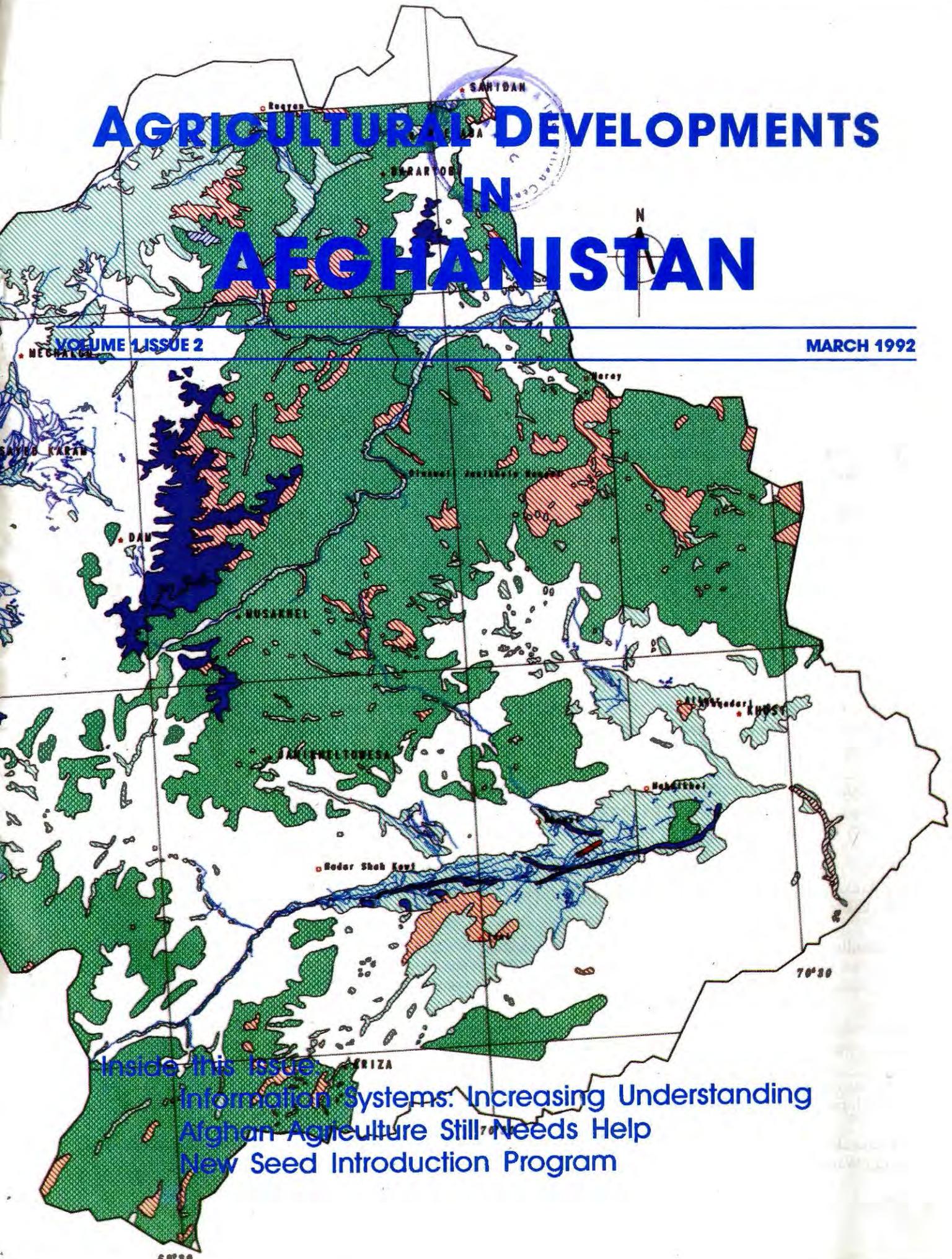


AGRICULTURAL DEVELOPMENTS IN AFGHANISTAN

VOLUME 1 ISSUE 2

MARCH 1992



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- Afghan Agriculture Still Needs Help
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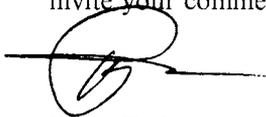
This issue's lead article represents our first attempt to explain the **geographic information system** that ASSP has been developing over the past two and half years. We have attempted to convey an understanding of what it is intended to do, provide in the broadest possible terms an explanation of what makes it work, and illustrate some of the insights into Afghan agriculture made possible by our information management capabilities. Future stories will help unravel the mystery of how the GIS operates and keep readers up to date on new information as it is collected and processed.

Our ADT staff have been hard at work this winter planning for the spring planting season. The results of their labor are about to come to fruition. The activities of our seed introduction program are detailed in this issue, including efforts now underway to get new varieties of maize, wheat, rice and potato into Afghanistan.

Also in time for spring, several publications in Dari have been prepared. Pesticides are the subject of two manuals, one translated from the English for training purposes and the other, developed by our staff, to accompany the backpack sprayers being provided to orchard owners to ensure safe and effective use of these chemicals. The other manuals, also prepared by our ADT staff, address cultivation of corn and potato. These publications are described along with information for obtaining copies.

This month's guest column is written by Dr. Azam Gul, Director of the Agriculture Department of the Swedish Committee for Afghanistan. Concerned about the food needs for refugees returning to Afghanistan, he presents targets for increased agricultural production and a strategy for reaching these targets in the shortest possible time given certain resource constraints.

We received constructive comments from our readers on our first issue of the newsletter. We continue to invite your comments and suggestions.



Miles Toder
Deputy Chief of Party

Cover: This current landcover map of Pakia Province, Afghanistan, was created using satellite data superimposed on location of agricultural lands, population centers and sources of water.

The Afghanistan Agriculture Sector Support Project/Private Sector Agribusiness (ASSP/PSA) is a development assistance program implemented by Development Alternatives, Inc. and funded by the Office of the United States Agency for International Development, Representative for Afghanistan.

ASSP/PSA focuses its efforts in two areas of Afghan agricultural development. It provides technical training for farmers in Afghanistan to increase food production and it gathers, analyzes and disseminates information about agricultural markets and production.

