1975
FARM ECONOMIC SURVEY OF THE HELMAND VALLEY

by

FRYDOON SHAIRZAI
GHULAM FAROUQ
and
RICHARD SCOTT

USAID/DP
KABUL, AFGHANISTAN

TABLE OF CONTENTS

AGGREGATE STATISTICS
(For Helmand Province)

TOTAL POPULATION	333,000
FARM POPULATION	204,000
TOTAL NUMBER FARMS	21,700
AVERAGE SIZE FARM	6.92 Ha.
PERCENT URBAN POPULATION	10
PERCENT FARM OWNERS	60
PERCENT SHARECROPPERS/LABORERS/OTHER RURAL	30
TOTAL CROPLAND	150,000 Ha.
TOTAL LAND CROPPED IN ANY ONE YEAR	104,000 Ha.
OF WHICH PERCENT DOUBLE CROPPED	23
PERCENT PLANTED IN WHEAT	66
PERCENT FARMERS USING FERTILIZER	76
PERCENT FARMERS BORROWING FROM AG BANK	68
NUMBER TRACTORS IN HELMAND	1,000
COTTON PRODUCTION IN HELMAND AS PERCENT OF NATIONAL	19
WHEAT PRODUCTION IN HELMAND AS PERCENT OF NATIONAL	4
CORN PRODUCTION IN HELMAND AS PERCENT OF NATIONAL	2
NET INCOME/FARM	$ 833.00
NET INCOME/CAPITA	$ 89.00

CHAPTER I

INTRODUCTION

Introduction: The 1975 Farm Economic Survey (FES) is an attempt to gather and analyze relatively detailed data which will reflect the socio-economic conditions of the rural people living and working in the Helmand Valley. The FES can be used as a bench mark for future planning and evaluation. It can also be used to measure the progress of development efforts in the Helmand since it improves and replicates two similar studies completed in 1965 and 1971. 1/ It is not known if similar data, based on field surveys, are available for other areas of the country. If they are, the studies have not come to our attention. There can be little doubt that for the purposes of area, regional, or provincial planning and development, evaluation of such data is invaluable. They are basic to understanding, which is the first step to rational developmental planning.

The study will include:

1. Population; ethnic and settler distribution.
2. Family size; age-sex distribution of farm families.
3. Farm size and tenure.
4. Land use, cropping patterns and yields.
5. Costs, returns and farm incomes.
6. Livestock ownership and distribution.
7. Farming practices and the use of the modern agricultural inputs.
8. Farming problems and attitudes.

The Province: Helmand is the largest province by area in the country, located in southwest Afghanistan roughly between latitudes 30 and 33 degrees north and longitudes 63 and 65 degrees east. The province includes an estimated 62,337 square kilometers or about 10 percent of the country. 2/

1/ Ira M. Stevens and Kamal Tarzi, Economics of Agricultural Production in Helmand Valley, 1965; and G.P. Owens, 1970 Farm Economic Survey: Helmand and Arghandab Valleys of Afghanistan, 1971.

2/ A Provisional Gazetteer of Afghanistan, ADS/CSO, Kabul, 1975.

The area is mostly clay or sand desert in the south, and dry rocky mountains in the north with an estimated 2,846 square kilometers of cultivatable land (4.5 percent) and 1,589 square kilometers irrigated (2.5 percent) in the late 1960's. 1/

Nearly all agricultural land is irrigated in the province because of limited precipitation, and most of this land lies in the flood plain of the Helmand River. Rainfall ranges between 2 and 9 inches per year, virtually all occuring in late winter and early spring. This rain supplies a marginal part of the moisture required for spring crop production, while all the water for summer and fall crops must come from irrigation. Evaporation rates are between 80 and 118 inches per year. 2/

Most irrigation in the province originates from the Helmand River, the largest river in Afghanistan, with a watershed of about 40 percent of the country's total run-off. 3/ The irrigation systems vary in size andinclude the major diversion structures and canals like the Boghra (120 kilometers in length with a 2,550 cfs capacity), and Darweshan (50 kilometers in length with a 1,00 cfs capacity). Both were constructed with heavy equipment and foreign technical advice. There are also irrigation systems fed from the small traditional brush and stone intakes and ditches rebuilt and maintained yearly by the farmers themselves and there are a limited number of small locally owned diesel water pump stations drawing water from the river. Irrigation from pumped wells is rare. In the foothill and mountainous regions of the province there is also irrigation from traditional karez systems (gravity-flow systems for bringing ground water to the surface via a series of wells connected by subterranean tunnels).

The Helmand River rises in a westerly extension of the Hindu Kush mountain range near Paghman about 40 kilometers west of Kabul, and runs southwesterly for about 536 kilometers into the desert plain where it joins the Arghandab River below the city of Lashkar Gah. The combined Helmand and Arghandab rivers continue in the same southwest direction for about 430 kilometers, turning back north to be absorbed in the marshes and inland sink of the Sistan or Chakhansur Basin known

---

1/ "Summary of Statistics on Livestock Population in Afghanistan", Ministry of Agriculture, 1969.

2/ Helmand River Basin Soil and Water Survey Report, Part I, USAID/Kabul, 1976, p. 2-14, 2-15.

3/ Lloyd I. Z. Baron, The Water Supply Constraint: An Evaluation of Irrigation Projects and their Role in the Development of Afghanistan, PhD. Disertation, Dept. of Economics, McGill University, 1975.

as the Hamun. This area straddles the border between Iran and Afghanistan. The altitude varies from 460 meters above sea level in the Sistan Basin to about 950 meters at the base of the mountains surrounding the upper part of the Valley. Most of the river water comes from rainfall at the intermediate elevations in the winter and spring and from melting snows in the high mountains which rise to elevations of 4,000 meters or more.

The general topography of most of the irrigable desert is extremely flat with slopes ranging from 0.5% along the river flood plain to about 0.1% in the Nad-i-Ali and Marja areas, and 0.25% - 0.015% in Chakhansur. These flat gradiants combine with poor soil, high evaporation rates and farmer misuse of water to aggravate the salting/drainage problems of the area and make maximum agriculture production difficult to achieve. At the same time, however, such gradiants lend themselves ideally to land leveling and irrigation. Alluvial or old river terrace soils of moderate to low fertility dominate the Helmand area. Subsoils are frequently underlain by impermeable conglomerate. Waterlogging is a problem in some areas and has either adversely affected farming or taken land out of production because of salinity. This is particularly a problem in Nad-i-Ali and Marja.

The hot days and relatively cool nights of summer, the mild climate of winter, and the long growing season with good light intensity are all favorable factors for plant growth in Helmand. The summers are hot and dry with daily temperatures commonly ranging well over 100°F, with an average daily temperature of 87°F. The winters are mild with average temperatures above freezing but the number of sub-freezing days eliminates the growing of tropical crops and fruits. 1/ Major sand and dust storms occur in the spring and sometimes in the fall.

The quality of the irrigation water is good to very good. The total salt content of the Helmand River water ranges from 200 to 250 parts per million at Kajakai Dam to almost 600 ppm at Char Burjak, the approach to the Chakhansur Basin.

In total, the conditions for irrigated farming in Helmand are good, and, while there are some obstacles to overcome to reach maximum production, particularly in terms of farmer water utilization, production levels and farmer incomes continue to increase.

1/ Helmand River Basin Soil and Water Survey Report, Part I, USAID/Kabul, 1976. pp. 2-14, 2-15.

Region Descriptions:

1. Nowzad: This is a foothills region about 60 kilometers north of Girishk. It is a water-short region dependent upon very old karez systems for irrigation. The landholdings are small and fragmented. While there is considerable traffic into the area, the road can be described as an undeveloped desert track. The potential irrigable land in the region is difficult to estimate in the face of continuing ground-water shortages and population losses (out-migration through the mid-1970's). In 1956, however, the Morrison-Knudsan Afghanistan (MKA) estimated the net irrigable area to be 3035 hectares (7500 acres) in their report S. W. Afghanistan Land and Water Resources. HAVA reported total registered farm land for tax purposes in 1971 at 7,150 hectares and total cropland in 1969/70 at 2,860 hectares (1970 FES, p.6). Cropland in 1975 is estimated to be 4,042 hectares based on this survey findings.

2. Musa Qala: This is a foothill region to the east of Nowzad and receives its irrigation water from indigenous intakes off the Musa Qala River and karez systems. The landholdings are small and fragmented. The desert track into the region is a branch off that to Nowzad, but another connection is through Kajakai during the winter when the Musa Qala River cannot be crossed. The real potential for irrigable land in this region is also difficult to estimate, again due to the long-term ground-water shortage. MKA estimated the irrigable area at 8093 hectares (20,000 acres) in 1956 and, interestingly, classed the water supply as "surplus" if the area were fully developed. In 1969/70 cropland was estimated at 4,800 hectares and in 1975 at 4,125 hectares.

3. Kajakai - Zamin Dawar: This region is not comparable to previously defined regions in earlier studies. It includes the area sometimes known as West-Kajakai or Zamin Dawar to the north and west of the Kajakai Dam, which is watered by karez systems and springs. The landholdings are small and fragmented. This is an extension of the Musa Qala hills area, water short and losing population over the past few years. MKA estimated the potential irrigable area at 3,250 hectares and in 1969/70 cropland was estimated at 1800 hectares. The total region for this survey's purpose also includes a section of the Helmand flood plain south of the Kajakai dam which receives irrigation water through traditional intakes from the Helmand River. There are no available past estimates of size for this area alone. It is estimated that the total cropland for the region is 1,631 hectares in 1975.

4. Sanguin: This region is on the left bank of the Helmand River, the market center about 40 km. north of Girishk, and stretches from Garm Ab (south of the Kajakai area) to Haidarabad.. This region, as far as the Kajakai Dam, is served by a good, all-weather, gravel road from the main highway at Girishk. It is in the Helmand flood plain and gets

adequate irrigation water through traditional river diversions. The holdings are generally very small and fragmented. The 1970 FES estimated cropland to be 6020 hectares but this also included the Kajakai area. The potential irrigable land in the area was estimated at about 7000 hectares, i.e., there is little room for expanding the agricultural lands in the region. In 1975, the more strictly defined region of Sanguin is estimated to include 6,317 hectares of cropland.

5. Girishk: This area mostly rests in the Helmand River flood plain and stretches between Qala-i-Gas in the east and Malgir in the west on the right bank of the river, and from Haidarabad to Yakhchal on the left bank. The market center of Girishk is 48 km. northwest of Lashkar Gah which connected by tow good all-weather gravel roads, but Girishk is also located on the paved Kandahar-Herat highway and is the center for many government services (e.g., health, ag. extension) for the larger region north of the highway. The town has electricity from the Boghra Hydro-electric generators. Irrigation water for the region is furnished by the Boghra Canal and several other older indigenous diversions off the river. The region is considered to have a surplus of water. The landholdings are small and fragmented. About 9,200 hectares were in cropland in 1969/70 (1970 FES). The area is highly populated and intensively cultivated, characteristics shared with the Sanguin region just to the north. Cropland in 1975 is estimated at 16,156 hectares.

6. Central: This is a large and complex region in terms of soils, water sources, and land use. It stretches along the left bank of the Helmand River from Yakhchal in Girishk to the village of Karez at the confluence of the Helmand and Arghandab Rivers. This left bank area includes the desert step soils watered by the old silting-up Seraj canal and some areas along the Arghandab flood plain. On the right bank, the area is in the Helmand flood plain and includes Babaji and the fertile areas of Bolanx and Aynak watered from the Shamalan canal via the Boghra, i.e., a water surplus area. While the Seraj area has suffered a loss of population over the years, the Helmand right bank is heavily populated and intensively cultivated. Landholdings are small and fragmented but productive. Lashkar Gah is the central market for the region and the provincial capital with a wealth of government services. The region is well served by a network of all-weather gravel roads (many along the banks of the canals and drains) and desert tracks. This region also includes Chah-i-Anjir, the home of Helmand Construction Company HCC which employs large numbers of the local population. Since the Central Region includes many areas previously attached to other regions for survey purposes, the potential irrigable area is difficult to estimate or compare with other survey figures. Cropland in 1975 is estimated at 12,247 hectares.

7. Nad-i-Ali: This region, located on a previously unfarmed desert step, is a product of the construction of the Boghra Canal and came into

existence in the early 1950's. It lies on the right bank of the Helmand River 17 km. west of Lashkar Gah and is served by good all-weather gravel roads. Although the region has a surplus of water, drainage is poor and is complicated by an impermeable layer of conglomerate lying about 2 meters or less below the surface. The population is comprised of settlers, and landholdings are relatively equitable, about 30 jeribs or 6 hectares. Potential irrigable land has been estimated at about 9000 hectares (1970 FES),and 7500 hectares (MKA-1956). Over the years, suggestions have been made to take much of the region out of normal agricultural production because of the poor soils and drainage problems. In 1969/70, cropland was estimated at 6,700 hectares. The 1975 cropland is estimated at 11,432 hectares.

8. Marja: This region is another product of the construction of the Boghra Canal and the resulting land developments. Its characteristics in terms of roads, soils, drainage problems, settlement, and landholdings are similar to Nad-i-Ali. The potential irrigable land is estimated at 8,100 hectares (1970 FES) and 10,800 hectares (MKA, 1956). Again, real potential must be based on costs of a complete and adequate drainage system. Cropland was estimated at 6,300 hectares in 1969/70. In 1975 cropland is estimated at 8,961 hectares.

9. Shamalan: This region is on the right bank and in the flood plain of the Helmand River and is considerably smaller than the area so named in the 1970 FES (Aynak, Bolan and frequently Basheran are normally included in the Shamalan region). The region is irrigated from the Shamalan Canal via a network of indigenous laterals and ditches. The southern reaches are water-short, but the long-term farming areas near the canal can generally be classed as surplus water areas. The all-weather road system, which parallels the banks of the canal and numerous major drains, is extensive. There has been considerable resettlement activity in the region since 1973, but some of this is on marginal land and with holdings of only 10 jeribs (2 hectares). Cropland in 1969/70 was estimated at 14,900 hectares (1970 FES), but this includes the areas in North Shamalan of Bolan and Aynak. In 1975, cropland for the more limited area is estimated at 14,768 hectares.

10. Darweshan: This region begins some 55 km. south of Lashkar Gah, just south of the last Shamalan district of Sorkduz but on the left bank of the Helmand River in the flood plain, and ends with the area of Benader Olia in the south. The road network is limited to the canal and major drainage banks but is generally passable in all weather; the southern reaches of the region depend on desert tracks. Irrigation water is served through a major diversion structure in the river and a large canal constructed in the 1950's. The ditches and laterals are farmer constructed and the water supply is genrally considered adequate if not in surplus. Since 1973 considerable resettlement on 10 jerib (2 hectares) plots has occured in the region (indigenous land holdings tend to be somewhat larger in total averaging 9.2 hectares). The potential irrigable area was estimated at

20,300 hectares (MKA 1956) and cropland in 1969/70 estimated at 11,400 hectares (1970 FES). In 1975 cropland is estimated at 17,671 hectares.

11. Khanishin: This region is probably the least accessable of the areas surveyed, resting in the Helmand River flood plain and extending from the end of the Darweshan region at Benader Olia to the last village in Helmand Province at Palalak. Parts of the region are on both sides of the river and motor transport is via undeveloped desert tracks. The irrigation systems are indigenous, and much of the area cannot be irrigated because of lack of water through these limited systems. The water shortage generally precludes the use of high-yielding varieties of wheat, which require large doses of fertilizer. While average landholdings are large (38.25 hectares), the amount of land planted each season amounts to a fraction of this. The total irrigable area was estimated at 18,000 hectares (MKA 1956) but this included an area of unknown size in Nimroz Province. In 1969/70 cropland was estimated at 11,400 hectares. Estimated cropland in 1975 is 7,241 hectares.

