the figures are not available. This year's budget for the "Wheat Program" is estimated at 298,000,000 Afghani. It can be assumed that research and station development will be adequately funded from this amount since all work connected with the wheat program received priority consideration by the RGA.

3. Contributions from Other Donors

In previous years the FAO has furnished the services of technicians on sugar beets and cotton. This is being continued and expanded in the case of cotton.

U. S. AID efforts on wheat are further supported by the Faculty of Agriculture, both the University of Wyoming and Afghan faculty.

Negotiations are underway with the FAO to develop a Special Fund Project for developing the physical facilities of Regional Research Station at Herat.

E. Termination Dates

1. Fiscal - FY 81
2. Physical - FY 81

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Project: National Agriculture Development
Activity: Crop Improvement
Sub-Activity: Extension 3060002.2
Project No: 800-11-100-002
FY: 1969 - 1970

A. Activity Targets

I. Organization

1. To improve the Afghanistan Extension Service by developing clear cut lines of authority and responsibility supported by unit functional statements and by job descriptions for all positions.
2. To establish a Pilot Extension Area in each of the existing seven Administrative Regions.
3. To establish Extension Centers at the Province and sub-Province levels.
4. To strengthen the Extension Information Section capacity to produce simple teaching aids for Extension Agents, Assistant Agents and farmers, to train Extension field personnel in their use and to disseminate information.

II. Extension Training

1. To establish formal pre-service training for Extension Agents and to establish pre-service training centers for Assistant Extension Agents in each of the seven Administrative Regions.
2. To conduct concentrated in-service training programs in each Region for all Extension personnel, pointed to increased production of wheat and other crops of importance in the area.

3. To continue participant training for supervisory level and Extension specialist personnel.

III. Crop Production

1. In coordination with Research personnel, to develop set "packages" of production practices to be recommended to farmers.
2. To establish the "package approach" through demonstration plots on the farmers' farms.
3. To promote at the village level, "Production Improvement Councils" made up of leading farmers and to involve the Councils in a system of fertilizer and seed distribution and sales to farmers;
4. To organize a farmer producing seed multiplication system.

B. Course of Action

Target I. - Organization

1. A new organizational pattern is to be developed under the direction of the President of the Research and Extension Department. It will incorporate definite lines of authority and responsibility and is to include job descriptions for all positions. We will actively pursue a coordinating effort with the Helmand-Arghandab Valley Authority to make the institutional organization of a similar nature.
2. Due to the shortage of trained staff it is planned to establish Pilot Extension Areas in each of the Regions. A general Extension effort will be carried out in each of the pilot areas which will be primarily the food crop demonstration program.
3. There is a marked tendency for Extension Agents and some Extension Supervisors to live in the larger cities where housing is available rather than in the areas where posted. A lack of transportation further diminishes effectiveness in these situations. Thus, it seems essential for the PGA to establish additional Extension Centers to provide a base of operation plus a home for the agent and his family. Each center will include an office, storage space, meeting room and a residence at the back of the compound. Centers are located at sub-governor ^{GOVERNOR} ~~GOVERNOR~~ headquarter villages where most necessary facilities are available.

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4. An Information Section at Extension National headquarters exists in name only. This Information Section was returned to the Extension Service in early 1967 after having been ineffective in another department for a period of two years. Depending on the support given by the Extension Service, the Mission will assist in reactivating this center. Regional Extension Information offices will be established to carry out a localized Extension activity in the provinces.

Target II - Extension Training

1. The shortage of trained Extension men is most acute at the Agent and Assistant Agent levels. These men are the ones who work directly with the farmers. To meet the goal of self-sufficiency in wheat for Afghanistan will necessitate the RCA establishment of Extension Training Centers at both the National and Regional levels to have an adequate staff to cope with the job ahead.
2. In-service training for all Extension personnel, in essence, is a continuous activity. AID advisors will pursue, with counterpart personnel, continuous and long-range training activities for all Extension personnel.
3. Participant training will be concentrated on training of present untrained Extension Supervisors and on management level personnel now serving, or projected to serve, at National and Regional headquarters.

Target III - Crop Production

1. The crop production program will be centered around the RCA accelerated wheat program. Package demonstrations, where known improved practices are demonstrated on the same plot, is the main introductory device. Plots are one jerib in size where improved seed, fertilizer and all recommended cultural practices will be used. These plots are on farmers' farms with the farmers doing the work under the guidance of the local Extension worker. In addition to serving as a tool to convince farmers on improved wheat production, the plot also serves as a seed multiplication device on a local basis.