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Reproduction of the contents is permitted with an acknowledgement of the source. Comments are solicited and encouraged from donor and implementing organizations concerned with agricultural development in Afghanistan.

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INFORMATION SYSTEMS:

Increasing Understanding of Afghan Agriculture

The heart of ASSP's Program Planning and Analysis (PPA) component is a **geographic information system** (GIS) which (1) collects data on agricultural conditions in specific places inside Afghanistan, (2) allows the data to be organized and manipulated for purposes of discovering trends and relationships, and (3) enables the resulting information to be presented and shared with others interested in the problems and opportunities for change and improvement in Afghan agriculture.

PPA's information system has evolved over a two and one half year period. It involves:

- trained personnel and supervisors who, in consultation with decision makers, determine information requirements and then collect and analyze the data.
- a variety of sources that provide data, such as: travelers, merchants, knowledgeable informants, agricultural extension agents resident inside Afghanistan and orbiting satellites.
- sophisticated computer hardware and software which help to make sense of the data that are collected.

The system is intended to provide better information upon which to base decisions of a policy or programming nature.

Determining Information Requirements

The types of decisions that need to be made provide

the framework for organizing the information system and establishing its capabilities. PPA is a project designed to increase the capability of Afghan agriculture to meet the food requirements of the present and likely future population following refugee repatriation. PPA's information needs are fairly straightforward. It is essential to know the *population* of each area, the *amount of land* under cultivation, the *types of crops* grown in the area, and the *quantities* produced.

Several types of information must be collected. The amounts of land cultivated under irrigated and rainfed conditions in each area must be measured. The proportion of land dedicated to food and fodder crops must be determined. The condition of irrigation systems, the farmers' access to and use of modern inputs such as fertilizers and improved seed varieties, effects of the weather and the personal security of farm workers are among the important influences on levels of agricultural production. Information about the movement of food from areas producing a surplus to those unable to provide for their own needs is of interest to us as it suggests the extent to which trade can be depended upon to match food supply with demand.

The Art of Data Gathering

Identifying the information needed is an important first step, but it is just the beginning. Developing a systematic approach for gathering this information in Afghanistan and interpreting the data being collected can be complex and challenging.

Changes as detected by satellite imagery between 1990 and 1991 in land under irrigated agriculture in a section of the Helmand Valley. Gains are in green and losses are in blue.



INFORMATION SYSTEMS continued . . .

The effects of the Afghan war are known to have altered much of the agriculture and uprooted a significant portion of the population. The magnitude of changes induced by the war and continuing hostilities make it difficult to employ many conventional methods for answering questions about agricultural production.

Much of the data from pre-war Afghanistan represents little more than historical artifact. Notwithstanding questions of the reliability of this information, many of our procedures for estimating the present condition of Afghan agriculture incorporate these pre-war "statistics" as a starting point. Part of the reason for doing this is that sampling techniques are difficult to follow rigorously under current circumstances.

Available literature offers very little of relevance concerning the difficulties of survey and measurement under conditions encountered by field workers in Afghan agricultural development. For this reason, DAI's information system staff, with assistance from advisors and subcontractors, have developed their own methods for approximating the information required.

Using historical data as a point of departure, DAI juxtaposes recent satellite data about physical phenomena that can be detected from space, information gathered through formal surveys on the ground, and attempts to complete the triangulation by using the abundant, but often unverified anecdotal accounts filtering back from Afghanistan. DAI's own data gathering capabilities are supplemented by information obtained from other projects and donor agencies which work in agriculture or roads, irrigation and social services.

Development of these methods has been evolutionary in nature. By working closely with the Office of the AID Representative for Afghanistan and other donors, DAI has been able to refine the accuracy and acceptability of the information.

Better Understandings

Analyses based upon the PPA information system have proven useful in several important ways:

- **Food needs analysis:** Prices of essential commodities such as wheat are monitored by province and used as early warning indicators of impending food shortages.
- **Food production projections:** An updated assessment of the amount of land under cultivation nationwide as well as in specific locations combines the information received from satellite images with on-the-ground surveys and leads to estimates of agricultural production.
- **City and village names:** A common lexicon of names of Afghan villages and cities along with their locations is being developed to improve coordination and communication among donor funded assistance programs.
- **Commodity pricing and marketing:** Prices of agricultural inputs, notably fertilizer, are being tracked over time and by location to determine distribution strategies and pricing guidelines for commercial sales.
- **Irrigation systems assessment:** Changes in irrigated cropland in the important Helmand/Arghandab Valley have been identified along with likely failures in irrigation/drainage systems that may have contributed to these declines.
- **Wheat availability forecasting:** Population and food production for 1992 have been factored into the first study of wheat availability to determine food deficit and surplus production areas.

These analyses, new uses for the data already collected, and new ways to employ the capabilities of our geographic information system will be reported in coming issues of **Agricultural Developments in Afghanistan**.

A New Kind of Compass

Compasses are handy gadgets. If you know approximately where you are, compasses can usually point you in the right direction and avert the troublesome problem of becoming lost. But, if you're surveying a farmer's field outside a village in Afghanistan and you need to know exactly where you are, a compass is not very helpful.

What is needed is something more sophisticated like a handheld navigational device called a global positioning system (GPS) that uses satellites to tell surveyors precisely where they are.

The ASSP/PSA project uses one such device called the Magellan GPS NAV 1000 Pro., a multi-channel receiver that utilizes four navigation satellites to give surveyors a three dimensional fix on their location – longitude, latitude and altitude. The GPS displays the user's location on a liquid-crystal screen and can update the information on a second-by-second basis. The unit is accurate to within 50 meters.