History: The extensive ruins of ancient civilizations along the central and southern Helmand River give evidence to the existence of what was once a major and prosperous and agricultural society based upon extensive irrigation. Most historians have argued that successive hoards of invaders from the North and West destroyed the large cities and major irrigation canals. What was once a "bread basket" of Central Asia was by the 20th century a vast, barren or scantily vegetated and populated land affected to varying degrees by salts, alkaline and erosion.

The detailed history of the modern agricultural developments in the Helmand Valley has been presented elswhere. In this section only an outline of the events is presented. 1/

A. Pre-Project Agricultural Development (1900-1946)

1. Between 1910 and 1914, the Afghans began to develop parts of an old canal system to be known as the Seraj Canal.

1/ Mostly edited from: Lloyd Baron, Sector Analysis: Helmand-Arghandab Valley Region, USAID/Kabul, 1973. Other sources: Louis Dupree, Afghanistan , Princeton Univ. Press, 1973; Lloyd I.Z. Baron, The Water Supply Constraint: An Evaluation of Irrigation Projects and Their Role in the Development of Afghanistan, PhD Disertation, Dept. of Economics, McGill Univ. 1975; Mildred Caudill, Helmand-Arghandab Valley: Yesterday, Today, Tomorrow, USAID/Bureau of Reclamation, Lashkar Gah, 1969.

2. In 1930 German engineers were called in to assist the repair, improvement and extension of the Seraj Canal.

3. Later in the 1930's Japanese engineers were called in to improve and extend the old Deh Adam Khan Canal which was later to be called the Boghra Canal.

4. World War II intemupted this project after only 15 kilometers of canal was dug using hand labor.

5. The Afghans continued the work through the war and completed 25 kilometers of canal by 1946.

B. First Period of Heavy Equipment Construction (1946-1960)

1. Between 1946 and 1949 the Afghan government, using monies accumulated through trade in WW II contracted with Morrison-Knudson Afghanistan (MKA) was to construct:

a) Road improvements between Chaman to Kandahar and Kandahar to Girishk to facilitate movement of equipment, supplies and personnel into the country and to their construction camp north of Girishk.

b) The Boghra Canal with diversion dam to provide water for the Nad-i-Ali and Marja desert tracts.

c) Major diversion structures on the Boghra Canal and the construction of the Shamalan Canal spur.

2. MKA's second contract (1949-1953), which was financed under an Export-Import Bank Loan, focused on:

a) Remedial construction on problems resulting from previously unanticipated factors; e.g., lining the leaky Boghra Cananl, examinning drainage problems and farmer mis-use of water.

b) Land development and preparation for settlement.

c) The construction of the Arghandab Reservoir with a storage capacity of 481 million cubic meters/390,000 acre feet.

d) The construction of the Kajakai Reservoir with a storage capacity of 1.8 billion cubic meters/1,495,000 acre feet.

During this contract period the concept of an integrated Helmand Valley development activity was developed and the autonomous Helmand Valley Authority (HVA) was established. Major land settlement at this time was implemented by HVA.

3. MKA's third and last contract (1953-1960) was also financed under an Export-Import Bank Loan. During this period:

a) The U.S. Point IV Assistance Program was established to give technical assistance on agricultural matters.

b) Major drainage construction was accomplished in the Marja, Nad-i-Ali, and Shamalan areas.

c) A diversion dam, a canal, and a drainage system were constructed in the Darweshan area.

d) Diversion works and canals were constructed in the South Arghandab and Tarnak areas.

e) A small hydroelectric plant (output = 3000 kw) was constructed on the Boghra Canal, with distribution lines to service Girishk, Lashkar Gah, and Chah-i-Anjir.

f) The Afghan Construction Unit (ACU) was established and given the responsibility for the operation and maintiance of the canals and project roads. This unit eventually replaced MKA.

g) Land development and preparation continued in the Marja and Shamalan areas.

h) The Tudor Report (1956) was published. This evaluation, undertaken for ICA, examined the engineering accomplishments and the numerous project problems recognized at the time.

C. Period of Study, Planning and Continued Land Settlement (1960-1970). The major highlights of this period were:

1. The arrival of the U.S. Bureau of Reclamation (BuRec) to give technical assistance on drainage, systems design, and maintenance.

2. The continuance of land development and settlement in the Marja and Shamalan areas.

3. The completion of 2 farm-economic studies:

a) I.M. Stevens and K. Tarzi, Economic Analysis of Marja Farms, 1964.

b) I.M. Stevens and K. Tarzi, Economics of Agricultural Production in Helmand Valley, Afghanistan, 1965.

4. The expansion in 1965 of HVA to cover the Kandahar area (HVA henceforth known as the Helmand-Arghandab Valley Authority "HAVA"). By the mid-1960's HAVA was coordinating utilities, education, agricultural research, extension, housing, health, and industrial development for the region.

5. Production figures for Marja and Nad-i-Ali began dropping, and some land was being abandoned by settlers in these areas because of rising water tables, salting, and poor agricultural practices.

6. Shamalan was selected for an intensive land development project which would focus on areas with the greatest agricultural potential in the shortest time frame. A feasibility study was completed in 1968.

7. A similar feasibility study was completed for The Central Arghandab Valley Unit by 1970.

8. In 1967 the U.S. Geological Survey studied the rates of silting in the Kajakai Reservoir.

9. High Yielding varieties of wheat first introduced in 1967.

D. A Period of Building, Planning and Change (1970-1976). Highlights were:

1. 1970 Farm Economic Survey completed by G.P. Owens.

2. Shamalan S10.7 lateral and Drain K constructed, 1971-74.

3. U.S. Geological Survey team makes limited study of water resources in upper Helmand Valley, 1971.

4. Flood-control diversions in lower Helmand studied by IECO in conjunction with Asia Development Bank, 1972.

5. Major drains constructed in Babaji area, 1970-72

6. Withdrawal of USAID/Bureau of Reclamation from HAVA after land development aspects of Shamalan Project deemed unfeasible, 1973-74.

7. Kajakai Hydro-electric generators installed and transmission line constructed to furnish power to Kandahar, Lashkar Gah, and Girishk.

8. More than 4000 families settled between 1973-76.

CHAPTER II

METHODOLOGY

The Sample: A list of landowners in Helmand province was developed from the records of the Land Registry and Agricultural Extension Departments. This list was arranged geographically or by region, to conform with the 11 administrative areas of the Agricultural Extension Department. A four percent random sample was drawn from each of the 11 areas giving a sample size of 868 landowners. A list of alternates was developed in the same way, one for every 20 landowners in the sample. The resulting sample size and number of usable interview schedules are as follows:

Area	Sample Size	Usable Interview Schedules
Nowzad	49	38
Musa Qala	55	55
Zamin Dawar	28	28
Sanguin	95	95
Girishk	112	94
Central	115	103
Nad-i-Ali	85	78
Marja	87	80
Shamalan	139	134
Darweshan	77 (63)*	68 (54)*
Khanishin	26	23
Total	868	796

* Excluding 14 new settlers who have been on the land for less than one year.

The Interview Schedule: The 1970 FES interview schedule was used as the base for developing the 1975 schedule. This was done to ensure that much of the data gathered could be used for purposes of comparison and recording change. This instrument was pre-tested in the field and some adjustments were made. The final version in both English and Pashtu is found in the appendixes. It normally took about two hours to complete one interview.

The Interviewers: Eighteen interviewers were recruited from a variety of offices in HAVA. Educational backgrounds ranged from college graduates in agriculture and economics to a high school graduate. Some of them had previous field interviewing experience. All received two weeks training and practice in the use of the interview schedule. The interviewers were organized into three teams of six persons, one of whom was the team supervisor with the added responsibility to check the completed interview schedules for completeness and consistancy. Later the teams were reduced to five persons. Each team was assigned a four-wheel drive vehicle. The overall supervision of the research activities was provided by both HAVA and USAID personnel who were in the field during the interviewing.

The Field Activities: The interviewing began in January 1976 for the 1975 crop-year, and was completed by April. While the survey could have started earlier, the timing was correct to locate the sample farmers in the slack work season. Personnel of the HAVA Agricultural Extension Service were relied upon to locate the sample farmers in their areas. The interviews were generally conducted in or near the farmers' compounds.

The 1970 FES used a system for organizing the interviewing context that required all the sample farmers to be brought to a central location in an area for a communal lunch and interview. This system was used for the first 3-4 days of the 1975 FES but it soon became apparent that a fun-fair atmosphere soon developed that was not conducive to serious interviewing. Where possible, the more private, one-on-one interview situation was used in the farmers' own surroundings. All three field teams normally worked in one area at a time which reduced the problems of logistics and supervision.

Data Processing: The interview schedules were taken to Kabul where a data processing office was established within USAID. Coders were hired for the job, a code book was written and the data was put on code sheets. These code sheets were transfered to the Afghan Computer Corporation (ACC) where the data was punched on cards and then put on tape. The programs were written by ACC personnel and the data was processed. There were numerous delays along the way in the processing phase of the project and the final tables were completed by the fall of 1977.

Limitations of the Study: The lists of landowners from which the sample was drawn was old and out-dated, and the land registry records were neither current nor accurate. There were cases where land was registered under an individual's name who was long since dead and the land had been divided up through the rules of inheritance among numerous heirs. In these cases, a son or other immediate heir was interviewed. If the sample farmer whose name appeared on the list could not be identified in an area, a name was drawn from the alternate list.

Generally, the interviewers were not in any sense professional. They came from a variety of offices with different backgrounds and experience, and their training was limited to two weeks. An attempt was made to overcome this limitation through close and continuous field supervision.

The accuracy of the data collected depends on the abilities of the farmers to understand the questions, make estimates of items like landholdings and crop production, and on their willingness to give answers to questions that could place them in a difficult position vis-a-vis government institutions, e.g., tax bureau. An attempt was made at the start of the interviews to establish rapport with each of the farmers through openness and explanation. Methods were devised to make the estimates more accurate (ways to probe the questions) and for translating the estimates into usable numbers.

Finally, the Regions of the 1975 FES do not correspond exactly with those of the 1970 FES. The data thus will not be unquestionably comparable. For example, the areas of Aynak, Bolan, and Basharan were part of Shamalan in 1970 but are in the Central Region in 1975. The regions of Marja, Nowzad, Darweshan, and Khanishin, on the other hand correspond reasonably well for the two survey periods.

Recommendations for the 1980 FES:

1. An updated list of farmer landowners should be prepared from the present records, field checked, and corrected by the agricultural extension agents in each of the areas. This activity should not await the 1980 FES, however, This information should be the base upon which most field projects and sub-projects rest.

2. Field research and interviewing is not an activity that everyone can do at an acceptable level of competence. It requires qualified, trained, and experienced personnel. Any future FES should depend only upon individuals who have the necessary qualifications and skills. These qualifications would include: (a) their mother-tongue must be Pashtu, preferably of the Kandahari dialect (the Helmand Region) if not of one of the local tribal groups, and (b) interviewing and field research experience among rural people. These individuals should be found in the HAVA Socio-Economic Research Unit of the Planning and Statistics Office by the next survey, i.e., full-time research staff.

3. In support of #2 above, the survey should be carried out over a slightly longer time period, perhaps between late November (after the crops) and the end of March, i.e., the slack work season. This longer period would allow the field team of interviewers to be smaller. Five to six persons, total, should make up the FES field team, all of whom would be professional interviewers. This would result in a less costly survey with more reliable results.

4. The FES interview schedule requires editing for a reduction in size. This can be done without a great loss of comparable data over the years. The time required for each interview was too long and while most of the farmers were obviously attempting to answer all questions with accuracy, the time period was fatiguing.

The demographic data on the first page can be revised to have more useful results, and most of the attitudinal questions scattered through the schedule could be eliminated with no great loss.

5. With a simplified interview schedule, hand-tabulation of the data should be considered for the results of the initial FES report. While all data may be put on punch cards and tape at a later date, the hand-tabulation for the initial report will speed-up the report writing process.

Since the interviews will be accomplished within a work unit of HAVA by a limited number of full-time people, the coding and tabulation work would probably best be done by the same people in the same area, i.e., Lashkar Gah. This process would eliminate some of the problems of coordinating efforts faced in both the 1970 and 1975 FES's and it would result in a more speedy and efficient operation. To have the activities of data processing and analysis spread between Kabul and Helmand is a complicated affair.

6. The HAVA regions require re-ordering for FES purposes. While the 1975 regions do correspond to some administrative units (agriculrural extension) they do not necessarily result in units with relatively homogeneous soil, agricultural or water source characteristics. Some of the averages and generalizations would be more meaningful with a re-ordering of the regions. The outstanding example is the Central Region which includes the flood plain areas of Aynak, Bolan,and Basharan which are watered by the Shamalan Canal. In 1970, they were in the Shamalan Region of which they are a part, and should have remained in that region for survey purposes. The Central Region also includes the water-short, clay soils of Seraj which receives water from the old Seraj Canal. The Karez area near Qala Bost is also included in the Central Region; it receives its water from an indigenous water system and combines the characteristics of clay soils and lower Arghandab agriculture. An average of all these areas as a unit is not too meaningful.

CHAPTER III

THE PEOPLE

This chapter describes and analyzes some of the social characteristic of the people who inhabit the Helmand Valley e.g., numbers, ethnicity, household type and composition. In later chapters, economic differences by region will appear in the data. To some extent, these differences may appear unexplainable outside the social context. As will be noted, two of the major social characteristics that very closely relate to this farming-economic scene are ethnicity and settler status. These characteristics relate to political power, size of land holding, access to water and government services, socio-cultural heterogeneity and, to some degree, local solidarity and cooperation. Socially, culturally, politically, and economically the Helmand Valley is a very complex area.

Numbers: There are an estimated 340,128 people (182,884 males and 157,244 females) living in Helmand Province, 320,170 of which (172,443 males and 142,727 females) are rural (94 percent). These people make up an estimated 53,804 households, 50,647 of which are rural (94 percent)[1/]. Most of this population tends to concentrate along the arable flood plain of the Helmand River since a large proportion of the province is desert. Thus, the population density for the province of about 5.2 persons per square kilometer (second lowest in the country) does not reflect settlement patterns.

There are also several thousand households of Pashtun nomads that move into or though the area during the winter with their sheep/goat herds to camp in the sparse desert pastures, and exit again into the mountain pastures to the north of Helmand province in the spring. To the south, there are unknown but sizable numbers of Baluch and Brahui nomad families that follow intra-province patterns of movement, e.g., from the Helmand River flood plain to desert wells and pastures in the Registan for winter and spring, to return to the river for summer. There is also a relatively large number of seasonal rural laborers that move into the province during the winter months from Ghor and other neighboring provinces to the north where harsh winters halt normal activity. Through the years some of this migrant labor has tended to settle in the province

---

1/ National Demographic and Family Guidance Survey of the Settled Population of Afghanistan, Vol. V, Helmand Province #23, 1975. These figures have been adjusted for an assumed 2.3 percent yearly increase, but do not take into account increases resulting from the settler program and do not include nomads.

adding to the already heterogeneous ethnic composition of the settled population. This report focuses on the settled, land owning, rural people of Helmand province.

Ethnicity: The settled indigenous populations of Helmand province are mainly Pashtu speaking tribal groups in the north and Baluchi and Brahui speaking groups to the south, with the blurred ethnic/linguistic border occuring around Landai on South Darweshan. The Brahui commonly identify themselves as Baluch and, thus, are commonly mistaken for Baluch but have a language of their own. Commonly multilingual and frequently sheepherding nomads, the Brahui as farmers are concentrated in the area of Khwaja Ali in Khanishin. "Indigenous" in this report includes, among other elements, Pashtun groups settled in the Helmand area through land granted by (king) Ahmad Shah in his attempts to unify his young nation in the mid and late 1700's. Thus, there are exceptions to the indigenous Pashtun/Baluch/Brahui settlement division noted,e.g., the last two villages in the province along the Helmand River to the south, Landai and Palalak, are of Pashtun origin (Barets tribe) and have been located in the middle of the Baluchi speaking area for the past 200 years; and the village of Bagat in south Darweshan is of Brahui origin established by land sales some 25 years ago in a Pashtun area.