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2. In order to gain full cooperation and assistance for the demonstration program and arrange for purchase of improved seeds and fertilizer at the local level, wherever possible a "Crop Improvement Council" will be established in each section of a block organization in the Pilot Extension Areas. The Government has introduced and continues to control the importation and sales of chemical fertilizer. In this area, the big two-pronged job ahead is to gain wide acceptance of fertilizer use by farmers and to develop an effective distribution-sales system through private channels that will reach every farmer.
3. The Ministry of Agriculture and Irrigation plans to continue its ongoing wheat seed multiplication program. Research stations will provide foundation seed to be distributed to leading farmers through Extension's package demonstration program. These farmers can sell the resulting crop for seed wheat to other farmers.

C. Progress to Date

1. The initial effort to develop an Agriculture Extension Service in Afghanistan was begun nine years ago. Resources for starting were nearly non-existent. There were few trained people in Agriculture and none in Extension.

Considerable progress has been achieved considering the point of departure and the problems involved. The progress achieved has been slow and it has not come without slowups and setbacks. The Agriculture Extension Service is still in its infancy in terms of a viable program, trained agents and knowledgeable effective management.

The Agriculture Extension Service is plagued with difficult situations (not uncommon in other Departments in the RGA) that must be improved in the period ahead. Low salaries, little (if any) transportation, lack of productive dedication, ineffective supervision, the absence of a purposeful national extension goal and ill-prepared personnel, characterize the growing pains that must be faced.

The Agriculture Extension Service as presently constituted has a reported 168 men, including 31 supervisors, 91 agents and 46 assistant agents. In recent years about the only function for field personnel has been to work in RGA cotton and sugar campaigns. In FY68 an attempt was made to make Extension personnel responsible for all phases of crop production. This policy is continuing in FY69. In FY68 the

Extension Service was assigned the additional duty of chemical fertilizer distribution and sales.

Since June 1966, the RGA has become increasingly interested in raising wheat production. Achievement of self-sufficiency in wheat production in the next few years will require reaching and influencing up to 200,000 farmers. The RGA looks to the Agriculture Extension Service as one of its arms that will have a major responsibility in achieving its wheat production goal.

Reorganization of the Extension Service and its relationship with other parts of the Ministry of Agriculture and Irrigation has taken place in 1958, 1959, 1963, and in 1966. Each time, definite improvement has been made and the role of Extension in agricultural production has been strengthened.

The Extension Service was established in 1958 under the Department of Extension, Publicity and Library. This Department was headed by a Director. In 1959 its status was raised to the equal of other departments in the Ministry of Agriculture, and its Director became a Director-General. In the Ministry reorganization of 1963, the Extension Service was made a separate Directorate, headed by a Director-General under the administration of the President of Agricultural Production and Extension. In the reorganization, which occurred early in 1966, research and extension were brought closer together, with the Director Generals for Agricultural Extension and for Agricultural Research placed under the President of Agricultural Research and Extension.

2. There is an acute shortage of trained extension staff at the village level. It is, therefore, necessary that a large number of young men be given special training to prepare them for the position of Assistant Extension Agents at the village level. During FY68 110 semi-literate village level workers were discharged from the Ministry of Agriculture and Irrigation to be replaced by young men with 9th grade qualifications. These young men are in training in three locations at the present time. In Jalalabad an extension training center was opened in January, 1968 with 40 students. By necessity this was an ad hoc curriculum for the purpose of trying out several methods of practical training applicable to Afghanistan. Two additional training centers are opening, at the time of writing this I-1, in Kabul and Kandahar. A total of 74 students are presently in training in these three locations.

A major extension training facility was under construction in 1965 in Udam Bagh to train 50 vocational agriculture high school graduates annually to become Extension Agents. Due to financial and other problems completion of this building has been delayed until FY69. FAO is assuming the responsibility of operating the National Training Center under their project for Extension/Credit for Afghanistan. It is anticipated this project will be in operation in early FY69.