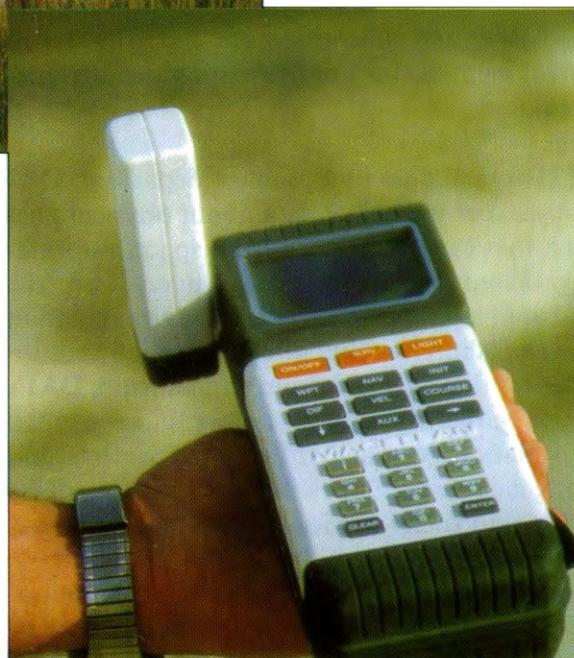
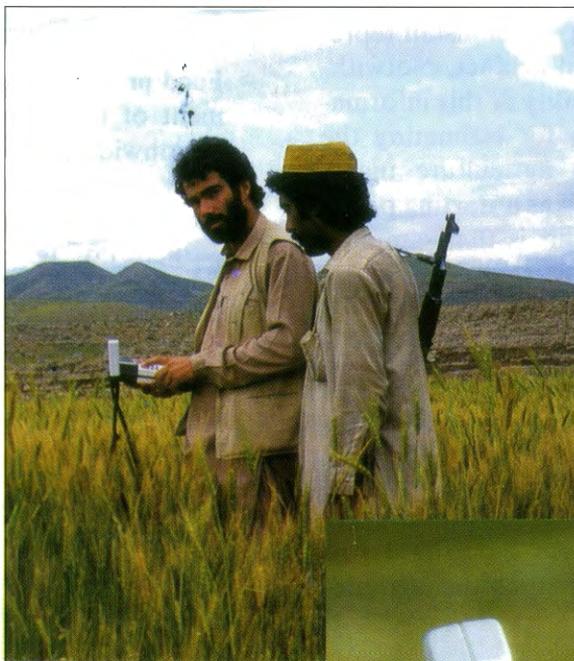
The Programming, Planning and Analysis (PPA) component of ASSP/PSA utilizes this instrument as part of its extensive, geographically-based, data collection program.

When data obtained from satellite imagery are combined with information collected by survey teams, with precise reference to particular locations, agricultural potential can be examined in various ways.

Planning is facilitated when the location of

supporting services and infrastructure including bazaars, storage facilities, irrigation systems, farm to market roads etc. can be examined simultaneously with natural phenomena such as soils, topography and climatic data.

The GPS can also be used as a sophisticated compass. Surveyors can store their starting positions in Magellan's memory along with up to 100 "way points". When a user is ready to head home, the unit will display a compass direction to point the way, tell how fast they are going, how far off course they are and how long it will take to reach their destinations.



Using GPS in the field and a close-up

New Seed Introduction Program

Since the beginning of the war in Afghanistan 13 years ago there have been few government sponsored agricultural activities in that country. The government agencies which were responsible for agricultural research, extension services and teaching have either changed direction or ceased to exist. The state of the art of agriculture has deteriorated badly.

One of the most important elements in successful agricultural production is good seed. Without it the potentials of labor, irrigation and fertilizers cannot be realized. When the government (public sector) ceased to function, the sources for improved seed also disappeared. Existing seed varieties lost their disease resistance long ago and are no longer desirable even when and where available.

Many of the Afghan relief and development agencies, including O/AID/REP, have recognized this shortcoming and have included in their assistance programs the provision of new, improved seed.

The first task in the introduction of new varieties of seeds is to run tests on a small scale before making widespread distribution. Ideally, those tests would be made in the country to receive the seed. Running



Harvesting wheat in Kandahar

trials in Afghanistan can be difficult because of problems of security, access and proper supervision. The task has, in this instance, been simplified by the finding that many of the improved varieties tested in Pakistan are also suitable for Afghanistan.

The second task in the introduction of new seed varieties is their multiplication for widespread distribution. DAI selects Afghan farmers to grow improved varieties of seed which have been proved appropriate for growth in Afghanistan. The farmers are then encouraged to trade or sell the seed to increase production in their communities.

DAI, and other non-government agencies, also import seed and closely monitor seed multiplication on experimental plots in Pakistan. Access, control and evaluation are understandably easier here than in Afghanistan, but quantities produced are usually small.

Multiplication of seed is also accomplished by having Pakistani growers produce seed for demonstration and distribution in Afghanistan.

Specifically, DAI staff are at this time demonstrating and multiplying *Basmati 385* rice in the provinces of Baghlan and Nangarhar. *Pirsabak 85*, a winter wheat variety, is recommended for similar demonstrations and multiplication in Kandahar, Helmand and Nangarhar.

Winter wheat being introduced in the higher elevation provinces of Logar, Wardak, Ghazni and Paktika is *Atay 85*. Observations are planned to evaluate the early spring planting of *Pak 81* and *Pirsabak 85* also in these areas.

This year, for the first time, an improved potato variety called *Diamant* will be tried in small plots in six provinces.

Open pollinated varieties of maize from Mexico and Pakistan are currently being demonstrated by DAI staff in eight or nine provinces for possible early production in Afghanistan.

Afghan Agriculture Still Needs Help

Dr. Azam Gul

In this month's guest column Dr. Azam Gul, director of the Agriculture Department of the Swedish Committee for Afghanistan and a leading authority on Afghan agriculture, argues that development assistance should be targeted especially towards agriculture with an overall goal of making Afghanistan self-sufficient in food.

Afghanistan is a country which has suffered much devastation and destruction in the past decade. Its future can only improve. Like a young child, the first step in its improvement will come when it is able to feed itself. Any efforts toward rehabilitation must begin with agriculture.

Afghanistan can very quickly become self-sufficient in food again. It can feed its entire population, including the refugees who will eventually return, but it will take a stronger commitment on the part of the donor community to make this happen.