The ethnic/linguistic composition of Helmand is complex as the result of migration and settlement over the years. Some of the first major resettlement activities of the government began after the 1910 construction of the Seraj Canal opened new lands for agriculture in the Yakchal area near Girishk . Emigrants from the Russian Revolution of Uzbak and Turkman origins were among those settled. With the completion of the Kajakai Dam and the major irrigation networks of the Boghra, Shamalan, and Darweshan Canals a major resettlement program was developed in the early 1950's. Between 1950 and 1973 some 6000 farm families were settled, representing nearly every major ethnic, linguistic and tribal group in Afghanistan. The policy in this early period was to recruit and settle related families in a block as a single social unit, e.g., 50 to 100 families of the same tribe or ethnic group that had previously functioned as a unit. These groups were given between 20-30 jeribs (4-6 ha.) of land per household.

Since 1973 over 4000 farm families have been settled in the area. The policy for these families apparently has been to settle ethnically and linguistically heterogenous units in a given area. An example of this is to be found in the Tabila/Gowargi area of Shamalan where 122 families were settled in 1974. The group represents 25 ethnic or tribal groups from all over the country. These groups have been given about 10 jeribs (2 ha.) of land per household.

The dominant ethnic groups by region are:

Nowzad: Isakzai 45 percent; Barakzai 11 percent; Alikozai 11 percent; with six other ethnic/tribal groups respresented in a sample of 38 households.

Musa Qala: Alizai 93 percent; Achekzai two percent; with three other ethnic/tribal groups represented in a sample of 55 households. This is the most homogeneous of the regions.

Zamin Dawar: Alizai 90 percent; with three other ethnic/tribal groups represented in a sample of 31 households. This is the second most homogeneous region.

Sanguin: Alikozai 60 percent; Isakzai 17 percent; Nurzai seven percent; with nine other ethnic/tribal groups represented in a sample of 97 households.

Girishk: Barakzai 46 percent; Isakzai 23 percent; Moahamadzai seven percent; with 13 other ethnic/tribal groups represented in a sample of 94 households.

Central: Barakzai 48 percent; Achekzai eight percent; Popalzai six percent; with 24 other ethnic/tribal groups respresented in a sample of 103 households.

Nad-i-Ali: Kharoti 34 percent; Arab nine percent; Kakar eight percent; with 22 other ethnic/tribal groups respresented in a sample of 78 households.

Marja: Nurzai 26 percent; Alikozai 18 percent; Daftani 11 percent; with 16 other ethnic/tribal groups represented in a sample of 80 households.

Shamalan: Barakzai 49 percent; Popalzai 15 percent; Nurzai eight percent; with 15 other ethnic/tribal groups represented in a sample of 134 households.

Darweshan: Nurzai 32 percent; Alikozai 24 percent, Andar 16 percent; with 10 other ethnic/tribal groups respresented in a sample of 68 hosehlds.

Khanishin: Baluch 48 percent; Barets 26 percent; Isakzai 13 percent; with three other ethnic/tribal groups represented in a sample of 23 households. Included with the Baluch is a concentration of Brahui located between Deshu and lower Khwaja Ali who generally identified themselves as Baluch. 1/

1/ See Louis Dupree, Afghanistan, Princetion Univ. Press, 1973, p.62.

In total, the Barakzai (21 percent), Alikozai (12 percent), Nurzai (10 percent) and Alizai (20 percent) represent the most numerous groups in the Helmand sample. They are all of Pashtun indigenous origins and are of the Durani (Abdali) Confederation.

Settlers: As noted, settler/indigenous status is a social variable that must be considered when examining regional data, as is time of settlement. It exaplains the ethnic/linguistic homogeneity, or lack of it, of a given area as well as differences in size of landholdings. Thirty six percent of the interview sample are classed as settlers. The percent of settlers by region are:

TABLE III-1: SETTLERS BY REGION AND YEARS IN PLACE

Region	Number of Settler Households in Sample	Percent of Settler Households	Number of Helmand Native Settlers	Average Years in Helmand 1/	Average Years on Farm 2/
Nowzad	0	0	0	NA	NA
Musa Qala	0	0	0	NA	NA
Zamin Dawar	0	0	0	NA	NA
Sanguin	0	0	0	NA	NA
Girishk	10	11	3	35	33.5
Central	31	30	11	29.4	14.9
Nad-i-Ali	78	100	3	21.5	18.4
Marja	80	100	15	21.8	10.9
Shamalan	35	26	3	15.7	11.1
Darweshan	28	41	3	9.9	4.3
Khanishin	8	35	6	37	5.1

1/ Includes Helmand Natives by age.
2/ Includes 7 settlers by age who were born on settlement farm.

Table III-1 also indicates the average number of years the settlers have been in the Helmand or if they are native born settlers. When the last two columns are compared, the data suggest the long term nature of the settlement process, i.e., they were either already natives of the area or waited some years for land.

As noted, the date of settlement is important for understanding land holdings variation. Until 1973, settlers received 20-30 jeribs (4-6 hectares) per household and after 1974 they received 10 jeribs (2 hectares) per household which directly affects the rural economic condition. Regions with a mix of indigenous and settled population may have a variety of landholding patterns as a result. For example, in the Khanishin area the average landholding is 38.25 hectares or 198 jeribs but the standard deviation between holdings is great. The same data broken down by indigenous holdings versus settlers, or by ethnic group, produces some interesting results. The eight settlers in the region each have 20 jeribs (4 hectares) of land; six of the eight are Baluch. The indigenous tribal groups of the region have holdings averaging:

Baluch	-	443 jeribs	(88.6 hectares)
Isakzai	-	163 "	(32.6 ")
Barets	-	296 "	(59.2 ")

Thus, the importance of the social variables of settler versus indigenous and tribal/ethnic affiliation is demonstrated.

As a side note, along the Helmand River to the south there is a general increase in size of landholdings among the Baluch groups when compared to the Pashtun areas further north. There is also a much higher rate of land not cultivated in the southern Baluch areas because of lack of water availability via the indigenously constructed irrigation intakes and systems. The Baluch are described with a centrally focused chief/client-political/economic structure (in this case, large landholdings with clients to work them) as opposed to the politically and economically more fragmented Pashtun structure with its emphasis on individual autonomy (and small farms).

Settlers' Previous Occupations: These data tend to reflect settler recruitment policies of the government. The largest number of settlers (37 percent) have previously been farm laborers. The second largest group were transhumance nomads of the past (31 percent) and were one of the chief target populations for settlement in the 1950's. There are settlers who fall into a category of unclassifiable workers (17 percent which reflects some level of interviewer error or lack of answer probing. It may be assumed that a large portion of this category worked in agriculture. The remaining 15 percent include a variety of crafts, skills and occupations as shopkeepers, waiters, students, drivers, religious functionaries, and general service jobs.

Household Type: For the purposes of this r
is defined as one with only one married mar
is one with more than one married man in it
more complex definitions but is limited by
collected. The plurality of married men ir
commonly are of two or more generations, i.

TABLE III-2: HOUSEHOLD TYPE BY SETTLEMENT S

	No Married Male (Broken Family)	One Ma Ma (Simpl
Settlers	4.4	6
Indigenous	3.3	5

The difference between the settler and ind
with the latter having a much larger propo
This factor will effect several other soci
population to follow.

Household Size: The average household siz
as a whole and the rural population of Hel
limited sample, has been estimated to be 6
of the FES indicate a very different set o

TABLE III-3: HOUSEHOLD SIZE BY REGION AND S

Region	Settler	Indigenous
Nowzad	NA	8.9
Musa Qala	NA	10.9
Zamin Dawar	NA	9.9
Sanguin	NA	10.1
Girishk	9.4	11.2
Central	8.5	9.6
Nad-i-Ali	7.8	NA
Marja	8.2	NA
Shamalan	8.7	9.4
Darweshan	6.7	11.0
Khanishin	7.0	8.7
Totals	8.0	10.1

1/ National Demographic and Family Guidan
Population of Afghanistan, Vol.V, Helm

Clearly, the settler households are smaller than those of the indigenous populations in total and by region. Girishk has the only settler population to equal the total average. As noted, Girishk has the oldest settler group in the province and tends to reflect socio-demographic patterns similar to those of the indigenous populations. A number of variables are likely involved in the data: (1) The extended family unit (defined simply as a household with more than one married man) is the ideal in a traditional Muslim agricultural setting. (2) The extended family unit tends to occur more frequently among the middle and high income groups than among the poor. (3) Settlers are recruited from among the poorer elements of society and are simple family units. Each married man qualifies for a separate land settlement unit. (4) The establishment of extended family units among displaced settler groups is to some degree a function of time and successful farming. At marriage, a young man ideally moves his bride into his father's household, the father having paid the "bride-price" which allowed the son to marry. Thus an extended household will commonly contain a man, his wife or wives, his unmarried sons and daughters, his married sons with their wives and children. But this extended unit may never materialize among the lower socio-economic status groups, e.g., the landless. Without an economic base of land or animals, the larger household unit has no function. A large household labor force is not needed. In this case, there appears to be a direct relation between settler status and smaller size family unit.

Age of Household Head: A supporting pattern is seen in the examination of ages of household heads. Again Girishk is an exceptional case.

TABLE III-4: AGE OF HOUSEHOLD HEAD BY REGION AND SETTLEMENT STATUS

Region	Settlers	Indigenous
Nowzad	NA	51.8
Musa Qala	NA	50.3
Zamin Dawar	NA	48.7
Sanguin	NA	48.3
Girishk	55.2	51.5
Central	47.1	45.7
Nad-i-Ali	44.4	44.4
Marja	43.0	43.0
Shamalan	43.4	45.1
Darweshan	43.6	43.1
Khanishin	42.8	41.9
Total	44.4	46.6

In this case there is an inverse correlation between the average age of household head and the percent of settler households in a region; that is, the settlers have younger household heads than does the indigenous population, a function of time and household type. As noted, the extended household head is expected to be of an older generation.

Household Labor Force: The two age categories used in the survey simplify the data to the point of being of limited value in understanding the demographic characteristics of the population. Any future FES should gather more refined data which would also reduce the level of error.

Males: Table III-5 indicates the percentage of households that have varying numbers of males present within the two age groups. The settler/indigenous distriction in this case does not include the total sample but includes only representative regions. The settler category is made up of the Marja and Nad-i-Ali interview samples. Each of these two areas are 100 percent settlers. The indigenous category is made up of the Girishk, Nowzad, Musa Qala, Kajakai-Zamin Dawar and Sanguin interview samples. All are 100 percent indigenous population regions with the exception of Girishk with 11 percent settlers who generally reflect indigenous population social characteristics.

TABLE III-5: DISTRIBUTION OF MALE POPULATION BY AGE GROUP AND SETTLER STATUS

	Ages 0-12			Ages 13 and Over		
	Percent HH with:					
	0 Males	1-3 Males	4+ Males	0 Males	1-3 Males	4+Males
Settlers	21.5	65.2	13.3	1.3	88.7	10.0
Indigenous	16.8	62.3	20.9	1.0	70.2	28.8
Total Sample	19	63.6	17.4	.9	77.6	21.4

Generally, Table III-5 indicates that the sample population has a relatively high proportion of families with no male children in the 0-12 age group. This pattern is more frequent among settlers than among indigenous families and likely relates to the simple/extended family patterns noted previously. Extended families (two or more generations in one household) are more likely to have a continuing and larger supply of young children than a simple family. This settler/indigenous pattern, however, is reversed with the females, Table III-7, page 25.

Table III-6 gives comparable data but refers only to males in the household who are available to work in the fields, i. e., the household agricultural labor force.

TABLE III-6: DISTRIBUTION OF MALE FIELD LABOR FORCE BY AGE GROUP AND SETTLER STATUS

	Ages 0-12			Ages 13 and Over		
	Percent HH with:			Percent HH with:		
	0 Males	1-3 Males	4+Males	0 Males	1-3 Males	4+ Males
Settlers	74.1	26.	0	.6	93.1	6.3
Indigenous	85.1	12.6	2.2	5.7	76.5	17.8
Total Sample	82	16.8	1.1	3.3	83.9	12.9

Generally, this table reflects a pattern of few male children 12 years old and under working in the fields; that is, young children are not generally defined as active members of the farm (field) labor force, although they do get responsibilities assigned around a household at very early ages. A higher proportion of settler families use this young age group than do the indigenous families who have, across the board, a larger labor force.

Females: Table III-7 suggests that the relative distribution of the female population is roughly the same as that recorded for the males but with some probable under-reporting of females in the younger age group. This is not surprising in a society where household females are not normal topics of conversation with strange men.

Table III-8 reflects traditional Muslim orientations that tend to keep women out of the fields and in the home. Especially among the Pashtun groups, in the Helmand-Kandahar region, household status may be diminished by the involvement of their female labor in the fields. Farm work, except as supplementary to the threshing (cleaning and sifting of wheat) is not considered an acceptable occupation for women from households of any status.

TABLE III-7: DISTRIBUTION OF FEMALE POPULATION BY AGE GROUP AND SETTLER STATUS

	Ages 0-12			Ages 13 and Over		
	Percent HH with:			Percent HH with:		
	0 Fem.	1-3 Fem.	4+Fem.	0 Fem.	1-3 Fem.	4+Fem.
Settlers	19.6	65.2	15.3	2	85.4	12.9
Indigenous	25.4	55.1	19.4	1.3	73.4	25.4
Total Sample	20.7	61.4	17.9	1.4	77.8	20.6

TABLE III-8: DISTRIBUTION OF FEMALE FIELD LABOR FORCE BY AGE GROUP AND SETTLER STATUS

	Ages 0-12			Ages 13 and Over		
	Percent HH with:			Percent HH with:		
	0 Fem.	1-3 Fem.	4+Fem.	0 Fem.	1-3 Fem.	4+Fem.
Settlers	88	12	0	82.9	15.8	1.3
Indigenous	99	1	0	98.4	1.6	0
Total Samples	95.5	4.1	.4	90.9	8.7	.8

There is considerable variation between the settlers and indigenous population in the inclusion of women in the farm labor force with the settlers reporting a higher utilization of women than the more traditionally oriented Pashtun groups. This difference likely reflects: (1) ethnic differences, i.e., non-Pashtun elements among the settlers; (2) the need for more household labor in the fields among the smaller settler families; and (3) social flexibility or disrupted role orientations commonly found among displaced or migrating populations, the settlers.

Off-Farm Occupations: Household sizes are large and the labor force appears adequate for agricultural production but 50 percent of the households contain individuals with off-farm occupations. Table III-9 shows the distribution of this activity as well as the sorts of occupations involved. The numbers are all male.

TABLE III-9: DISTRIBUTION AND TYPES OFF-FARM OCCUPATIONS*

	Percent of Households	Professional and Clerical		Skills and Services		Farm		Military		Students	
		No.	%	No.	%	No.	%	No.	%	No.	%
Nowzad	66	7	2.0	10	3.0	5	1.5	8	2.4	24	7.1
Musa Qala	62	15	2.5	7	1.2	5	.8	5	.8	42	7.0
Zamin Dawar	65	2	.7	8	2.6	8	2.6	1	.3	17	5.5
Sanguin	62	20	2.0	9	.9	11	1.1	12	1.2	66	6.7
Girishk	48	9	.9	2	.2	5	.5	5	.5	53	5.1
Central	53	13	1.4	11	1.1	10	1.0	10	1.0	51	5.3
Nad-i-Ali	50	7	1.2	11	1.8	4	.7	4	.7	44	7.2
Marja	34	1	.2	13	2.0	1	.2	3	.5	30	4.6
Shamalan	43	15	1.2	9	.7	5	.4	10	.8	63	5.1
Darweshan	46	2	.3	8	1.3	2	.3	10	1.6	28	4.5
Khanishin	17	0	0	0	0	2	1.1	0	0	6	3.2
Totals		91	1.2	88	1.2	58	.8	68	.9	424	5.6

*Note: Column 1 (Percent of households with off-farm workers) is calculated using the number of sample households by area. All other percent columns are calculated using the sample population by area. Since all participants are male, the percentages of the total population are small.