An annual wheat production conference has been held in FY67 and FY68 with the assistance of USAID, Wyoming Team and FAO advisors to the Ministry of Agriculture and Irrigation. Attending were all Directors of Agriculture from the provinces, regional Director Generals of Agriculture, Director of Extension for the Regions and the Extension Supervisors. All the latest information available on wheat production was presented at the conference and each region and province prepared their wheat production work plan before the conference adjourned. These Directors and Supervisors returned to their respective provinces and carried out short-term training sessions for their staff on wheat production. As a result, 797 package demonstrations on wheat were planted in 1966 and 1081 like demonstrations were planted in 1967.

Participant training is a continuing activity that has a long record both at university level and in short courses. This training has prepared a small cadre of men at administrative and supervisory levels in Extension. During FY68 participants were selected for short-term training in agriculture education, extension information and extension supervision. In addition, a group of 25 leading agricultural extension men were taken to West Pakistan for a two week study tour on wheat production, with emphasis on extension program, in West Pakistan.

3. Demonstrations on wheat production were introduced in Afghanistan on a large scale in 1966. Demonstration plots of fertilizer and fertilizer responsive wheat varieties were established on the lands of 797 farmers. In each 1/4 acre plot, new wheat varieties were sown alongside a local variety. One-half of each plot received fertilizer while the other half was not fertilized. Each plot was checked periodically and a complete record was kept of its performance.

In 1967 1031 demonstration plots on wheat production were planted on 1031 farmers' farms. Each plot was 1 jerib (1/2 acre in size) using improved seed, fertilizer and all improved cultural practices in a package. Results of the 1967 planting are as yet unavailable for harvesting was not completed at the time of writing this document. However, indications are that approximately a one hundred percent increase over local wheat production will be demonstrated. An oxen drawn grain drill was introduced on several of these demonstrations and proved very successful in most areas. This was the first attempt toward mechanization of wheat production with oxen drawn equipment. Twelve demonstration drills were used in 1968. This equipment enjoyed such favorable farmer response that an order has been placed for 100 additional drills financed by the Ministry of Agriculture and Irrigation.

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D. Funding Requirements

1. U. S. Contributions (thousands of dollars)

FY	DEI	Technicians				Commodities	Participants			Other Costs
		PASA		Contract		Direct or Contract	Direct or Contract			
		No.	\$ Amt.	No.	\$ Amt.	\$ Amount	Number	\$ Amt.		
FY-68	6	126	-	-	-	30	30*	3	43	3
FY-69	7	175	-	-	6 ^{1/}	30	8	1	50	5
FY-70	7	190	-	-	3	30 ^{2/}	8	1	53	4

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* 25 of these participants on 2-week training trip to West Pakistan

1/ Three month consultant on Agriculture Information

2/ Contract advisors on Agriculture Information

2. FGA Contributions

In its Third Five Year Plan for the period March 21, 1968 to March 20, 1973, the FGA projects a buildup in Extension personnel to reach 832.

The estimated 1347 (March 21, 1968 to March 20, 1969) budget is 25,000,000 Afghanis. In addition, 184,000,000 Afghanis is budgeted for increased wheat production. A part of this will be used for the Extension Wheat Program.

3. Contributions from Other Donors

FAO, in cooperation with the Government of Sweden, is planning a \$4,000,000 pilot project in Extension, Credit and Cooperatives in two rural pilot areas backed by a central training facility to be near Kabul. The government of West Germany has a rural development project in Paktia Province that includes agriculture extension. The West Germans are cooperating in the agricultural food production goals in their project area.

E. Termination Dates

1. Fiscal Termination - FY81
2. Physical Termination - FY 82.

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Project: National Agriculture Development
Activity: Crop Improvement
Sub-Activity: Development Services (3060002.3)
Project No: 306-11-199-002
FY: 1969-1970

A. Activity Targets

- I. To promote and encourage the development of agri-business in the areas of seed production and distribution, fertilizer sales and distribution, chemical sales and distribution, and general farm production support inputs, including marketing, credit, storage, etc.
- II. To organize and operate a government seed registration and certification service.
- III. To organize a crop improvement association or similar organization to promote production of pure seed by interested farmers or agri-business minded individuals or groups.
- IV. To develop the technical and operating competency of sufficient numbers of Afghans in the area of farm machinery maintenance and operation to maximize the utilization of farm machinery for increasing agricultural production.

B. Course of Action

Target I - Provision of Production Inputs

1. Continue survey and evaluation of the potential opportunities available to agri-business to support agricultural development and increased production.
2. Promote the legislative and operational freedom and incentives necessary to encourage agri-business to assume a major role in and make a major contribution to increase agricultural production.