Donor assistance to Afghan farmers over the past few years has been generous and much appreciated. Now is the time to capitalize on that investment and make it come to fruition. A concerted drive to expand agricultural assistance is needed to push the country back onto its own two feet.

A Goal to Double Agricultural Production

I would like to propose that funds for a substantial agricultural assistance package be properly targeted toward the goal of doubling the output of land currently under cultivation in Afghanistan.

If the goal of increasing the production of wheat by two-fold were obtained, not only would there be enough food for everyone to eat but a surplus would exist. Grain storage would actually become a logistical concern. A more flourishing market system would develop. Eventually, through reinvestment, the need for outside food assistance would end.

How realistic a goal is this? In fact, I believe it's a very feasible target. But, before I examine how it can be achieved, let me begin by explaining why it is needed.

I'll start by first giving some background on Afghan agriculture, especially the conditions that existed in the country before the recent conflict began.

Afghanistan is primarily a rural, agrarian society. The population in 1978 was 15.2 million people, 80 per cent of whom lived outside urban areas. The total available land for agriculture in the country was about 0.53 hectares per person. Because of the shortage of water, only about half of that (0.26 hectares per person) was used to meet the food, feed, fiber and partial fuel needs of the population.

Wheat is by far the most important crop in Afghanistan, having almost 5 times the average area and 3.5 times the production of the next most important crop, maize. The total per capita consumption of wheat by Afghans is one of the highest in the world (about 180 kg per year) and provides nearly 80 percent of their caloric intake.

Because of its traditional agricultural practices, Afghanistan was a grain importing country for many years. Production methods are based on the wooden plow and sickle. Soils in arid or semi-arid areas have been used for agriculture. They are high in calcium and low in nitrogen, organic matter and available phosphorus. Soil depleting crops such as wheat, barley, rice and maize have been grown on these soils for a long time without the addition of fertilizers, chemical or organic. Most of the animal manure has a higher priority use as fuel and very little has been applied to the soil. Even wheat stubble is burned for fuel in many places.

In the years following the importation of the first improved wheat seed from the International Maize

and Wheat Improvement Center (CIMMYT) in 1964, a significant shift took place in agricultural production. The farmers' quick acceptance of new seed varieties led to a dramatic drop in wheat imports.

Between 1964 and 1973, the average yearly import of wheat was about 115,450 tons. This amount dropped to 25,300 tons in 1974, 5,000 tons the next year and 2,500 tons in 1976 and 1977. Wheat imports for these last three years were mainly for seeding purposes. The indications were that by 1974-75 Afghanistan had become self-sufficient in wheat production.

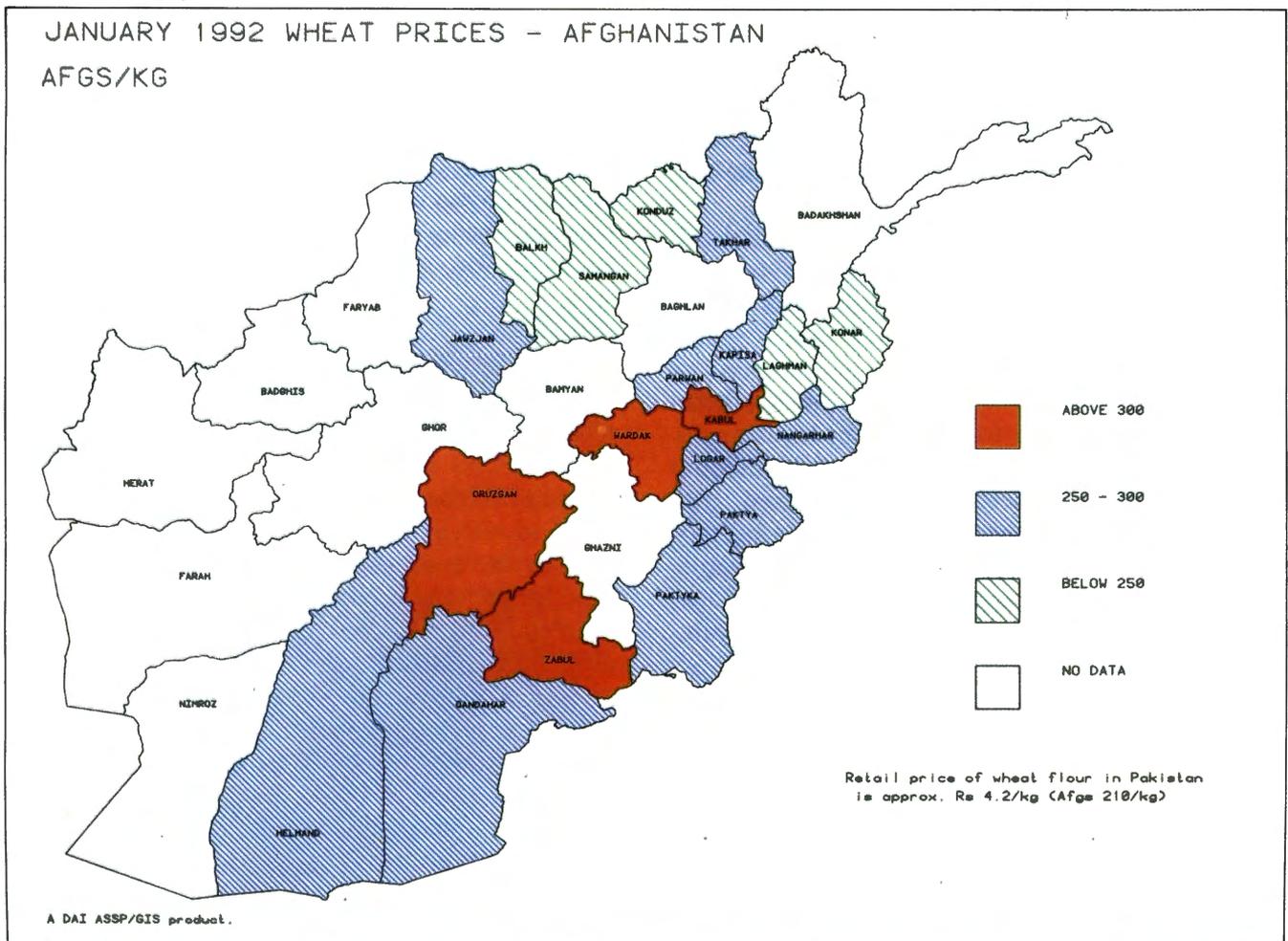
The jump in growth of wheat production in Afghanistan reflected similar changes in cereal production happening throughout the developing world. Of all the cereals, wheat has seen the largest increase. From 1948 to 1986, wheat yields in the developing world grew at the surprising rate of 4.3% a year,

quadrupling harvests from 50 million to 200 million tons. It is even more significant to mention that the boosting of crop yields has come largely from increases in production per unit area rather than expansion in the area of production.