Students represent the largest number of persons with off-farm occupations but considering the age distribution of the population (Tables III-5 and III-7), the numbers appear small. It should be kept in mind, however, that rural female attendance at schools is near zero. While the area with the largest proportion of students is the long-term settlement area of Nad-i-Ali, with a relatively developed school system and easy access to Lashkar Gah, it is significant that the next three areas with the largest proportions of students (Sanguin, Musa Qala and Nowzad) are indigenous areas with relatively small farms. Musa Qala and Nowzad are basically water-short areas, using karez systems that have for some years been in the process of drying up. They are not areas of easy access, however, Sanguin, mostly watered by the Seraj Canal, is generally a small-farm area probably resulting from the process of Muslim inheritance fragmentation. It is conveniently located along an all-weather road. The region with the fewest students is Khanishin. It is the most isolated region with the worst roads (tracks) and probably the fewest educational facilities. The ethnic/linguistic differences between the areas are also likely involved factors. Khanishin is ethnically mixed, with 48 percent Baluch in the sample which is not one of the languages of the school system. Nowzad and Sanguin are ethnically the most homogeneous areas in the province with no settlers recorded. Nowzad has a similar pattern of Pashtun ethnicity.

The patterns of other off-farm job classifications tend to parallel the student patterns; that is, the three areas noted high in student activity are also high in "professional" (mostly teachers) and "clerical" jobs. Nowzad and the Kajakai-Zamin Dawar regions share several characteristics (including geographic location) and are both relatively high in the off-farm occupations of skills, services and farming. Thus, the general patterns suggest that, with the exception of the isloated Khanishin area, the more economically marginal areas, with small farms, fragmented land holdings and water-short karez systems tend to have higher rates of off-farm employment, which is as should be expected. The middle range off-farm activity comes from the more advantaged areas, in terms of location nearer Lashkar Gah; i.e., Central, Nad-i-Ali, Marja.

Conclusion: This chapter has noted some of the basic social characteristic of the people of Helmand province that relate to the economics of farming. The combination of the ethnic/linguistic group distribution over the area and settler status of these various groups correlates with and will explain much of the regional variation to be found in the economic data. One of the main points to be drawn from this chapter, however, is the recognition of the socio-cultural heterogeneity of the areas for planning purposes.

CHAPTER IV

FARM SIZE DISTRIBUTION, LAND VALUE AND TENURE PATTERN

Summary: The average farm size in Helmand province is 6.92 hectares. The largest farms are located in the southern part of the province (Khanishin) and the smallest in the north (Sanguin). The average farm size in the latter area is 3.22 ha; in the former, 38.25 ha. Darweshan ranks next to Khanishin with respect to farm size, though with a much smaller average (9.19 ha). Excluding Khanishin, the average farm size in Helmand province is 5.99 ha.

There is substantial inequality in land holdings: 26 percent of the farmers own 5.0 percent of the land; 52 percent own 16; and 74 percent own 32 percent, for a genie coefficient of 0.57. There is a weak inverse correlation between farm size and land value, the inequality in farm values is slightly less than the inequality in farm size. There is also less inequality in the amount of land under cultivation per farm than in farm size. In Khanishin, for example, 68 percent of the farm land is left idle.

Farm land values (in current prices) increased by 131 percent over the five years ending in 1354 (1975), an average annual growth rate of 18.2 percent. This is perhaps three times the rate of growth in the general level of prices. On average, the highest priced land ($2800/ha) is located in the small-farm area of Sanguin.

However, land prices in Nad-i-Ali, Marja and Shamalan have shown the most rapid growth, increases of 264,220 and 170 percent respectively for the five years period 1349-1354 (1970-75).

One fourth of the land in farms was not cultivated in 1354 (1975). Forty-four percent of all such land was located in Khanishin where an average of 26.14 hectares per farm (average farm size of 38.25 ha) was idle. The lack of irrigation water accounts for the bulk of the idle land.

Farmers cultivate most of their own land. Overall, an average of 4.5 percent of the land in farms is shared-out and 1.0 percent is rented-out. Farmers generally do not cultivate much land that is not their own. Rented-in land amounts to 3.9 percent of land in farms and shared-in land, 2.2 percent. Fifteen percent of the farmers had let out under girau, amounting to 4.3 percent of all land in farms.

Farm-Size Distribution: According to the survey data, approximately three-fourths of Helmand farms are less than six hectares in size (see Table following). More than half are less than four hectares, and over

a fourth are less than two hectares. There is thus a relatively large number of small farms in province. Only five percent are larger than 20 hectares and only 0.6 percent large than 100. These larger farms are concentrated in Khanishin and, to a much lesser extent, in Darweshan. The bulk of the very small farms (less than one hectare) are located in Nowzad and Zamin Dawar -- 42 percent of the farms in the former are less than one hectare and 32 percent of those in the latter. Almost 80 percent of the Sanguin farms are less than four hectares in size.

There is, however, substantial inequality in land holdings. The 25 percent of farmers with the smallest farms own only 4-5 percent of all land in farms; the 25 percent with the next smallest farms own 12-13 percent; and the next 25 percent own 17 percent: The quartile with the largest farms own 66 percent of the land, and the five percent with the largest holdings own 37 percent of the land.

A comparison of the 1970 and 1975 survey data suggests some fragmentation of land holdings. The proportion of farms in the smallest size classes was higher in 1975 than in 1970 but the proportion in the largest size classes was smaller. The percent distribution of farm size by class (in hectares) was:

	Hectares									
Year	.50	.50-.99	1.00-1.99	2.00-2.99	3.00-3.99	4.00-5.99	6.00-9.99	10.00-19.99	20.00-99.99	100+
1970	1.5	7.7	11.8	13.5	10.5	16.9	15.6	14.7	6.7	1.1
1975	2.9	9.1	14.3	11.8	14.4	21.9	12.7	7.9	4.4	0.6

TABLE IV-1: DISTRIBUTION OF FARM SIZE (SIZE CLASSES ARE IN HECTARE)

A. Frequency Distribution

	Hectares									
Area	0.50	0.50-0.99	1.00-1.99	2.00-2.99	3.00-3.99	4.00-5.99	6.00-9.99	10.00 19.99	20.00-99.99	99.99
Nowzad	5	11	5	1	1	6	5	1	3	-
Musa Qala	2	9	11	5	7	11	3	1	3	1
Zamin Dawar	2	8	10	2	2	1	2	2	2	-
Sanguin	5	19	22	20	10	12	6	2	1	-
Girishk	5	12	17	13	11	13	5	11	5	1
Central	2	7	10	9	9	42	11	10	3	-
Nad-i-Ali	-	-	4	2	1	26	41	3	1	-
Marja	-	-	-	-	38	35	1	6	-	-
Shamalan	2	5	32	23	16	21	18	16	1	-
Darweshan	-	1	3	19	12	8	9	8	8	-
Khanishin	-	1	-	-	8	-	-	3	8	3
Total	23	73	114	94	115	175	101	63	35	5

B. Percent Distribution

Nowzad	13.2	28,9	13.2	2.6	2.6	15.8	13.2	2.6	7.9	-
Musa Qala	3.8	17.0	20.8	9.4	13.2	20.8	5.7	1.9	5.7	1.9
Zamin Dawar	6.5	25.8	32.3	6.5	6.5	3.2	6.5	6.5	6.5	-
Sanguin	5.2	19.6	22.7	20.6	10.3	12.4	6.2	2.1	1.0	-
Girishk	5.4	12.9	18.3	14.0	11.8	14.0	5.4	11.8	5.4	1.1
Central	1.9	6.8	9.7	8.7	8.7	40.8	10.7	9.7	2.9	-
Nad-i-Ali	-	-	5.1	2.6	1.3	33.3	52.6	3.8	1.3	-
Marja	-	-	-	-	47.5	43.8	1.3	7.5	-	-
Shamalan	1.5	3.7	23.9	17.2	11.9	15.7	13.4	11.9	0.7	-
Darweshan	-	1.5	4.4	27.9	17.6	11.8	13.2	11.8	11.8	-
Khanishin	-	4.3	-	-	34.8	-	-	13.0	34.8	13.0
Total	2.9	9.1	14.3	11.8	14.4	21.9	12.7	7.9	4.4	0.6

C. Cumulative Distribution, Percent

Nowzad	13.2	42.1	55.3	57.9	60.5	76.3	89.5	92.1	100	100
Musa Qala	3.8	20.8	41.5	50.9	64.2	84.9	90.6	92.5	98.1	100
Zamin Dawar	6.5	32.3	64.5	71.0	77.4	80.6	87.1	93.5	100	100
Sanguin	5.2	24.7	47.4	68.0	78.4	90.7	96.9	99.0	100	100
Girishk	5.4	18.3	36.6	50.5	62.4	76.3	81.7	93.5	98.9	100
Central	1.9	8.7	18.4	27.2	35.9	76.7	87.4	97.1	100	100
Nad-i-Ali	-	-	5.1	7.7	9.0	42.3	94.9	98.7	100	100
Marja	-	-	-	-	47.5	91.3	92.5	100	100	100
Shamalan	1.5	5.2	29.1	46.3	58.2	73.9	87.3	99.3	100	100
Darweshan	-	1.5	5.9	33.8	51.5	63.2	76.5	88.2	100	100
Khanishin	-	4.3	4.3	4.3	39.1	39.1	39.1	52.2	87	100
Total	2.9	12.0	26.3	38.1	52.5	74.4	87.1	95.0	99.4	100

TABLE IV-2: PERCENT OF ALL LAND IN ALL FARMS BY SIZE CLASS OF FARM (SIZE CLASSES ARE IN HECTARES)

A. Percent Distribution

Area	.01-.50	.50-.99	1.00-1.99	2.00-2.99	3.00-3.99	4.00-5.99	6.00-9.99	10.00-19.99	20.00-99.99	100.00
Nowzad	.46	3.47	2.55	.88	1.51	12.19	16.41	4.38	57.89	-
Musa Qala	.17	1.50	3.56	2.80	5.47	11.83	5.60	3.84	23.57	41.66
Zamin Dawar	.36	3.59	9.37	3.59	4.43	3.24	9.47	15.35	50.60	-
Sanguin	.56	4.76	10.22	15.65	11.81	19.00	13.37	9.28	15.35	-
Girishk	.27	1.51	4.27	5.05	5.87	10.72	5.93	23.37	26.64	16.35
Central	.13	.97	2.45	3.83	5.34	35.28	16.53	19.04	16.43	-
Nad-i-Ali	-	-	1.59	.95	.79	25.76	57.90	7-91	5.09	-
Marja	-	-	-	-	34.47	44.07	1.45	20.01	-	-
Shamalan	.12	.64	8.04	9.60	8.79	15.13	21.46	32.73	3.49	-
Darweshan	-	.12	.65	7.24	7.24	6.69	11.18	17.71	49.17	-
Khanishin	-	.09	-	-	3.52	-	-	5.77	47.15	43.48
Total	.14	1.05	3.21	4.34	7.77	16.13	13.82	15.43	25.74	12.31

B. Percent Distribution, Cumulative

Nowzad	.46	4.20	6.75	7.63	9.14	21.33	37.74	42.12	100.0	100.0
Musa Qala	.17	1.67	5.23	8.03	13.50	25.33	30.93	34.77	58.34	100.0
Zamin Dawar	.36	3.95	13.32	16.91	21.34	24.58	34.05	49.40	100.0	100.0
Sanguin	.56	5.32	15.54	31.19	43.00	62.00	75.37	84.65	100.0	100.0
Girishk	.27	1.78	6.05	11.10	16.97	27.69	33.62	56.99	83.63	100.0
Central	.13	1.10	3.55	7.38	12.72	48.00	64.53	83.57	100.0	100.0
Nad-i-Ali	-	-	1.59	2.54	3.33	29.09	86.99	94.9	100.0	100.0
Marja	-	-	-	-	34.47	78.54	79.99	100.0	100.0	100.0
Shamalan	.12	.76	8.80	18.40	27.19	42.32	63.78	96.51	100.0	100.0
Darweshan	-	.12	.77	8.01	15.25	21.94	33.12	50.83	100.0	100.0
Khanishin	-	.09	.09	.09	3.61	3.61	3.61	9.38	56.53	100.0
Total	.14	1.19	4.40	8.74	16.51	32.64	46.46	61.89	87.63	100.0

Average Farm Size: The average farm size of the sample farmer was 6.92 hectares in 1975 (see Table below), down substantially from the 8.60 hectares of the 1970 survey. The variance about the 1975 mean, however, was very high.* The average farm size was the smallest in Sanguin (3.22 ha) and the largest in Khanishin (38.25 ha), with the next highest average, 9.19 ha, in Darweshan. There was substantial idle land -- an average of 1.71 ha/farm or one-fourth of the land in farms. This too had a high variance. The range was from a low of 0.31 hectares, or five percent of land in farms, in Nad-i-Ali to a high of 26.4 hectares, or 68 percent of land in farms, in Khanishin. While far from an egalitarian distribution, the inequality is smaller for cultivated land per farm than in absolute land ownership. The 1975 survey shows a substantial reduction in the amount of idle land from the level reported in the 1970 survey -- from 2.95 ha/farm, or 34 percent of the land in farms in 1970, to 1.71 ha/farm, or 25 percent of land in farms in 1975. Average cropland per farm, however, was still somewhat higher in 1970 (5.65 va 5.21 ha) than in 1975.

Tenancy Patterns: The great bulk of Helmand farmers cultivate their own land with the help of hired labor, including bazgars. The latter are share croppers who typically provide only labor inputs into the farming process and have no decision-making authority. Bazgars were considered farm laborers in the 1970 survey and the same is done in this report.

As Table IV-3 shows, an average of only 0.38 ha/farm, or 5-6 percent of all farm land was rented-and shared-out; 7.4 percent of all sample farmers shared-out land and 3.1 percent rented-out land. An average of 0.30 ha/farm was in girau. Girau is a process whereby the owner borrows against his land and until the loan is repaid the output of the land goes to the creditor. Often the debtor will sharecrop the land that he has in girau. Fifteen percent of the sample farmers had put land under girau in 1975.

Twelve percent of the farmers cultivated land that was not their own, amounting to an average of 0.51 ha/farm for all sample farms.

Sharecropping: For all practical purposes, there are two kinds of sharecroppers in Helmand province, viz, bazgars and keshtagars. The former, by far the more numerous, typically provide only labor inputs and receive one-fifth of the crop. The latter ordinarily provide all inputs except land and water. The cost of fertilizer, however, is generally shared in the same proportion as the crop is divided, i.e., a two-third share accruing to the keshtagar. Wheat and cotton are by far the dominant crops produced by sharecroppers.

---

* The standard deviation was twice the size of the mean.

Very few (two percent) of the farms utilized both bazgars and keshtagars, and only six percent utilized keshtagars (see Table IV-5 following). While less than half of all farms utilized sharecroppers, there were almost as many sharecroppers as farm-owners. For all sample farms, the average number of sharecroppers was 0.9 -- 0.8 bazgars and 0.1 keshtagars per farm. Overall, an average of 3.23 hectares was sharecropped by each of the bazgars and 3.68 hectares by each keshtagar.