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3. Provide training and technical backstopping of agri-business personnel.
4. Assist in the development of groups of farmers under some kind of cooperative plan for joint marketing of produce and purchase of production inputs.
5. Assist in the development of agricultural credit.

Target II - Regulatory Role of the RCA in Seed Production

1. Establish adequate rules and standards for seed production in Afghanistan.
2. Establish seed analysis laboratory.
3. Develop a seed production regulatory agency and train the administration and inspection personnel.
4. Develop a foundation seed production program.

Target III - Seed Production and Distribution

1. Organize farmer or private program seed production through a crop improvement association or similar organization.
2. Provide technical training and backstopping to all seed producers (production, cleaning, storage, plant protection, and distribution).

Target IV - Machinery Operation and Maintenance

1. To provide assistance to the MAI, with special emphasis on the training of Afghan personnel, both government and private, in the operation, maintenance, and repair of agriculture machinery. Aid the Afghan agriculture leaders to create more familiarity with the operation and maintenance of modern agricultural machinery.
2. Advise and assist the MAI with development of plans for a Farm Machinery Training Center and with supervising the construction and equipping of the center.
3. Train and assist the Afghan teaching staff of the Farm Machinery Training Center, to consist of three (3) men at the start.

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- (1) One Counterpart. To be trained in all phases of Training Center.
 - (2) One Instructor/Translator.
 - (3) One Diesel Systems Instructor.
4. To develop a practical farm shop curriculum to cover farm shop operation, inventory control, skills in preventative maintenance, operation, maintenance and repair of farm machinery. Initial basic training classes to cover a period of six (6) months and to include ten (10) to twenty (20) trainees. Special and advanced training will be provided as trainees show proficiency, desire and aptitude in learning new skills.

C. Progress to Date

This activity was proposed in FY 67 but was not initiated until November FY 68. Progress to date, although not extensive, indicates the RGA's awareness of these activities and the contribution that they will make toward the development of agriculture. A stated goal of the RGA in the Third Five Year Plan is "Expansion of the private sector with the encouragement of quick-producing projects in agriculture and industry."

Progress is indicated by:

1. The TVA Fertilizer Team (FIO/T 336-002-2-70100) made a study of the fertilizer situation and potential for manufacturing and distributing fertilizer.
2. Under a Summer Research Project, Dr. Norman K. Whittlesey, Agricultural Economist, Washington State University, investigated the market structure for imported items. It was found that definite marketing channels exist which may be developed for the newer inputs such as fertilizer, chemicals and machinery necessary for agricultural development.
3. Distribution in FY 68, the first year for this activity, of 7,500 tons of fertilizer and 1064 tons of improved wheat seed. This is the first step toward a goal for the use of the improved seed and fertilizer on 10% of the irrigated wheat acreage by FY 72. This requirement in terms of tons will be 60,000 tons of fertilizer and 20,000 tons of improved wheat seed.
4. An experiment in distribution through the private sector as a result of the efforts of the Extension Section in the Jalalabad Area

has demonstrated the effectiveness of this system. Fertilizer and seed dealers at the village level have increased the percentage of wheat acreage planted to fertilized improved varieties from less than 1% in FY 67 to the range of 60% within a five mile radius of the point of distribution. In order to expand this operation and to develop others, serious attention to crop production credit must be given.

5. Several U. S. chemical firms will be approached (particularly those in neighboring countries) to present the marketing and distribution opportunities available in Afghanistan. Contact has already been made with the Allied Chemical Company which has under construction a large fertilizer complex in Iran.
6. There are currently no Afghans trained for a Seed Regulatory Agency. Two participants have been selected for one year intensive practical training in the U. S. Upon their return, one participant will work at the national policy level. The other will be engaged in seed laboratory operations, production techniques, cleaning, warehousing of foundation type seeds.

7. Agricultural Machinery Training Center

- a. Plans for training center complex have been completed and submitted to MAI for approval.
- b. Land site has been approved.
- c. 75% of equipment and tools ordered have been received, inventoried, and warehoused in marked bins until needed at the training center.
- d. Contact has been made with qualified personnel to fill positions in the training center. These are pending approval.
- e. Interest is developing among young men to be chosen as farm machinery trainees.