Before the war only about 30% of the wheat area in Afghanistan was planted with improved seeds. The average wheat yields for the country grew from 832 kg per hectare in 1963-64 to 1,131 kg per hectare in 1977-78. This growth rate was quite small compared to that in the rest of the developing world. It was about 85% lower than the annual growth rate in Pakistan, for example. However, keep in mind the fact that, while this increase was meager, Afghanistan had still been able to attain self-sufficiency; it was feeding itself.

The Present Situation

In 1987, a survey was conducted by the Swedish



Afghan Agriculture continued . . .

Committee for Afghanistan (SCA) based in Peshawar, Pakistan. Interviews were conducted with more than 11,000 heads of farm family households spread throughout all the provinces of Afghanistan and in the refugee camps.

The yield figures given by farmers showed a substantial decline in wheat production between 1978 and 1987: 33% for irrigated wheat and 50% for dry land wheat. Total agricultural production in 1987 fell to about 53% of its 1978 level.

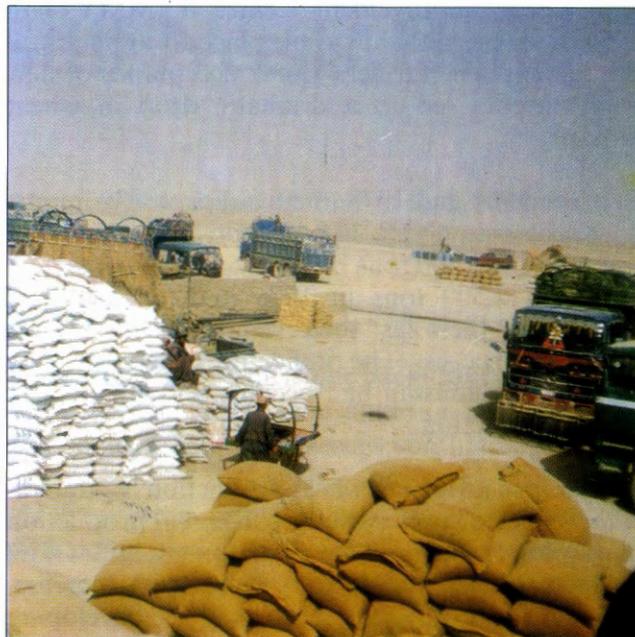
The reasons for this decline, apart from the direct effects of the war, appeared to be caused by:

- A reduction of about 30% in the area cultivated by individual farmers.
- A decrease in family and hired labor of about 32% and 24% respectively.
- A 40% loss of draft oxen.
- A decline in the proportion of farmers using fertilizers from 76% to 53% for urea and from 57% to 33% for diammonium phosphate (DAP).
- Destruction of about 30% of the irrigation systems.
- A deterioration in the genetic potential of seeds.
- Increased damage caused by weeds, insects, diseases, rats and birds.

In a further survey conducted in the northern provinces, the damage to crops from locusts and sunn pest infestation affected about a half million hectares of land. The destruction varied from 10% to 100% depending upon the extent of the infestation in different areas. More than 350,000 people were living below subsistence level because of the plague. Hardest hit were people in Badghis, Faryab, Badakhshan and Samangan provinces.

The Future

The biggest challenge for Afghanistan is how to make the country self-sufficient in the fastest possible time. Demands for agricultural products will remain high for many years to come.



Wheat and DAP central storage area

At present, Afghan farmers are producing about 53% of the pre-war harvest levels. That's about enough food to feed eight million people or two thirds of the twelve million people now living inside Afghanistan. To make up for the shortfall in production, we estimate 300,000 to 350,000 tons of wheat are being imported annually from the former Soviet Union and about 150,000 tons from Pakistan.

A Nine Million Shortfall

If there is a political settlement soon and five million Afghans who are now refugees in other countries return to Afghanistan, the resident population will swell to more than 17 million. At the current production levels, Afghanistan will be deficient in food for about nine million people. That is a critical problem, with the shortage of food intensified by the difficulties of distribution.

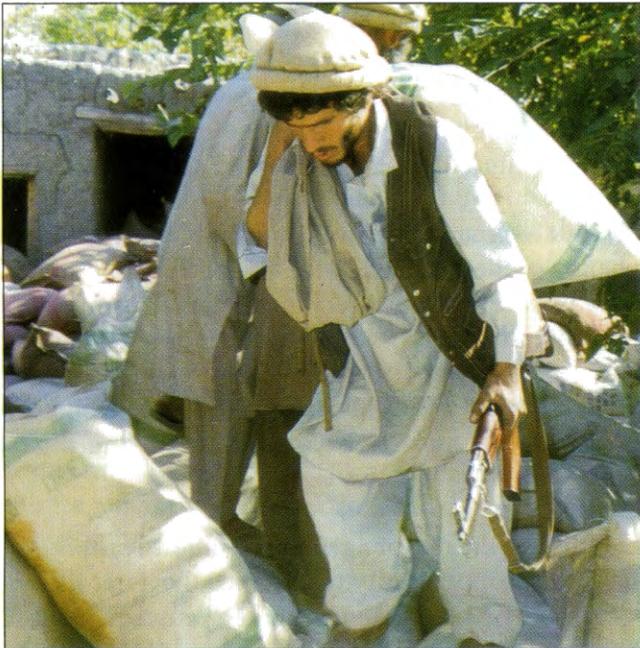
There are two ways in which production can be increased. One way is to bring more land under cultivation. I'm referring not to land that was previously under cultivation, but to new acreage. That requires a substantial period of time and large amounts of investment capital which the country cannot afford.