1970 vs 1975. According to the survey results, the number of sharecroppers per farm was slightly lower in 1975 than in 1970 -- the respective averages were 0.90 and 0.94. The decrease was experienced by both bazgars and keshtagars. This outcome seems reasonable since the average farm size decreased and the tractor population increased over the period. The survey data show a very sharp decrease in the number of sharecroppers per farm in Khanishin. Thus, there were 2.55 bazgars per farm in 1970 but 0.87 in 1975. The corresponding figures for keshtagars were 1.00 and 0.70. There were also decreases for Nowzad, Musa Qala, Zamin Dawar, and Darweshan. In the first three of these areas there was substantial underemployment and unemployment. A larger proportion of the household heads in these areas indicated an interest in off-farm work than in any of the other areas. The number of bazgars per farm increased in Marja, Nad-i-Ali, Shamalan, Girishk and Sanguin.

TABLE IV-3: AVERAGE FARM SIZE: AND AVERAGE PER FARM AMOUNT OF IDLE, CULTIVATED, SHARED-OUT, RENTED-OUT AND GIRAU LAND
(Hectares)

Area	No. Farms	Mean Farm Size (Owned)	Average Per Farm				
			Idle	Cultivated	Shared-Out	Rented-Out	Giraued Out
Nowzad	38	6.39	2.96	3.43	0.22	0.06	0.88
Musa Qala	53	8.74	2.01	6.73	0.07	0.01	0.28
Zamin Dawar	31	5.20	2.89	2.31	-	0.06	0.45
Sanguin	97	3.22	0.46	1.76	0.14	0.02	0.27
Girishk	93	6.87	0.55	6.32	0.24	0.10	0.80
Central	103	5.98	1.50	4.48	0.18	0.14	0.23
Nad-i-Ali	78	6.24	0.31	5.93	0.03	-	0.07
Marja	80	5.33	0.93	4.40	0.22	-	-
Shamalan	134	4.96	0.44	4.52	0.29	0.13	0.21
Darweshan	68	9.19	0.72	8.47	0.29	0.01	0.26
Khanishin	23	38.25	26.14	12.11	4.44	0.40	-
Total	798	6.92	1.71	5.21	0.31	0.07	0.30

TABLE IV-4: FREQUENCY OF FARMERS WITH GIRAU-OUT LAND, BY AREA AND REASON

Area	Got Married	To Pay Debts	Unable To Plant	Salt Problems	Family Reasons	Financial Problems	Unknown
Nowzad	1	2	1	-	-	4	-
Musa Qala	1	2	-	-	1	7	1
Zamin Dawar	2	1	-	-	-	3	-
Sanguin	2	9	-	1	1	8	1
Girishk	4	5	1	-	1	14	3
Central	-	-	3	1	1	12	-
Nad-i-Ali	-	1	-	-	-	2	-
Marja	-	-	-	-	-	-	-
Shamalan	2	7	-	-	1	8	3
Darweshan	2	1	-	-	-	4	1
Khanishin	-	-	-	-	-	-	-
Total	14	28	5	2	5	62	9

TABLE IV-5: SHARECROPPERS: NUMBER FARMS REPORTING USE OF, TOTAL AND AVERAGE NUMBER PER FARM, AND PERCENT OF ALL FARMS UTILIZING, BY AREA

Area	Number Farms Reporting			Total No.		Total Hectares Cultivated by:		Average Number per Farm for All Sample Farms		Average Number per Farm for Farms Utilizing		% of All Farms Utilizing:		
	Bazgar & Kesh-tagar	Bazgar	Kesh-tagar	Bazgar	Kesh-tagar	Bazgar	Kesh-tagar	Bazgar	Kesh-tagar	Bazgar	Kesh-tagar	Bazgar & Kesh-tagar	Bazgar	Kesh-tagar
Nowzad	-	11	1	18	3	51.8	5.8	0.47	0.08	1.64	3.00	-	29	3
Musa Qala	-	21	2	36	2	105.8	2.6	0.65	0.04	1.71	1.00	-	38	4
Zamin Dawar	-	7	1	18	1	42.0	0.6	0.58	0.03	2.57	1.00	-	23	3
Sanguin	2	35	5	57	10	128.4	14.0	0.59	0.10	1.54	1.43	2	36	5
Girishk	3	36	6	128	10	431.4	23.0	1.36	0.11	3.28	1.11	3	38	6
Central	1	44	10	77	11	214.0	53.6	0.75	0.11	1.71	1.00	1	43	10
Nad-i-Ali	-	41	1	63	1	221.4	2.4	0.81	0.01	1.54	1.00	-	53	1
Marja	-	25	3	35	3	107.0	11.8	0.44	0.04	1.40	1.00	-	31	4
Shamalan	6	54	9	117	15	301.0	38.6	0.87	0.11	1.95	1.00	4	40	7
Darweshan	3	24	4	71	9	363.6	19.8	1.04	0.13	2.63	1.29	4	35	6
Khanishin	2	8	4	20	16	98.8	127.2	0.87	0.70	2.00	2.67	9	35	17
Total	17	306	46	640	81	2065.2	298.4	0.80	0.10	1.98	1.29	2	38	6

Price of Farm Land. Over the five years ending in 1975, the simple average price of farm land in Helmand province increased by 131 percent, from afs 36,230 per hectare to afs 83,580. The average annual growth rate was 18.2 percent, perhaps 200 percent higher than the growth in the general level of price. Growth rates varied widely from area to area, however. The highest rate, 264 percent, or 29.5 percent annually, was in Nad-i-Ali; the lowest, 49 percent, or 8.3 percent annually, was in Zamin Dawar. Despite the high growth rate in land values in Nad-i-Ali, farm land in this area is still the lowest priced (average of afs 34,310 per hectare) of the 11 areas in Helmand province. It is one-fourth the price of land in Sanguin, where the highest priced land (afs 133,200 per hectare average) is located. And as is shown in Table IV-6 below, the absolute changes in the land values in all except the Central and Khanishin areas were greater than the absolute value of farm land in Nad-i-Ali in 1975.

Land values in Khanishin experienced the smallest absolute increase, probably because two-thirds of the farm land in this area is left idle each year due to lack of water and because it is a rather inaccessible area. Farm values in Nad-i-Ali experienced the next smallest increase. The soils in this area have a very low level of native fertility, and there are also severe drainage and salinity problems. The Central area is next in order. Although a heterogeneous area, it has the same problems as noted above for Nad-i-Ali but to a lesser degree. In addition, the area under irrigation continues to shrink as the capacity of a major canal serving the area continues to decline. Next in order is the Zamin Dawar area where good soils exist but where the flow from the karezes which irrigate the area has been declining. In the Sanguin area, where land prices rose the most, the soil is good, there are only minor salting problems, and most farmers have ample irrigation water.

On the criterion of land value, the rank order of the 11 areas changed but little over the past five years.* Zamin Dawar experienced the largest change, moving from first place in 1970 to fourth in 1975. This change is explained by the declining flow of the kareze which irrigate the area. The next largest change was for Girishk which moved from fourth place to second.

We do not have much information on land values in the rest of the country. But land prices in Helmand are on average about one-fifth those around Jalalabad and about one-third those in the vacinity of Kunduz-Pule Khumri-Baghlan. The values in the Helmand presumably do not reflect the increased productivity that will result from the drainage project, since farmers were not aware of the program at the time the survey was made.

---

* For the ranked means of averages, Spearman's rank correlation coefficient has a value of 0.92.

TABLE IV-6: AVERAGE PRICE OF FARM LAND, 1970 AND 1975, AND CHANGE IN PRICES BY AREA AND FOR THE HELMAND PROVINCE. RANK ORDERED BY AREA
(afs/Hectare)

Area	1970 Price	1970 Rank	1975 Price	1975 Rank	Change, 1970-1975 Absolute afs	Absolute Rank	Relative %	Relative Rank	Annual %
Nowzad	31,699	6	72,375	6	40,676	5	128	6	18.0
Musa Qala	56,626	3	110,940	3	54,314	4	96	9	14.4
Zamin Dawar	70,519	1	105,177	4	34,658	8	49	11	8.3
Sanguin	59,457	2	133,202	1	73,745	1	124	7	17.5
Girishk	44,677	4	111,416	2	66,739	2	149	4	20.1
Central	29,433	7	59,380	8	29,947	9	102	8	15.1
Nad-i-Ali	9,417	11	34,310	11	24,893	10	264	1	29.5
Marja	15,849	10	50,664	9	34,815	7	220	2	26.2
Shamalan	36,479	5	98,391	5	61,912	3	170	3	22.0
Darweshan	26,896	8	64,518	7	37,622	6	140	5	19.1
Khanishin	20,258	9	37,982	10	17,724	11	88	10	13.4
Province	36,231		83,582		47,351		131		18.2

Land Leveling. Among sampled farmers, 96.4 percent gave positive responses when asked whether their land was leveled, amounting to an average of 5.66 hectares of such land per farm. Of those whose land was leveled, 93 farmers (12 percent) indicated this had been done by Government; 630 (81.6 percent) by themselves; and 39 (5.1 percent) said by both themselves and Government. Ten (1.3 percent) reported they didn't know who had done the leveling. More than half of the interviewed farmers, 437 (56.5 percent), reported that their land had been leveled by using a combination of hand and animal power; 120 (15.5 percent) had utilized machines and 104 (13.5 percent) had leveled their land by hand. Twelve percent had used various combinations of hand-animal-machine approaches. Nineteen farmers (2.6 percent) didn't know how their farms had been leveled since they received the land already leveled from their ancestors.

Comparison of 1970 and 1975 surveys. As shown in Table IV-7 below, 66 percent of the sampled farmers in 1970 reported their land was leveled, while in 1975 this percentage moved up to 96.4. The proportion of farmers who had used machine power for their land leveling rose from 12.2 percent in 1970 to 24.6 percent in 1975. For the corresponding years, the use of traditional methods fell from 86.6 percent to 75.4 percent, a reflection of the increase of agricultural machinery in the province.

TABLE IV-7: PROPORTION OF FARMERS REPORTING THEIR LAND HAD BEEN LEVELED, AND PERCENTAGE REPORTING THAT LEVELING HAD BEEN DONE WITH MACHINES, 1970 AND 1975, BY AREA

(Percent)

Area	Percent of All Farmers Reporting Land was Leveled		% of those who Had Leveled which Used Machines to Level	
	1970	1975	1970	1975
Nowzad	63	97.4	-	2.7
Musa Qala, Zamin Dawar	66	93.0	-	3.8
Sanguin	70	94.8	-	-
Girishk	96	95.7	-	8.9
Central	74*	99.0	-	9.9
Nad-i-Ali	67	98.7	61.0	74.0
Marja	75	98.8	66.0	75.9
Shamalan	48	94.8	10.0	24.4
Darweshan	48	98.5	5.0	29.9
Khanishin	50	95.7	-	-
Total	66	96.6	12.2	24.6

* Seraj

CHAPTER V

CROPS AND CROPPING PATTERNS

Crops: Land use and cropping pattern in Helmand are shown in Tables V-1 thru V-3. The average farm of 6.86 hectares consists of 4.75 hectares (69 percent) cropland and 2.12 hectares (31 percent) idle land. Idle land includes fallow land, wasteland, pasture, house and barn lots, roads, drains and ditches. Very little arable, productive land is set aside for pasture in the study area. Animals graze mostly on fallow land, wasteland, or public land.

On the average farm, double-cropping is practiced on 1.10 hectares, giving a total land in crops of 5.85 hectares. The area double-cropped and total land in crops are adjusted to include the land farmed by the owner and only the land that has been shared-out, rented-out, and giraued-out; it excludes the land that has been shared-in, rented-in and giraued-in, assuming that the cropping pattern of the rented-out and giraued-out land is the same as that of the land farmed by the owner in each region.

Wheat is still the dominant crop, in the study area, covering 3.14 hectares (66 percent) of total cropland. Fertilizer-responsive, high yielding varieties of wheat have largely replaced the local varieties; only the water short regions in the north and south have reported significant farming of local wheat. Overall, 28 percent of sample farmers reported farming local varieties of wheat on 22 percent of average cropland, while the corresponding figures for improved wheat are 76 and 44 percent respectively. a/

Cotton is the next most important crop. On the average, each farm had 1.36 hectares (29 percent of its cropland) under cotton; 1.10 hectares (23 percent) of this was single-cropped cotton and 0.26 hectares (six percent) was double-cropped cotton. Single-cropped cotton is planted early in the spring on previously fallow land, while double-cropped cotton is planted immediately after the wheat harvest. The extent of cotton double-cropping depends on water availability and average farm size. In general, cotton farming in Helmand has expanded very rapidly over the past five years, due mainly to the introduction of high yielding varieties of wheat and the establishment of a price support policy for cotton delivered to the government-owned processing plant in Lashkar Gah. Cotton production is expected to continue to grow in the future and the government has already approved a project to expand the ginning and storage capacity for cotton in Helmand. In 1975-76, 65 percent of the sample farmers reported single-cropped cotton farming and 25 percent reported double-cropped cotton farming,

a/ The sum will add up to more than 100 percent due to farms reporting both local and improved wheats.

TABLE V-1: LAND USE IN HECTARES PER FARM, BY REGION

Region	Farm Size	Cropland	Idle Land [a]	LAND IN CROPS					
				Wheat	Cotton [b]	Other Crops	Fruits & Vegetables	Total Land in Crops	Area Cropped Double [c]
Nowzad	6.39	3.30	3.09	2.26	0.14	0.53	0.70	3.63	0.34
Musa Qala	5.10	3.00	2.10	2.08	0.55	0.55	0.30	3.48	0.48
Zamin Dawar	5.20	2.33	2.87	1.81	0.09	0.92	0.25	3.07	0.74
Sanguin	3.22	2.66	0.56	2.14	0.33	1.41	0.17	4.05	1.39
Girishk	6.87	5. 77	1.10	3.88	1.52	1.58	0.29	7.27	1.50
Central	5.98	4.26	1.72	2.63	1.20	0.90	0.31	5.04	0.79
Nad-i-Ali	6.24	5.38	0.86	3.50	1.75	0.66	0.32	6.23	0.85
Marja	5.33	4.12	1.21	2.83	1.44	0.97	0.30	5.54	1.43
Shamalan	4.96	4.25	0.71	2.26	2.11	1.05	0.32	5.74	1.50
Darweshan	10.67	9.18	1.49	5.76	3.10	1.03	0.43	10.32	1.15
Khanishin	38.63	11.14	27.49	9.37	0.84	0.56	0.81	11.58	0.45
Total	6.86	4.75	2.12	3.14	1.36	1.01	0.34	5.85	1.10

[a] Idle Land - Includes land taken by villages and houses and land lost in drains laterals, roads etc.

[b] Includes double cropped cotton which is planted in wheatland.

[c] Covers corn, Mungbeans, cotton, and some vegetables planted in wheatland.