8. Agricultural Equipment Maintenance and Support

- a. Equipment Operations and Mechanic Training Program. This program consists of the training of Afghans in the operation and maintenance of demonstration farm machinery at the MAI Experiment Stations.

Training in progress:

1. Four Crawler Tractor operators (TD9) trained in the use of bulldozer, landplane and scraper--training 40% complete.

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D. Funding Requirements (continued)

2. RGA Contributions

A specific amount of Afghans to be contributed to the activities making up this sub-project are not available at the time of this submission. The RGA does recognize the extreme importance of supplying or making available the production inputs to the farmer to make it possible for the farmer to secure greater production. This has been noted in the RGA "Third Five-Year Plan" for the period of March 31, 1967 to March 30, 1972. The "Plan" budget for wheat production is not well defined as per expenditure for specifics. Funds for RGA procured fertilizer and government production of seed have been considered. This is only a small portion of the ultimate total requirement. The lack of knowledge of total requirements, lack of a plan to provide the inputs and ways to accomplish this by the RGA is the basis for U. S. assistance in this vital agricultural/Agri-business sector.

It can be anticipated that sufficient funds will be allocated to these activities from the "wheat production" budget and the National budget once the base for total requirements are established.

3. Other Donors' Contribution

The RGA recognizes its inability at the present to fully meet the financial requirements necessary for supplying the production inputs. It has taken steps to secure loan assistance from the U. S. S. R. in constructing a urea fertilizer plant at Mazar-i-Sharif. The estimated completion time being about 1971.

E. Termination Date

1. Fiscal Termination FY-81
2. Physical Termination FY-81

Project: National Agriculture Development
Activity: Surface Water Research (3060002.4)
Project No: 306-11-193-303
Date: 1969-1071

A. Activity Target

The primary target of this sub-project is to increase agricultural production by helping the RCA establish an effective organization for the collection and interpretation of the water data necessary for the rational design and operation of irrigation systems. To accomplish this, it will be necessary for Afghanistan to (1) have an organization capable of collecting and interpreting water data, (2) build a gaging station network to furnish the needed data, (3) train personnel in the techniques required to operate the organization and network, and (4) have the scientific instruments and accessories needed to obtain the data.

In addition to the above, reconnaissance sedimentation studies of Kajakai and Arghandab Reservoirs reveal that extensive silting has occurred in both reservoirs. The loss of storage due to these sediment deposits can greatly affect the planning and operation of the proposed hydropower installation at Kajakai Reservoir, the availability of water to irrigate the Helmand and Arghandab Valleys, and the planning of future developments - both agricultural and industrial - in the downstream areas. Detailed sedimentation studies are proposed for these reservoirs in FY 69 and FY 70.

B. Course of Action

The general course of action is outlined in a report prepared in June 1966 by the project advisors. This report summarizes the work that had been done up to that time and makes recommendations for accomplishing the project targets enumerated above.

Project target (2) needed more specific detailing to forestall possible problems arising in the fields of transportation, personnel, logistics, and funding and a memorandum of understanding covering these points

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was agreed to by the Ministry of Agriculture and Irrigation (MAI) and USAID/A on May 4, 1956. This memorandum is included in its entirety in the FY 57 E-1 and ProAg and by reference in the FY-68 E-1 and ProAg.

Because of the unforeseen complexity of preliminary surveys the sediment studies of the reservoirs will probably have to be delayed until the fall and winter of 1959. Additional funding will be required for two specialists for a 120-day TDY and the probable extension of one technician presently on post for an additional year. All three technicians will be supplied by the USGS on a PASA agreement. Additional funding will also be needed for highly specialized commodities required for the reservoir surveys.

C. Progress to Date

When the project was initiated in 1952 the target was to establish and operate climatological, river, and reservoir gaging stations for water management in the Helmand Valley. Because of the increasing demand for water data on a national basis, the project was expanded in 1954 to provide assistance to the MAI on a national scale. Project activities were aimed primarily at assisting the Water and Soil Survey Department (WSSD) of the MAI to prepare a comprehensive plan for a national gaging station network and a central organization to operate and interpret the data obtained. The plan was completed in June 1956 and present activities are directed toward the fulfillment of this plan as well as continuing the work in progress before that time.