The second alternative is to raise production per unit area. This option provides a wide scope of opportunities for quick growth in wheat cultivation. Increasing the existing yields will also require the development and extensive use of certain improved appropriate, innovative and adaptable technologies within the farming communities.

The most important agricultural input to accomplish this task is the development and use of improved seed. The benefit of using other inputs cannot be realized unless the seed that is used has the genetic capacity for making use of them.

The improved wheat varieties once grown by the Afghan farmers have degenerated. They have become susceptible to diseases, have lost their high yield potentials and, in some cases, have even lost their identity. They should have been replaced by new, improved seeds many years back.

Among the varieties that we have recommended be sent into Afghanistan at the moment, we are getting 6 to 7 tons per hectare in experimental plots. When the same varieties, with some guidance and the appropriate kinds of fertilizer, are given to farmers inside Afghanistan, production is about 3½ to 5 tons per hectare.



Moving fertilizer closer to the fields.

Today the average yield for irrigated wheat is only about 1150 kilograms per hectare. Obviously, there is a big gap between the yields of the average farmer and those who are using improved seed.

Doubling Pre-War Production Will Feed 30 Million

I believe a realistic goal of raising the current output of farmers from 1150 kg to 2300 kg per hectare is attainable. This amount is well below the yields of 3½ to 5 tons per hectare that assisted farmers are currently harvesting. However, if farmers' production could be just doubled on the same amount of land that was cultivated before the war, as many as 30 million people could be fed.

During the last three years thousands of tons of improved wheat seed and maize have been distributed to Afghan farmers. While this assistance has benefited a limited number of farmers, the practice cannot continue forever because of budget constraints, limited availability of seed in Pakistan, high transport costs, etc. **Production of high quality seed must be shifted from Pakistan into Afghanistan.** There it can be reproduced on a large scale and tested in the field before it is distributed to the farmer.

Other existing problems for Afghan agriculture should also be included in rehabilitation plans. The availability and proper use of fertilizer is a chronic problem for the farmers. (See page 11, February 1992 edition of this newsletter).

Improved crop varieties cannot be fully utilized unless they receive the proper kinds and amounts of fertilizers. Analyses of world cereal production shows that the gain in yields can be quite dramatic. **For every additional kg of fertilizer applied to the cereal crops in developing countries in the past two decades, the yield has increased by a ratio of about 8 to 1.** Any type of assistance package which increases the availability and affordability of fertilizer will be welcomed.

Increased farm power is also badly needed for

Afghan Agriculture continued . . .

agricultural development. Before the war, about 90% of the farmers were using oxen for land cultivation, 8.5% used tractors. Our survey shows that about 250,000 pairs of oxen would be needed to make up the shortfall that now exists. Achieving this number by a natural increase would take 17 years at a 3% growth rate.

The logistics of importing a large number of animals from Iran or Pakistan are prohibitively difficult and may not be feasible. More emphasis should be placed on the use of tractors, especially in provinces where tractors had been used during the pre-war period. Animals should mostly be considered for areas where farms are small, have steep slopes or are terraced. The use of stationary threshers should also be encouraged.

Natural crop enemies are becoming a serious threat to certain harvests in different parts of the country. Weeds and rodents in various regions; mildew in grapes and certain other crops; locust and sunn pest

in the northern provinces; and cutworms, borers, aphids and many other insects almost all over the country are damaging crops and reducing their yields.

Agro-chemicals are probably the most hazardous commodities on the farms and their unnecessary use must be avoided as much as possible. Certain pesticides and herbicides should be introduced into the country for specific purposes and should be available only to people who have received proper training in their safe usage.

The reconstruction of the irrigation systems in Afghanistan must proceed. While much work has been completed on the canals, wells and karez systems in the country, there is more to do. Over 30% of these water delivery systems have had some sort of destruction. Since almost all the important crops in the country are grown under irrigation, repair of these systems must continue to be a high priority.

Emphasis should be placed on training qualified extension workers and increasing farmers' knowledge. Extension agents can establish links with farmers and spread the knowledge of adaptable technologies. They can also relay valuable information to researchers about any problems encountered with new agricultural products and techniques.

Surveys have shown that farmers' knowledge of the wheat varieties planted in their fields is very limited. They must be taught the importance of using both quality seed and the associated technology that goes with it. Farmers will utilize their resources more efficiently only if they have ready access to technical information which is becoming increasingly site specific.

I would like the donor agencies to take advantage of the present opportunity to enhance the agricultural potential of Afghanistan while the refugees are still outside of the country. **Every hectare of land that we improve now will proportionately ease the problems of repatriation and diminish the intense demands of the future.**

Data Dictionary Being Prepared

Since its inception ASSP has collected from various sources over 220 megabytes of data. This includes data from eight surveys, monthly reports of commodity prices, transport and currency exchange rates, interpreted satellite data on landcover, and digitized information on roads irrigation structures, water sources, village and city names and administrative boundaries and contours showing elevation. The volume of data is expected to grow substantially.

With the assistance of Earthsat, a DAI subcontractor, data collection from satellite imagery continues. ASSP will shortly have both the raw data and the capability to process and interpret it in Islamabad. Other projects are providing data on roads, education and health care facilities, irrigation structures, agricultural activities and population. The combined data will enable ASSP to provide an up-to-date and complete picture of conditions inside Afghanistan.

*To organize this massive amount of information, ASSP will soon publish a **Data Dictionary** which will provide an index to available information. It will describe sources, methods of collection, dates and places covered, types of data, file structure, options for reporting and displaying data, as well as where in the system the data may be found.*

*When completed, the **Data Dictionary** will be distributed free of charge to all organizations involved in Afghan relief and development. Requests for copies should be sent to: Director of Publications, DAI, ASSP/PSA, P.O. Box 2721, Islamabad, Pakistan.*

Publications Now Available in Dari

For agriculture the repercussions of the war in Afghanistan have been many. Like other victims of the conflict, education has suffered tremendously. Little contact has been maintained between the farmer in the field, the agricultural schools and research stations. Agricultural publications and the extension workers to disseminate and explain important new information have been practically non-existent.