TABLE V-2: Average Area Cropped per Farm and Area Cropped as Percent of Cropland per Farm by Crop, by Area

Region	Wheat				Cotton				Corn		Clovers		Other Crops a/		Vegetables		Fruits b/		Total Land in Crops c/	
	Local		Improved		Single		Double													
	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%
Nowzad	2.13	64.5	0.13	3.9	0.14	4.2	-	-	0.25	7.6	0.10	3.0	0.18	5.4	0.01	0.3	0.69	20.9	3.63	110.0
Musa Qala	0.50	16.7	1.58	52.7	0.49	16.3	0.06	2.0	0.38	12.7	0.11	3.7	0.06	2.0	0.02	0.7	0.28	9.3	3.48	116.0
Zamin Dawar	1.01	43.3	0.80	34.3	0.06	2.6	0.03	1.3	0.61	26.2	0.07	3.0	0.24	10.3	0.01	0.4	0.24	10.3	3.07	131.8
Sanguin	-	-	2.14	80.4	0.27	10.2	0.06	2.2	0.92	34.6	0.10	3.8	0.39	14.7	0.02	0.8	0.15	5.6	4.05	152.2
Girishk	0.44	7.6	3.44	59.6	1.38	23.9	0.14	2.4	1.16	20.1	0.20	3.5	0.22	3.8	0.11	1.9	0.18	3.1	7.27	126.0
Central	1.19	27.9	1.44	33.8	1.06	24.9	0.14	3.3	0.54	12.7	0.20	4.7	0.16	3.8	0.16	3.8	0.15	3.5	5.04	118.3
Nad-i-Ali	0.10	1.8	3.40	63.2	1.50	27.9	0.25	4.6	0.28	5.2	0.13	2.4	0.25	4.7	0.09	1.7	0.23	4.3	6.23	115.8
Marja	0.24	5.8	2.59	62.9	0.85	20.6	0.59	14.3	0.54	13.1	0.20	4.8	0.23	5.6	0.10	2.4	0.20	4.8	5.54	134.5
Shamalan	0.29	6.8	1.97	46.4	1.51	35.5	0.60	14.1	0.76	17.9	0.18	4.2	0.11	2.6	0.21	4.9	0.11	2.6	5.74	135.0
Darweshan	3.85	41.9	1.91	20.8	2.74	29.8	0.36	3.9	0.34	3.7	0.19	2.1	0.50	5.4	0.08	0.9	0.35	3.8	10.32	112.4
Khanishin	9.34	83.8	0.03	0.3	0.84	7.5	-	-	0.02	0.2	0.03	0.3	0.51	4.6	0.15	1.3	0.66	5.9	11.58	103.9
Total	1.06	22.3	2.08	43.8	1.10	23.2	0.26	5.5	0.62	13.0	0.16	3.4	0.23	4.8	0.10	2.1	0.23	4.8	5.85	123.2

a/ Mainly barley and Mungbeans.

b/ Orchard Land only, in addition fruit trees are planted along farm boundaries.

c/ Includes double cropping.

TABLE V-3: Percent of Sample Farms Reporting Planting of Indicated Crops by Region

Region	Wheat		Cotton		Corn		Mung Beans	Clovers	Vegetables	
	Local	Improved	Single	Double	Local	Improved			Single	Double
Nowzad	89%	10	13	3	45	0	13	37	13	13
Musa Qala	34	69	27	14	58	2	9	56	14	14
Zamin Dawar	58	45	10	6	52	3	6	48	10	10
Sanguin	1	98	25	9	84	4	9	54	12	12
Girishk	13	87	70	18	76	3	17	78	23	23
Central	40	67	87	16	45	2	18	69	20	21
Nad-i-Ali	5	95	88	28	19	18	20	55	23	23
Marja	14	95	76	55	34	22	28	71	22	22
Shamalan	16	87	84	44	43	8	14	67	34	34
Darweshan	62	59	96	38	32	5	25	61	25	25
Khanishin	96	4	35	0	9	0	22	17	13	13
Total	28	76	65	25	48	7	17	61	22	22

ranging from a high of 96 percent in Darweshan to a low of 10 percent in Zamin Dawar (single-cropped) and from a high of 55 percent in Marja to a low of zero percent in Khanishin (double-cropped). Double-cropped cotton is generally damaged by the early frost in November and the yield is lower than the single-cropped cotton. Research on new varieties of wheat and cotton with shorter growing seasons may solve this problem. Currently, the improved varieties of cotton grown in the area are Akala 44 and 1517 C.

Corn and clovers are grown in all regions of Helmand on 13 and three percent of cropland respectively. Though some regions reported farming of improved varieties of corn, the farmers were less enthusiastic about planting the new varieties. Some farmers indicated that the yields of the local and improved varieties of corn were practically the same even when the improved varieties were fertilized. Hence, more research and demonstration is needed for the expansion of improved corn farming.

Other crops, such as Mung Beans, Barley and Sesame, cover about 0.23 hectares (five percent) of cropland ranging from a high of 15 percent in Sanguin to a low of two percent in Musa Qala.

Vegetables are grown on 0.1 hectares (two percent) of cropland. With the exception of Girishk, Central, Marja, and Shamalan regions, vegetables (carrots, tomatoes and onions) are mainly grown in small lots around the houses for the owners' consumption. In Marja and Shamalan melons form the major kinds of vegetables that are grown for sale. In the recent past, melons from Helmand have gained expanding markets in Kabul and other major towns in the country.

Fruits have traditionally been the high value cash crop in Helmand. Fruit production, however, has remained limited to the regions in upper Helmand and until very recently little orchard planting was excercised in the relatively newer project areas in the center. Most of the grape vines and pomegranate trees listed in Table V-4 for Central, Nad-i-Ali, and Marja are newly-planted trees which do not yet bear any fruit. This indicates a movement towards expansion in fruit production. Almonds produced in Nowzad, Musa Qala, and Zamin Dawar are famous in local and foreign markets and form important sources of income to farmers in those regions. Other fruits which are generally planted around the house and on the farm/orchard boundaries are mulberries, Russion olives, figs, apricots, apples and pears. Mulberries produced in the area are normally for home consumption and are not for sale. On the average, orchard land covered 0.23 hectares (five percent) of the cropland, ranging from a high of 21 percent in Nowzad to a low of three percent in Shamalan. Some barley and clover interplanting in newly planted orchards was reported.

TABLE V-4: Average Number of Fruit Trees/Vines per Farm by Region

Region	% of Farms Reporting any Fruit	Average Number of Trees/Vines			
		Grapes	Pomegranates	Almonds	Other Fruits a/
Nowzad	68	10	13	19	87
Musa Qala	85	21	18	17	137
Zamin Dawar	74	18	7	5	36
Sanguin	77	29	24	1	180
Girishk	72	35	22	6	162
Central	78	41	26	4	156
Nad-i-Ali	73	53	29	0	90
Marja	72	49	36	2	105
Shamalan	64	44	30	3	167
Darweshan	71	30	15	0	62
Khanishin	35	8	1	0	8
Total	72	36	24	4	129

Table V-5 shows the double-cropping pattern. Overall 1.10 hectares (twenty-three percent) of the cropland is double-cropped. Since double-cropping in Helmand is mostly referred to the planting of a second crop on wheat land, the land available for double-cropping is the average wheat land in each region. In 1975-76, 35 percent of the wheat land was planted in second crops, e.g., cotton, corn, mung beans, and vegetables. Shamalan, with 66 percent of the wheat land double-cropped, reported the highest rate and Khanishin, with five percent, the lowest. Corn is the main second crop covering over 56 percent of the area double cropped; this is followed by cotton and mung beans which cover 24 and 11 percent, respectively. Double-cropping is on the increase, and practically all of this land planted in cotton is a net addition to the total area cropped. As summarized in table VII-1, the valume of double-cropping is limited by factors such as water-shortage and the high cost of chemical fertilizer required for replenishment of nutrients in the soils.

a/ Includes Russion Olive and Mulberry trees planted to mark farm/orchard boundaries.

TABLE V-5: Average Double Cropping per Farm by Region

Region	Area Double Cropped			Double Crops in Hectares and in Percent of Area Double Cropped									
				Cotton		Corn		Mung Beans		Other Crops		Vegetables	
	Hectares	% of Cropland	% of Wheatland	Ha's	%	Ha's	%	Ha's	%	Ha's	%	Ha's	%
Nowzad	.33	10.0	14.6	-	-	.25	75.8	.02	6.1	.06	18.2	-	-
Musa Qala	.48	16.0	23.1	.06	12.5	.38	79.2	.02	4.2	.01	2.1	.01	2.1
Zamin Dawar	.73	31.3	40.3	.03	4.1	.61	83.6	.01	1.4	.07	9.5	.01	1.4
Sanguin	1.38	51.9	64.5	.06	4.3	.92	66.7	.05	3.6	.34	24.6	.01	.7
Girishk	1.49	25.8	38.4	.14	9.4	1.16	77.8	.08	5.4	.08	5.4	.03	2.0
Central	.80	18.8	30.4	.14	17.5	.54	67.5	.11	13.8	-	-	.01	1.2
Nad-i-Ali	.84	15.6	24.0	.25	29.8	.28	33.3	.24	28.6	-	-	.07	8.3
Marja	1.43	34.5	50.5	.59	41.2	.54	37.8	.16	11.2	.06	4.2	.08	5.6
Shamalan	1.50	35.0	66.4	.60	40.0	.76	50.7	.08	5.3	.03	2.0	.03	2.0
Darweshan	1.14	12.4	19.8	.36	31.6	.34	29.8	.28	24.6	.10	8.8	.06	5.3
Khanishan	.45	3.9	4.8	-	-	.02	4.4	.41	91.1	.02	4.4	-	-
Total	1.10	23.2	35.0	.26	23.6	.62	56.4	.12	10.9	.07	6.4	.03	2.7

Cropping-Pattern, Comparison with 1970: The land-use and cropping-pattern for 1970 and 1975 are shown in Table V-6. During this five year period, major changes in farming practices have occurred in Helmand. First, the average farm holding has dropped by 20 percent from 8.60 to 6.86 hectares. The decrease in farm size is mainly due to land fragmentation through inheritance and settlement of landless farmers and nomads on small lots of about 2 hectares. (see Chapter III The People). The decrease in cropland, however, is lower than that of the general farm which indicates a net expansion in cropland area resulting from further cultivation of idle land. Idle land which measured as 52 percent of cropland in 1970 dropped to 45 percent in 1975.

Second, in absolute terms double-cropping increased by 112 percent, from 0.52 hectares to 1.10 hectares per farm. In relative terms, the increase is larger and the area double-cropped rose from 9 percent of the cropland in 1970 to 23 percent in 1975. The growth in double-cropping has resulted from an increase in improved wheat farming and use of chemical fertilizer.

Third, high yielding varieties of wheat have, to a great extend, replaced the local varieties. Overall, the absolute land per farm planted to improved wheat has increased by 550 percent, from 0.32 to 2.08 hectares. Improved varieties of wheat which covered only six percent of the cropland in 1970 increased to 44 percent in 1975; local wheat dropped from 75 to 22 percent in the same period. However, improved and local wheats are not planted at the indicated rate uniformly in all regions. The 22 percent in local wheat is mainly composed of farms in the water-short Northern Helmand and Khanishin areas. In Helmand, improved wheat farming requires application of chemical fertilizer and consequently more irrigation.

Fourth, cotton farming, which is a relatively recent introduction into the area, has experienced a rapid growth. From 1970 to 1975 the absolute land per farm planted to cotton (single and double-cropped) has increased by 339 percent, from 0.31 to 1.36 hectares, covering five and 29 percent of the total cropland, respectively. The increase in double-cropped cotton is even larger. Cotton farming is expected to continue to grow in the future.

Finally, other field crops and fruits show slight decreases in absolute terms but have remained practically unchanged in relative terms. Land in vegetables has increased by 150 percent from a small base figure of 0.04 hectares in 1970 to 0.10 hectares in 1975. Melons constitute the bulk of this increase and are produced for the market, while vegetables are generally grown for household consumption.

TABLE V-6: Cropping Pattern, Comparison with 1970

Land use and Crops	Land in Hectares			Land use as Percent of Cropland	
	1970	1975	% increase	1970	1975
Farm Size	8.60	6.86	-20	152	144
Cropland	5.65	4.75	-16	100	100
Idle Land	2.95	2.12	-28	52	45
Area Double Cropped	0.52	1.10	112	9	23
Wheat-Local	4.22	1.06	-75	75	22
Wheat-Improved	0.32	2.08	550	6	44
Cotton	0.31	1.36	339	5	29
Corn	0.51	0.62	22	9	13
Clovers	0.20	0.16	-20	4	3
Other Crops	0.38	0.23	-39	7	5
Vegetables	0.04	0.10	150	1	2
Fruits	0.29	0.23	-21	5	5

Conclusion: Farming in Helmand has started to break away from its traditional subsistance form and farmers are now able to grow more high-value cash crops. The shift is due mainly to improved wheat farming and the use of chemical fertilizer. Using high yielding varieties of wheat farmers can meet their consumption needs by planting less land to wheat (81 percent of cropland in 1970 versus 66 percent in 1975), releasing more land for other crops. Presently, the major crops produced for sale are cotton and melons, which enjoy established markets in Lashkar Gah and Kabul respectively. Helmand, however, has the potential to grow more high-valued crops such as vegetables and fruits when the marketing requirements for these crops are met, e.g., construction of better farm to market roads in the area. Though farming in Helmand as a whole shows considerable improvement, the water short regions in the north (Nowzad and Zamin Dawar) and Khanishin in the south are still subsistance farming areas where conditions are becoming worse due to the decreased volumes of karez water for irrigation. During the past five years, there has been an increase in out-migration of small landowners from Nowzad and Zamin Dawar. The plans to provide irrigation water from Kajakai reservoir by pumps will certainly be helpful for the development of Zamin Dawar, but new irrigation schemes for Nowzad, Musa Qala, and Khanishin should also be studied.

"water short karez areas"

CHAPTER VI

CULTURAL PRACTICES

Fertilizer: The great bulk (94 percent) of commercial fertilizer was applied to wheat and cotton: 63 percent to the former and 31 percent to the latter. Most of the remainder was used on fruits, with little if any applied to vegetables. While varying widely from area to area, the fertilizer cost per farm averaged approximately afs.11,700. The following amounts of commercial fertilizer were applied by the sample farmers:

Crop	Urea		DAP		Urea + DAP	
	(MT)	(%)	(MT)	(%)	(MT)	(%)
Wheat	379.9	65.7	175.1	58.0	555.0	63.1
Cotton	162.5	28.1	110.5	36.6	273.0	31.0
Corn	3.2	0.6	1.0	0.3	4.2	0.5
Vegs	2.2	0.4	1.3	0.4	3.5	0.4
Fruits	26.3	4.6	11.9	3.9	38.2	4.3
Other	3.9	0.7	2.0	0.7	5.9	0.7
Total	578.0	100.0	301.8	100.0	879.8	100.0

Wheat: Three-fourths of all farmers applied commercial fertilizer to wheat. The range was from 4 percent in Khanishin to 96 percent in Marja and Sanguin. An average of 2.24 ha/farm of wheat was fertilized, and the overall average application rate was 310 kgs/ha. The recommended rate was a standardized 375 kgs/ha of a two to one mix of urea and DAP. While farmers did not adhere very closely to the recommended rate, the two to one mix was typically used. The retail price of the mix was approximately afs.10.6/kg.

Slightly over one fifth of the farmers applied manure to their wheat land and 18 percent applied top soil. Only two farmers out of the sample of almost 800 applied gypsum.

TABLE VI-1: FERTILIZER APPLIED TO WHEAT

Area	Commercial Fertilizer on Wheat: Farmers Using (%)	Application Rate (Kgs/ha)	Fertilized Area, Mean (Ha/Farm)	Farmers Which Used: Manure (%)	Top Soil (%)	Gypsum (%)
Nowzad	11	116	0.15	8	11	-
Musa Qala	66	265	0.97	28	23	-
Zamin Dawar	58	386	0.91	23	10	-
Sanguin	96	356	2.02	28	13	-
Girishk	89	315	3.89	29	20	-
Central	72	247	2.07	18	19	1
Nad-i-Ali	94	384	3.49	21	12	-
Marja	96	406	2.75	23	26	1
Shamalan	81	279	1.74	25	12	-
Darweshan	57	171	2.99	7	34	-
Khanishin	4	72	0.03	13	17	-
Total	76	310	2.24	22	18	-

Cotton: About half as much commercial fertilizer was used on cotton as on wheat. The application rate was slightly less (298 kgs/ha vs 310) and roughly half as many hectares were fertilized. Fifty-nine percent of all farmers in the sample (798) applied commercial fertilizer to cotton. As was the case for wheat, the proportion of farmers which applied commercial fertilizer was much higher than the proportion which applied manure, soil, and gypsum.