Project activities are channeled through the WSSD. This department is the central agency envisioned under project target (1) and is responsible for the collection, interpretation, and publication of data concerning the water resources of Afghanistan. Under the program existing prior to 1956 it became evident that the WSSD would not be in a position to accomplish the project target and to assume full operation and funding by the phase-out date of 1958. Rather than extend the program an unreasonable length of time or phase-out before the WSSD was ready to carry on by itself, the activities of both USAID and WSSD were expanded with additional funding and technical support to build and equip about 85 additional gaging stations and to train about 30 additional Afghan technicians in the operation and maintenance of these stations. The physical phase-out date was extended to FY-59.

Progress has been generally satisfactory and improved in the last fiscal year although project targets (1) and (3) have been hampered by the inertia of the MAI in furnishing the required personnel to adequately

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staff the organization. At the end of FY-67 project target (2) was approximately 30 percent behind schedule but during the last construction season this deficit was reduced to about 10 percent. The non-arrival of project commodities also hampered project targets (1) and (3) during FY-67 and FY-68 but most of the urgently needed items are now on post.

The following table shows the construction work (target 2) that has been completed during FY-67 and FY-68:

<u>Field</u>	<u>FY-67</u>	<u>FY-68</u>	<u>Total</u>
Gage wells installed	46	20	66
Cableways installed	1	6	7
Concrete cable anchors	48	37	85
Bedrock cable anchors	14	15	29
<u>Shop Fabrication:</u>			
Cleanout and inspection door sets	46	20	66
Cable cars	30	21	51
Column supports, cable	0	66	66
A-frame Supports, cable	1	0	1
<u>Existing Stations:</u>			
Major rehabilitation	4	4	8
Relocation	0	5	5

Because of their location in either physically inaccessible or sensitive areas, 19 of the recommended stations out of the target total of 85 could not be built. In their place, 13 existing stations in need of major repairs were either rehabilitated or relocated. The six remaining stations, all located in sensitive areas, will be built by Afghan crews using non-locally available USAID-furnished commodities and instruments. These figures are included in the table above.

In addition to the work shown above the following was accomplished in FY-68:

1. Field reconnaissance of about 30 stations to determine design properties of cableways.
2. Field reconnaissance and establishment of 38 sediment data collection stations.

3. Establishment of a sediment laboratory for the analysis of total sediment content and particle size.
4. Completion and publication of training manual Number 2, "Computation of Basic Streamflow Records."
5. Start of formal training course in office interpretation of basic streamflow data.
6. Continuation of routine work at previously established gaging stations.
7. Continued training of counterparts in construction methods and procedures and basic streamgaging.
8. Reconnaissance surveys of sedimentation in Kajakai and Arghandab Reservoirs.

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6D. Funding Requirements

1. U. S. Contributions (thousands of dollars)

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FY	DH	Technicians				Commodities		Participants			
		PASA		Contract		Direct or Contract		Direct or Contract		Other Costs	
		No. end yr.	\$ Amt.	No. end yr.	\$ Amt.	No. end yr.	\$ Amt.	\$ Amount	Number New Ext.		\$ Amt.
FY-68	-	-	4	99*	-	-	5	2	3	24	-
FY-69	-	-	1	73*	-	-	10**	2	2	42	-
FY-70	-	-	1	51*	-	-	-	2	2	33	-

* PASA overhead figured into PASA Technician Costs

FY-68 \$21,125

FY-69 \$23,631

FY-70 \$15,723

** Determination of total commodity requirements will depend on findings and program development of sedimentation studies.

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2. RGA Contribution (Afghanis)

<u>Afghan Year</u>	<u>Operating</u>	<u>Development</u>	<u>Total</u>
1347	8,000,000	-	8,000,000
1348	8,000,000	-	8,000,000
1349	<u>8,000,000</u>	-	<u>8,000,000</u>
	24,000,000		24,000,000

3. Other Donors' Contributions

The UN Special Fund has a \$2,095,320 program of ground water hydrology.

A previous UN Special Fund program worked on the Hari Rud drainage in 1961-63 and established nine gaging stations and eleven rain gages. The reading of these is presently done by the U.S. assisted group.

The Federal Republic of Germany has a five-man geodetic and hydrology team working in the Pakhtia Province and on the Kabul and Kunduz River drainage on collection of runoff data.

The USSR has a limited number of gaging stations on the Oxus River drainage.

E. Termination dates

1. Physical termination - FY-70
2. Fiscal termination - FY-72

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