The Agricultural Development Training (ADT) component of ASSP/PSA is in the process of developing a series of publications about a variety of food crops. It is intended that these new materials, written in Dari with simple messages and many illustrations, will be used by the project's extension workers to provide farmers with information which will help to improve crop yields.

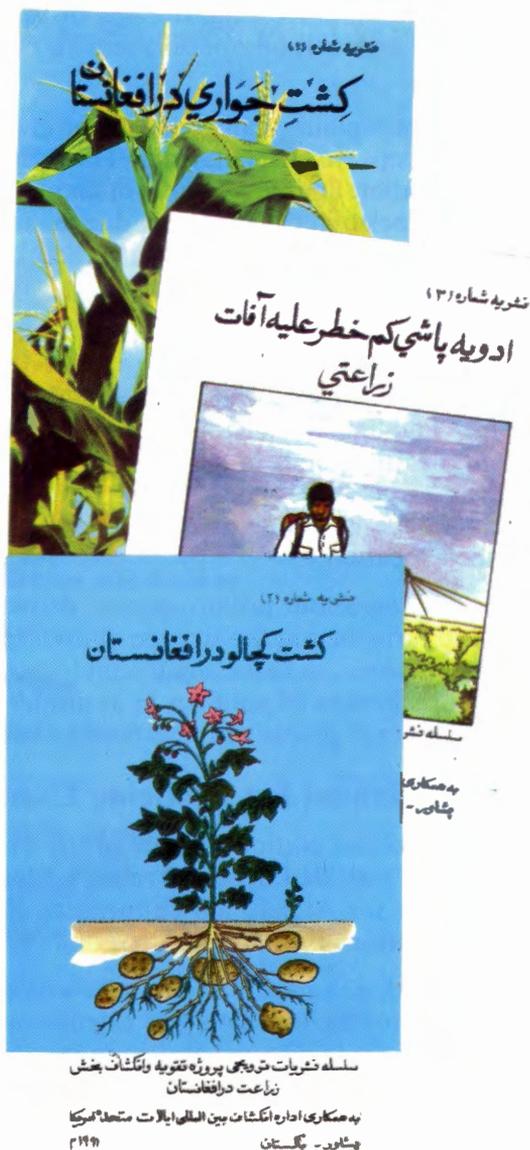
Because wheat, maize and potato are the three main food crops in Afghanistan, pamphlets have been developed on them first. The pamphlets on maize and potato have been published. **Growing Corn in Afghanistan** and **Growing Potatoes in Afghanistan** may be ordered from the list of ADT publications found on page 13. The pamphlet on wheat, a revision and expansion of work earlier prepared by the Swedish Committee for Afghanistan, will be available shortly.

Maize Pamphlet

The illustrated 25 page pamphlet on maize provides useful information on proper agricultural practices including soil types, land preparation, methods of planting, seeding rates, times of planting, fertilizer application, irrigation, cultivation, weed control, thinning and crop rotation.

It discusses how to harvest and store grain and gives facts on important corn diseases and insects such as corn smut, cutworm, corn borer and their control measures.

The section on methods of planting for example, emphasizes the importance of row planting. By providing farmers with specific information on



techniques of row planting, it explains some of the advantages in using this system.

The pamphlet encourages the use of crop rotation to maximize yields by making the best use of soil nutrients and moisture while reducing insect and disease problems.

Potato Pamphlet

The similarly designed pamphlet on potato production discusses: land preparation; the method, depth and time of planting; weed control; fertilizer application; irrigation; harvesting; storage; diseases and their control; and methods for selecting the best seed potatoes.

The pamphlet explains many reasons for low yields in potato crops in Afghanistan. These include: shortage of labor; limited amounts of good, healthy potato seed; lack of fertilizer; losses due to improper storage; substandard agricultural practices and poor marketing of potato crops.

One section explains that farmers, because of limited knowledge, aren't utilizing the seed potential that already exists in their growing fields. The pamphlet highlights a technique for selecting the vigorous, healthy plants in the field which can then be used as seed potato for next year's planting. Once the plants have been identified, a stick is used to mark their location.

Another section about potato storage delivers the message to farmers that the storage of diseased and damaged potatoes can cause significant losses to the potato crop. Storage of potatoes in improper warehouses or storage places can also lead to wastage.

Training Manual for Pesticide Users

A newly translated edition in Dari of the **Training Program for Pesticide Users: A Trainer's Manual** is now available for Afghan agriculturalists. See the list of publications on page 13.

The illustrated, 338 page Dari manual was originally prepared for use in training 23 extensionists for Badghis Province in a locust and sunn pest control program. The manual's major focus is safe use and

handling of pesticides. It also provides technical information on the life cycles of pests, the right chemicals for each and the proper timing for their use.

The manual, prepared in cooperation with the Consortium for International Crop Protection (CICP) and USAID and translated by ASSP/PSA staff members, provides trainers with the information to train others in the proper use and storage of pesticides and how to prevent contamination of the environment.

Twenty copies have been given to the Agency Coordinating Body for Afghan Relief (ACBAR) for non-government organizations (NGO) members to review and critique.

Manual for Safe Use of Pesticides

The ADT component of ASSP/PSA includes a color manual, **Safe Use of Pesticides**, with each pesticide sprayer they distribute in Afghanistan. This publication is for use by extension workers and Afghan farmers. It may be ordered through the publication list on page 13.

In contrast to the training manual, this manual's 28 fully illustrated pages explain in simple messages the safety and precautionary measures to be taken by pesticide users. Most of the concepts in the guidebook are explained through universally understood pictures.

Unlike the training manual this manual gives no specific information on the use of different chemicals for specific crops or pests. Instead, a statement such as "Don't mix the chemical with your bare hands" lies next to an illustration with a cross over it. On the same page is a picture of correctly gloved hands.