TABLE VI-2: FERTILIZER APPLIED TO COTTON

Area	Commercial Fertilizer on Cotton: Farmers Using (%)	Application Rate (kgs/ha)	Fertilized Area, Mean (Ha/Farm)	Farmers Which Used: Manure (%)	Soil (%)	Gypsum (%)
Nowzad	3	329	0.01	5	3	-
Musa Qala	38	199	0.44	15	6	-
Zamin Dawar	10	520	0.09	-	-	-
Sanguin	23	312	0.22	4	5	-
Girishk	70	225	1.47	16	20	-
Central	71	287	1.23	13	32	1
Nad-i-Ali	91	380	1.76	4	8	-
Marja	90	350	1.34	8	14	-
Shamalan	71	211	1.49	13	25	-
Darweshan	66	212	2.13	9	25	-
Khanishin	13	62	0.67	-	4	-
Total	59	298	1.15	9	16	-

Other Crops: Corn, which normally is planted as a second crop following wheat, receives only a negligible amount of fertilizer of any kind. In vegetable production, manure is much more important than commercial fertilizer(hardly any of the latter is used). In fruit production, on the other hand, the use of commercial fertilizer is becoming increasingly important. While only 4 percent of the total amount of commercial fertilizer was applied to fruits, approximately one-fifth of all farmers in Helmand (and 40 percent of those in Marja) applied some such fertilizer to fruits. In terms of the number of fertilizer users, commercial fertilizer is now much more important than manure.

TABLE VI-3: FERTILIZER APPLIED TO WHEAT;KIND, AVERAGE Kgs AND HAs PER FARM, BY AREA *

Area	Urea Applied			DAP Applied			Manure Applied			Soil Applied			Gypsum Applied		
	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean
Nowzad	4	11.18	.15	3	6.25	.14	3	.07	1.78	4	.44	.09	-	-	-
Musa Qala	35	169.77	.97	31	87.05	.89	15	2.49	.42	12	1.91	.38	-	-	-
Zamin Dawar	18	247.18	.91	11	104.44	.74	7	.80	.16	3	.40	.07	-	-	-
Sanguin	93	488.27	2.02	88	231.06	1.99	27	1.09	.52	13	2.83	.32	-	-	-
Girishk	83	878.06	3.89	80	348.14	3.35	27	3.74	1.73	19	16.46	1.19	-	-	-
Central	74	340.66	2.07	72	169.78	2.05	19	1.23	.56	20	2.68	.39	1	.21	.02
Nad-i-Ali	73	905.13	3.49	71	435.90	3.44	16	2.03	.57	9	2.84	.28	-	-	-
Marja	77	760.00	2.75	75	355.63	2.69	18	1.42	.51	21	6.88	.68	1	.99	.22
Shamalan	108	322.76	1.74	104	163.43	1.68	33	.93	.44	16	3.05	.26	-	-	-
Darweshan	39	356.62	2.99	30	154.41	2.15	5	1.32	.77	23	37.33	2.34	-	-	-
Khanishin	1	2.17	.03	-	-	-	3	1.58	1.35	4	3.32	1.19	-	-	-
Total	605	476.11	2.24	565	219.40	2.06	173	1.59	.74	144	7.52	.62	2	.13	.02

* All Averages are for all Farms not just for the Farms using Fertilizer.

TABLE VI-4: FERTILIZER APPLIED TO COTTON; KIND, AVERAGE Kgs AND HAs PER FARM, BY AREA

Area	Urea Applied			DAP Applied			Manure Applied			Soil Applied			Gypsum Applied		
	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean
Nowzad	1	2.63	.01	1	3.95	.01	2	.05	.26	1	.02	.25	-	-	-
Musa Qala	20	65.68	.44	12	21.82	.22	8	6.21	.21	3	.92	.10	-	-	-
Zamin Dawar	3	30.65	.09	3	16.13	.09	-	-	-	-	-	-	-	-	-
Sanguin	22	43.43	.22	22	334.41	1.21	4	1.74	.07	5	7.50	.45	-	-	-
Girishk	65	215.69	1.47	55	115.43	1.42	15	1.94	.42	19	23.25	.84	-	-	-
Central	73	232.40	1.23	68	120.27	1.19	13	.33	.27	33	10.21	.51	1	.15	.02
Nad-i-Ali	71	444.87	1.76	71	223.08	1.77	3	.62	.04	6	1.25	.10	-	-	-
Marja	72	323.13	1.34	65	146.41	1.18	6	.25	.12	11	2.27	.16	-	-	-
Shamalan	95	213.06	1.49	85	101.87	1.41	18	1.45	.30	34	16.84	.59	-	-	-
Darweshan	45	299.26	2.13	38	151.47	1.94	6	1.97	.30	17	20.63	1.14	-	-	-
Khanishin	3	26.09	.67	3	15.22	.67	-	-	-	1	.38	.04	-	-	-
Total	470	203.67	1.15	423	138.50	1.19	75	1.40	.21	130	9.94	.46	1	.02	-

All averages are for all farm not just for the farms using fertilizer.

TABLE IV-5: FERTILIZER APPLIED TO CORN;KIND, AVERAGE Kgs AND HAs PER FARM, BY AREA*

Area	Urea Applied			DAP Applied			Manure Applied			Soil Applied		
	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean
Nowzad	-	-	-	-	-	-	3	.36	.11	1	.01	.01
Musa Qala	-	-	-	-	-	-	2	.12	.01	-	-	-
Zamin Dawar	1	1.21	-	-	-	-	-	-	-	-	-	-
Sanguin	-	-	-	-	-	-	-	-	-	-	-	-
Girishk	3	4.26	.02	2	2.13	.02	2	.20	-	1	.94	.02
Central	6	5.70	.06	4	2.43	.06	3	.06	.01	6	6.66	.08
Nad-i-Ali	2	.80	-	2	.64	-	5	.08	.01	1	.01	-
Marja	5	4.84	.03	4	2.81	.02	-	-	-	2	.08	-
Shamalan	13	8.68	.11	5	2.43	.06	4	.04	.01	8	3.53	.04
Darweshan	3	8.64	.04	-	-	-	-	-	-	2	.40	.02
Khanishin	-	-	-	-	-	-	-	-	-	-	-	-
Total	33	4.03	.04	17	1.31	.02	19	.07	.01	21	1.60	.02

* No Gypsum Applied. All averages are for all farms not just for the farms using fertilizer.

TABLE VI-6: FERTILIZER APPLIED TO OTHER CROPS;KIND, AVERAGE Kgs AND HAs PER FARM, BY AREA*

Area	Urea Applied			DAP Applied			Manure Applied			Soil Applied		
	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean
Nowzad	1	1.32	.02	1	1.32	.02	7	.23	.04	2	.49	.03
Musa Qala	1	1.82	.01	-	-	-	4	.07	.02	-	-	-
Zamin Dawar	1	6.45	.02	1	1.61	.02	3	.05	.01	-	-	-
Sanguin	8	17.65	.15	5	8.25	.12	7	.12	.04	-	-	-
Girishk	7	7.31	.04	4	4.79	.03	11	1.34	.07	-	-	-
Central	5	1.94	.01	1	.12	-	20	.46	.07	2	.07	-
Nad-i-Ali	6	3.69	.07	4	3.04	.04	7	.31	.02	1	.21	-
Marja	8	6.09	.02	6	4.84	.04	10	.44	.03	3	.12	.01
Shamalan	2	1.12	.01	-	-	-	13	.34	.03	1	.01	-
Darweshan	1	.74	-	-	-	-	13	1.21	.05	-	-	-
Khanishin	-	-	-	-	-	-	-	-	-	-	-	-
Total	40	4.90	.04	22	2.48	.03	95	.49	.04	9	.07	-

* No Gypsum Applied. All averages are for all farms not just for the farms using fertilizer.

TABLE VI-7: FERTILIZER APPLIED TO VEGETABLES;KIND, AVERAGE Kgs AND HAs PER FARM, BY AREA*

Area	Urea Applied			DAP Applied			Manure Applied			Soil Applied		
	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean
Nowzad	2	5.59	.05	2	2.96	.05	4	.87	.17	1	.02	.10
Musa Qala	1	.91	-	1	.91	-	1	.01	-	2	.04	.01
Zamin Dawar	1	.40	.01	-	-	-	3	.33	.05	-	-	-
Sanguin	5	2.96	.03	3	1.16	.01	5	.16	.01	2	.14	.01
Girishk	2	6.91	.03	3	5.32	.03	2	.12	.01	2	.47	-
Central	2	.97	.01	1	.49	-	10	.17	.02	4	.24	.01
Nad-i-Ali	3	1.76	.01	2	.64	.01	11	.27	.05	-	-	-
Marja	5	7.50	.04	5	5.31	.04	14	.74	.09	4	1.42	.04
Shamalan	1	1.12	-	-	-	-	8	.25	.02	3	.03	.01
Darweshan	-	-	-	-	-	-	11	.79	.14	-	-	-
Khanishin	-	-	-	-	-	-	-	-	-	-	-	-
Total	22	2.75	.02	17	1.62	.01	69	.32	.04	18	.26	.01

* No Gypsum Applied. All averages are for all farms not just for the farms using fertilizer.

TABLE VI-8: FERTILIZER APPLIED TO FRUITS; KIND, AVERAGE Kgs AND HAs PER FARM, BY AREA*

Area	Urea Applied			DAP Applied			Manure Applied			Soil Applied		
	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	Kgs/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean	No. Farms	MT/ Farm Mean	HA/ Farm Mean
Nowzad	4	2.30	.04	1	.99	.02	4	.28	.02	1	.19	.01
Musa Qala	6	17.27	.08	4	6.36	.06	11	.40	.07	3	.44	.02
Zaming Dawar	7	70.16	.38	4	41.53	.32	5	.21	.12	1	.07	.02
Sanguin	33	51.68	.42	25	20.23	.28	30	.89	.28	12	1.16	.19
Girishk	17	33.38	.26	10	14.49	.13	9	1.01	.08	7	2.86	.09
Central	21	29.61	.28	14	14.93	.17	7	.38	.05	3	.54	.03
Nad-i-Ali	11	27.56	.17	7	10.90	.14	1	.03	-	-	-	-
Marja	30	82.97	.41	22	32.19	.28	5	.27	.03	4	.24	.02
Shamalan	16	19.50	.19	12	11.19	.10	2	.05	.01	4	.45	.03
Darweshan	6	9.38	.11	4	6.62	.10	-	-	-	2	2.08	.01
Khanishin	-	-	-	-	-	-	-	-	-	-	-	-
Total	151	33.02	.24	103	14.87	.16	74	.36	.07	37	.86	.05

* No Gypsum Applied. All averages are for all farms not just for the farms using fertilizer.

Cash Sales of Farm Owners: Farm owners reported average gross cash sales of farm commodities of afs 24,633 in 1975. The range was from less than afs 5,000 in Zamin Dawar to a high of afs 39,040 in Girishk (see Table VI-9 following). Cotton sales averaged afs 14,931 per farm and generated 60 percent of all cash receipts of farm owners, reaching a high of 73 percent in Darweshan and a low of 15 percent in Zamin Dawar. In 8 of 11 areas, cotton sales yielded a larger proportion of cash receipts than any other crop. In three area -- Zamin Dawar, Khanishin and Sanguin -- the sale of wheat generated more cash receipts than did cotton. Wheat contributed 25 percent overall, from a low of 10 percent in Musa Qala to a high of 52 percent in Khanishin. The sale of vegetables generated the third largest amount of cash, five percent overall. Vegetables were fairly important in Sanguin where they generated 12 percent of cash receipts but produced a negligible amount in Marja, Nad-i-Ali and Khanishin. The sale of other crops -- barley, corn, mung beans and sesame -- was next in importance, followed by fruits. The latter constituted 53 percent of the cash income in Nowzad but only 3.5 percent overall. The cash income produced by livestock, included in the "Other" column of Table VI-9, was very samll.

As shown in Table VI-10, 64 percent of all farmers sold cotton, ranging from seven percent in Zamin Dawar to 92.3 percent in Nad-i-Ali. Only 37 percent of farmers sold wheat. While the cash receipts from the sale of farm commodities increased sharply from 1970 to 1975, the proportion of farmers making cash sales suggests that Helmand province is not without its subsistance farmers.

Cash sales of sharecroppers are not included in the above figures. Thus on a per farm basis, the cash receipts are understated. Cotton is the only crop that would have generated substantial cash income for sharecroppers, however.

1975 vs 1970: Cash sales per farm increased by 150 percent in 1975 over those of 1970, from afs 9,865 to afs 24,633. Cash sales of cotton increased by afs 10,870, or 268 percent, from afs 4,061 to afs 14,931, though it should be noted that the cotton price was almost 50 percent higher. Cash sales of vegetables rose by 659 percent, from afs 161 per farm to afs 1,222, and wheat by 107 percent, from afs 2,965 to afs 6,127. The price of wheat was practically the same in the two years. The foregoing figures understate the change, however, since the 1970 survey supposedly is a per farm basis while the 1975 survey refers only to sales by owners. It does not include sales by sharecroppers.

TABLE VI-9: CASH SALES REPORTED BY FARM OWNER, AVERAGE PER FARM, BY AREA

A. Kgs per Farm

Area	Wheat	Cotton	Other Crops	Fruit	Vegs	Other	Total
Nowzad	291	201	29	349	22	86	
Musa Qala	165	490	125	169	19	916	
Zamin Dawar	413	53	107	149	2	52	
Sanguin	1037	203	215	148	133	62	
Girishk	1622	1537	551	172	754	627	
Central	392	998	142	362	509	450	
Nad-i-Ali	1876	1402	67	19	34	56	
Marja	1428	963	197	190	-	134	
Shamalan	706	1609	291	81	1431	93	
Darweshan	1413	1991	202	179	43	13	
Khanishin	1231	359	-	192	1	194	
Total	1017	1076	215	174	419	249	

B. Afs per Farm

Nowzad	1963	2764	163	6379	504	297	12070
Musa Qala	957	6859	704	747	298	110	9675
Zamin Dawar	2748	726	508	533	252	177	4944
Sanguin	6577	2752	1336	881	1603	398	13547
Girishk	10390	21524	2775	956	2345	1050	39040
Central	2393	14033	694	489	2013	289	19911
Nad-i-Ali	11510	20452	319	39	35	304	32659
Marja	8221	12888	1077	704	-	213	23103
Shamalan	4376	23458	1885	398	2345	67	32529
Darweshan	8230	27165	921	493	506	27	37342
Khanishin	5761	4443	-	870	24	83	11181
Total	6127	14931	1185	864	1222	304	24633

C. Percent of Total Cash Sales Generated by Different Crops (%)

Nowzad	16.3	22.9	1.4	52.9	4.2	2.5	100
Musa Qala	9.9	70.9	7.3	7.7	3.1	1.1	100
Zamin Dawar	55.6	14.7	10.3	10.8	5.1	3.6	100
Sanguin	48.5	20.3	9.9	6.5	11.8	2.9	100
Girishk	26.6	55.1	7.1	2.4	6.0	2.7	100
Central	12.1	70.5	3.5	2.4	10.1	1.4	100
Nad-i-Ali	35.2	62.6	1.0	0.1	0.1	0.9	100
Marja	35.6	55.8	4.7	3.0	-	0.9	100
Shamalan	13.5	72.1	5.8	1.2	7.2	0.2	100
Darweshan	22.0	72.7	2.5	1.3	1.4	0.1	100
Khanishin	51.5	39.7	-	7.8	0.2	0.7	100
Total	24.9	60.6	4.8	3.5	5.0	1.2	100

TABLE VI-10: PERCENT OF ALL FARM OWNERS MAKING CASH SALES, BY COMMODITY (Percent)

Area	Wheat	Cotton	Crops	Fruits	Vegs	Other
Nowzad	15.8	10.5	15.8	65.8	7.9	7.9
Musa Qala	20.0	40.0	20.0	23.6	5.5	20.0
Zamin Dawar	16.1	6.5	9.7	19.4	6.5	16.1
Sanguin	46.4	26.8	24.7	10.3	6.2	8.2
Girishk	40.4	72.3	46.8	13.8	21.3	16.0
Central	23.3	76.7	18.7	9.7	2.9	25.2
Nad-i-Ali	52.6	92.3	14.1	5.1	2.6	10.3
Marja	56.3	83.8	27.5	6.3	-	13.8
Shamalan	38.1	88.1	29.9	11.2	13.4	9.7
Darweshan	29.4	73.5	19.1	13.2	8.8	5.9
Kahnishin	30.4	30.4	-	4.3	4.3	13.0
Total	36.6	64.3	24.1	13.9	8.0	13.4

Credit Use: The majority of the sample farms in Helmand, 87 percent, reported borrowing in 1975, ranging from a low of 66 percent in Nowzad to 99 percent in Nad-i-Ali. The largest source of credit is the "bank" (The Agricultural Development Bank) which supplies fertilizer loans. Forty percent of borrowers indicated the bank as their only source, and an additional 38 percent, used credit from both bank and other sources, namely friends and relatives and rich people. Friends and relatives, which generally supply interest-free credit, constitute the second largest source, with 37 percent of the borrowers receiving credit from these sources (14 percent borrowed from friends and relatives only and another 23 percent borrowed from both the bank and friends and relatives). Finally, the rich people (landowners, money lenders, and shopkeepers) who are the commonly used sources of credit in areas such as Nowzad, Zamin Dawar, and Khanishin from 23 percent of credit suppliers in Helmand. Borrowings from rich people generally carry very high interest rates and are used as last alternatives.