The manual includes information on prevention of contamination through the skin, nose, eyes and mouth and what measures can be taken if someone does become poisoned. One of the strongest themes throughout the text and pictures is preventive measures a farmer must take to protect the environment as well as himself.

ASSP / PSA PUBLICATIONS

The following free publications about Afghan agriculture may be obtained by checking the appropriate box cutting the page and mailing to: Director of Publications, ASSP/PSA, P.O. Box 2721, Islamabad, Pakistan.

NEW PUBLICATIONS IN DARI

- No. 1. **Growing Corn in Afghanistan**, Peshawar, 1991.
- No. 2. **Growing Potato in Afghanistan**, Peshawar, 1991.
- No. 3. **Safe Use of Pesticides**, Peshawar, 1992.
- Trainers' Manual, Training Program for Pesticide Users**, Peshawar, 1992 [originally prepared and printed in 1985 by the Consortium for International Crop Protection (CICP) and the United States Agency for International Development USAID]

EXTENSION

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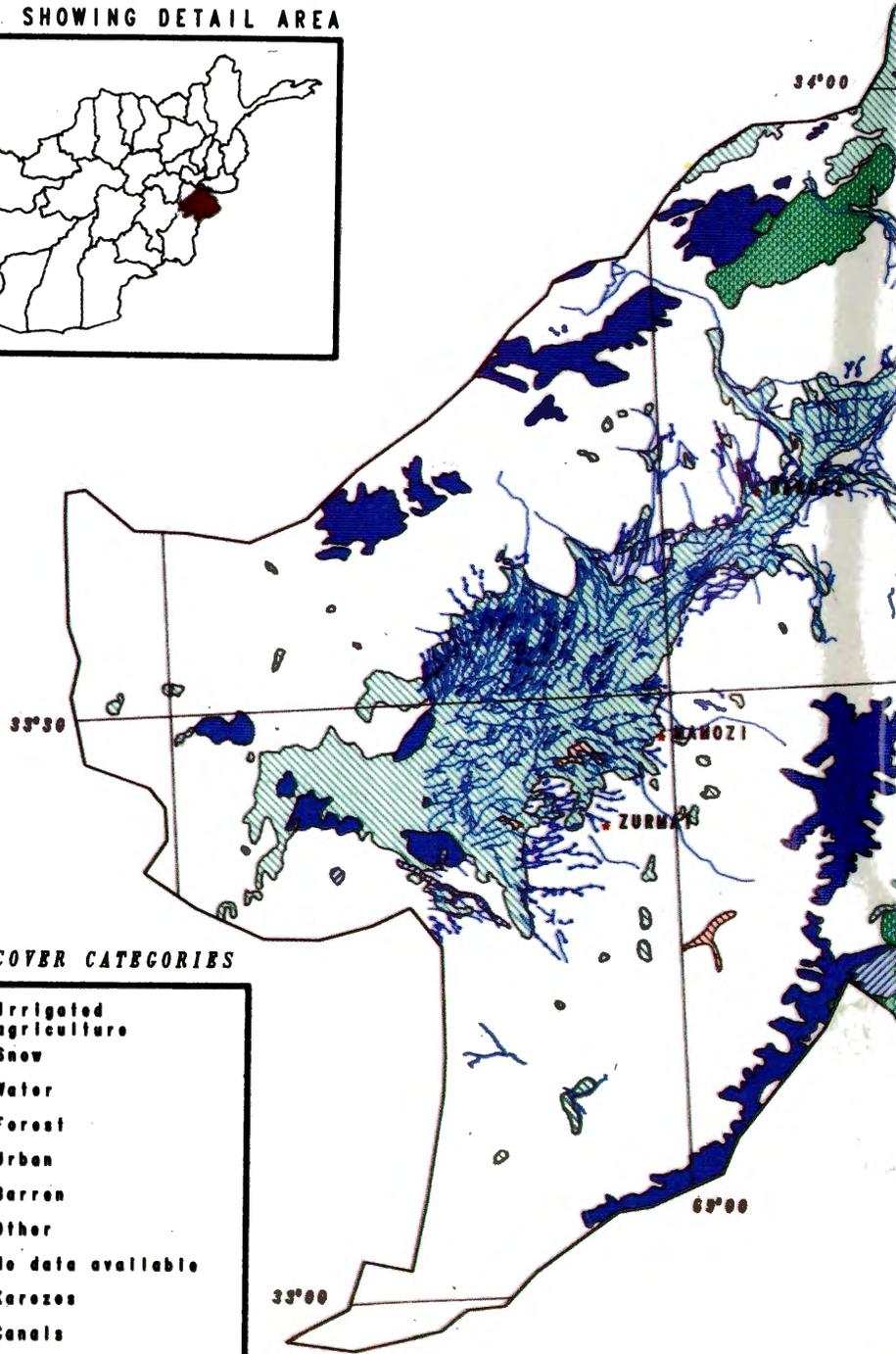
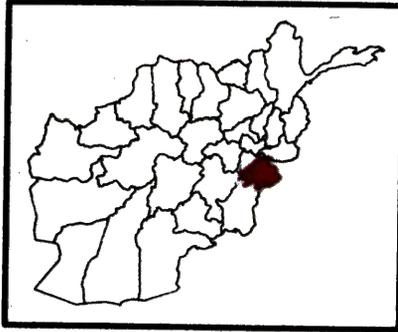
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The silk screen posters created by Aminullah Baqizad, a member of the ASSP staff, are available in limited numbers. All script is in Pashto and Dari. Subjects of the posters are:

1. Growing rice by rows (pictured in Feb. 1992 issue of *Agricultural Developments in Afghanistan*)
2. Potato growing in rows
3. Comparing local and improved varieties of wheat
4. Comparing new and old methods of harvesting wheat
5. Comparing new and old methods of threshing wheat.

MAP SHOWING DETAIL AREA



LANDCOVER CATEGORIES

	Irrigated agriculture
	Snow
	Water
	Forest
	Urban
	Barren
	Other
	No data available
	Karezes
	Canals
	Other water sources
	Cities
	Areas