Except for the water-short areas of Nowzad, Zamin Dawar, and Khanishin where the borrowing is mainly for consumption, most of the borrowing is made for the production purposes. In general, 45 percent of the borrowers borrowed for production, 37 percent borrowed for both production and consumption, and only 17 percent for consumption alone. Comparing "purpose of borrowing" with "sources of credit", it is observed that in addition to fertilizer credits from the bank, other sources were also used for production borrowing. The other sources are mainly friends and relatives, and the borrowing is usually for wheat seed and tillage charges. Consumption loans are obtained in the form of cash, grain, and livestock and are repaid either in cash or in kind.

Salam, a system of credit whereby wheat is sold before it is harvested at prices substantially lower than either the prevailing or the expected market price (often the prices are 50 percent below the future market price), has largely been abandoned throughout the Helmand. It was a frequently used system of credit in the past, but in 1975 its use was reported only in Upper Helmand, Nowzad, and Zamin Dawar.

The borrowings for production, with the exception of tractor loans, are short term credits which are generally due within one year. At the time of the survey, March of 1976, 45 percent of the borrowers reported full repayment of the loan and another 33 percent reported partial repayment. Though there were few loans in "partially repaid" and "unpaid" categories that were due later in 1976, some borrowers mentioned the unability to repay as a cause for outstanding borrowings. Thus, the indicated numbers include loans that are extended for more than the normal one year period. Fertilizer loans are generally repaid when due or with relatively short delays. Overdue loans are generally those that have been borrowed for consumption purposes.

TABLE VI-11: LOAN REPAYMENT BY PERCENT OF BORROWERS

Area	Repaid (%)	Partially Repaid (%)	Not Paid (%)
Nowzad	27	35	38
Musa Qala	59	24	17
Zamin Dawar	33	33	33
Sanguin	49	29	22
Girishk	46	28	26
Central	39	43	18
Nad-i-Ali	42	40	18
Marja	36	38	26
Shamalan	50	31	20
Darweshan	57	25	19
Khanishin	53	18	29
Total	45	33	22

Of the 699 farms (87 percent) that reported borrowing, 14 included long-term tractor loans furnished by the Agricultural Development Bank. The average borrowing per borrower and per farm, excluding farms with tractor loans, was afs 17,340 and afs 15,093 respectively. Similar to the percentage of farms that used credit, Nad-i-Ali reported the highest borrowing per borrower/farm and Nowzad the lowest. In general there is a close relationship among the percent of farms borrowing, the amount borrowed, and the purpose of borrowing. The areas with high percentages of borrowers generally coincide with areas with a higher percentages of borrowing for production, and in these areas the average borrowing is also higher.

In 1970, 64 percent of the sample farms reported borrowing. The sources of credit were friends and relatives (45 percent), HAVA/fertilizer credit (40.7 percent) and rich people, 17.5 percent. The significant increase in the number of farms borrowing and the changes in the sources of credit used between 1970 and 1975 are caused by the growth in fertilizer application and the establishment of the Agricultural Development Bank as a supplier of fertilizer credit. The increase in cotton production

as a cash crop in areas around Lashkar Gah and Girishk has slightly strengthened the farmers' financial positions, and borrowings from friends and relatives thus show a modest decline (45 percent in 1970 to 37 percent in 1975).

TABLE VI-12: FARMS REPORTING BORROWING AND SOURCES OF CREDIT

Area	Farms Borrowing in 1975		Indicated Sources of Credit by Percent of Borrowers				
	No.	%	Friends & Relatives	Bank	Rich People	Bank & Relatives	Bank & Rich People
Nowzad	25	66	63	4	25	4	4
Musa Qala	42	76	14	38	19	17	12
Zamin Dawar	22	71	33	10	43	14	-
Sanguin	85	88	10	49	3	19	20
Girishk	88	94	2	46	7	24	21
Central	92	89	25	29	3	23	20
Nad-i-Ali	77	99	4	55	-	34	8
Shamalan	119	89	9	52	6	23	10
Darweshan	56	85	15	38	13	22	13
Khanishin	17	74	47	-	29	18	6
Total	699	87	14	40	8	23	15

TABLE VI-13: INDICATED PURPOSE OF BORROWING
NUMBER AND PERCENT OF BORROWERS.

Area	Production		Consumption		Prod. & Consumption	
	No.	%	No.	%	No.	%
Nowzad	2	8	20	80	3	12
Musa Qala	19	45	9	21	14	33
Zamin Dawar	3	14	13	59	6	27
Sanguin	44	52	13	15	28	33
Girishk	43	49	4	5	41	47
Central	35	38	16	17	41	45
Nad-i-Ali	44	57	2	3	31	40
Marja	36	47	4	5	36	47
Shamalan	66	55	15	13	38	32
Darweshan	25	45	13	23	18	32
Khanishin	1	6	12	71	4	24
Total	318	45	121	17	260	37

TABLE VI-14: AVERAGE BORROWINGS BY AREA

Area	Average Borrowing in Afs. Excluding Farms with Tractor		Farms with Tractor Loans	
	Borrower	Total	No.	Afs Av. Per Borrower
Nowzad	9,515	6,172	1	200,000
Musa Qala	11,466	8,756	-	-
Zamin Dawar	13,130	9,191	1	131,000
Sanguin	14,898	13,036	1	129,000
Girishk	18,660	17,402	5	285,720
Central	15,591	13,926	-	-
Nad-i-Ali	26,330	25,992	-	-
Marja	24,482	23,258	-	-
Shamalan	15,366	13,620	2	263,550
Darweshan	15,068	12,287	3	365,853
Khanishin	10,862	7,900	1	500,000
Total	17,340	15,093	14	286,690

Plow Power: Certain agricultural practices are indicative of other socio-economic characteristics in a particular region or area. The type of plow power used (tractors or draft animals) in an area is a good example of such an agricultural practice. It reflects the concentration of capital, indicates the people's attitudes toward farm mechanization, and says something about land tenure, cropping patterns, and the use of sharecropper labor. An early study, for example, documented the displacement of tenants and the shift from the use of sharecroppers (who had previously furnished the draft animals and as a result received a larger share of crop) to farm laborers with the introduction of tractors. 1/ These patterns of displacement have been noted by technicians in the Helmand through the early 1970's.

Table VI-15 shows the percentage of land plowed by animal or tractor by region and by settler status.

The Helmand Region is noted for its early use of tractors, and their concentration reflects the level of wealth, the land-tenure pattern, and the type of terrain in the various sub-regions. The 1970's have seen a very rapid increase in tractors, from less than 100 in 1969 to more than a 1000 at the present time. The tractors, however, are not evenly distributed over the region. The northern areas, with their greater ethnic homogeneity, traditional water systems, larger percentage of of subsistance farms, rolling terrain, and fewer settlers, all have high rates of animal use. This animal-use pattern gradually shifts to tractor-use further south, with the greatest use of tractors in Darweshan and Khanishin. In these two areas, tractors are used mainly by the indigenous population ; settlers have lower rates of tractor-utilization.

In the southern area, however, land holdings for the indigenous groups are large and the sample size is relatively small. Thus, the actual concentration of tractors in these areas will be less per land area than in some other regions of Helmand, e.g., Shamalan.

Inexplicably, the two settler areas of Marja and Nad-i-Ali have different patterns of tractor utilization. Most of the socio-economic charactristics of the two areas are similar, e.g., long-term settlers on the desert steppe with adequate water. Nad-i-Ali has more soils and salt problems than Marja but has more farm equipment, vehicles, bicycles, motorcycles, and radios; and while Nad-i-Ali has a lower average net income than Marja, it has higher rates of tractor use. On the other hand, in the early 1970's the farmers of Marja began planting Mexipak wheat at a more rapid rate than the farmers of Nad-i-Ali. 2/ Thus, the reasons for the difference in tractor use between these two neighboring settler areas are not clear, and further study is required. A relatively detailed tractor survey would be useful in understanding the socio-economic changes taking place throughout the Helmand.

1/ Farm Tractors and Water Pumps in Afghanistan, by K. Dawlaty, R. Saunders, G. Owens, Kabul 1969, p.13.

2/ 1970 FES, Table 9a, p.22

TABLE VI-15: PLOW POWER USED BY PERCENT OF TOTAL LAND IN EACH REGION BY SETTLER STATUS.

Area	Total		Settler		Non-settler	
	Mach.	Animal	Mach.	Animal	Mach.	Animal
Nowzad	24	76	-	-	24	76
Musa Qala	5	95	-	-	5	95
Zamin Dawar	0	100	-	-	0	100
Sanguin	19	81	-	-	19	81
Girishk	40	60	0	100	44	56
Central	31	69	28	72	32	68
Nad-i-Ali	73	27	73	27	-	-
Marja	41	59	41	59	-	-
Shamalan	50	50	42	58	52	48
Darweshan	68	32	10	90	73	27
Khanishin	58	42	14	86	61	39
Total	45	55	47	53	43	57

CHAPTER VII

FARMER ATTITUDES AND PROBLEMS

Major Agricultural Problems: The major agricultural problems perceived by Helmand farmers were, in descending order of frequency, (a) poor drainage/salting; (b) inadequate irrigation water; (c) lack of equipment/oxen; (d) lack of finances or credit; and (e) the high prices of chemical fertilizer. These problems, of course, are not mutually exclusive.

Drainage: Poor drainage was a major problem in most of the areas. As shown in Table VII-1, 60 percent of the farmers in Nad-i-Ali and almost as many in the Central area had major drainage problems. Over half of the farmers in Darweshan and slightly less than half of those in Marja also indicated that drainage was a major problem. Only in Nowzad, Musa Qala, and Zamin Dawar were drainage problems reported to be insignificant.

Irrigation Water: Insufficient irrigation water was almost as much of a problem for farmers as poor drainage. Only in Nad-i-Ali was insufficient irrigation water an insignificant problem. Over 80 percent of the farmers in Nowzad, Khanishin, and Zamin Dawar and almost 75 percent of those in Musa Qala considered a lack of irrigation water to be a major problem. Overall the figure was 37 percent. Not surprisingly, there was a fairly high inverse correlation between insufficient water and drainage problems. This is shown in Table VII-2 below where the areas are ranked on the basis of the proportion of farmers in each area with (a) insufficient irrigation water, ranked in descending order; and (b) with drainage problems, ranked in ascending order.* The Table shows, for example, that a larger proportion of Nowzad farmers experienced inadequate water but a smaller proportion experienced drainage problems than in any other area. At the other extreme, a smaller proportion of Nad-i-Ali farmers experienced inadequate water but a larger proportion had drainage problems than any other area.

The relationship between drainage problems and irrigation water supply can generally be explained by an examination of water sources, soils and settlement patterns of the particular areas. For example, Nowzad, Musa Qala, Zamin Dawar and Khanishin have inadequate water supplies because they are either hill areas dependent on Karez systems that for some years have been drying up or desert-flood plain areas using inadequate indigenous ditches and intakes off the Helmand River. These water short areas have fewer drainage/salinity problems than areas like Nad-i-Ali, which has few water supply problems (being well served by the Boghra Canal) and has

---

* The value of Spearman's rank correlation coefficient is 0.76.

a technically efficient irrigation system. The drainage/salinity problems in Nad-i-Ali are caused by tight clay soils of the desert step, an impermeable conglomerate slab three to six feet below the surface, and an inadequate drainage system; this is aggravated by farmer misuse of water (over-irrigation) and recent large scale land settlement raises the water table.

TABLE VII-1: MAJOR AGRICULTURAL PROBLEMS AND PERCENT OF FARMS EXPERIENCING, BY AREA

Area	Drainage/ Salinity	Insufficient Water	Lack of Equip/Oxen	High Priced Fertilizer	Financial	Othe
Nowzad	2.6	86.8	23.7	18.4	10.5	15.8
Musa Qala	5.7	73.6	15.1	18.9	13.2	22.6
Zamin Dawar	6.5	80.6	19.4	12.9	12.9	-
Sanguin	32.0	21.6	18.6	43.3	20.6	8.2
Girishk	38.7	26.9	15.1	14.0	15.1	14.0
Central	58.3	33.0	20.4	6.8	9.7	19.4
Nad-i-Ali	60.3	9.0	34.6	16.7	26.9	15.4
Marja	47.5	33.8	27.5	18.8	26.3	25.0
Shamalan	37.3	35.1	24.6	11.9	16.4	14.2
Darweshan	51.5	27.9	29.4	13.2	25.0	20.6
Khanishin	30.4	82.6	13.0	8.7	8.7	17.4
Total	38.8	37.1	22.7	17.3	17.8	16.2

TABLE VII-2: MAJOR AGRICULTURAL PROBLEMS, FREQUENCY BY CATEGORY AND AREA

Area	Water Shortage	Drainage/ Salinity	High Priced Fertilizer	Lack of Equip./ Oxgn	Finan-cial	Agri-cultural Education	Unsuit-able Land	Birds	Other	None
Nowzad	33	1	7	9	4	-	4	-	2	-
Musa Qala	39	3	10	8	7	-	1	2	9	1
Zamin Dawar	25	2	4	6	4	-	-	-	-	2
Sanguin	21	31	42	18	20	-	3	1	4	11
Girishk	25	36	13	14	14	-	1	4	8	12
Central	34	60	7	21	10	-	4	2	14	-
Nad-i-Ali	7	47	13	27	21	5	3	2	2	3
Marja	27	38	15	22	21	3	2	12	3	3
Shamalan	47	50	16	33	22	5	5	1	9	10
Darweshan	19	35	9	20	17	-	4	7	3	-
Khanishin	19	7	2	3	2	-	3	1	-	-
Total	296	310	138	181	142	13	30	32	54	42

TABLE VII-3: RANK CORRELATION BETWEEN LACK OF IRRIGATION WATER AND POOR DRAINAGE PROBLEMS

Area	Ranking, Proportion of Farmers, by Area Indicating Major Problems of: Water Shortage, Descending Order	Poor Drainage, Ascending Order
Nowzad	1	1
Khanishin	2	4
Zamin Dawar	3	3
Musa Qala	4	2
Shamalan	5	6
Marja	6	8
Central	7	10
Darweshan	8	9
Girishk	9	7
Sanguin	10	5
Nad-i-Ali	11	11

Equipment and/or Oxen: Twenty-three percent of the farmers in Helmand indicated that the lack of equipment/oxen was a major problem. The percentage ranged from a low of 13 in Khanishin to a high of 35 in Nad-i-Ali.

Other Problems: Financial problems were considered major by 18 percent of the farmers and 17 percent assigned the same status to the high price of chemical fertilizers. Birds were a major problem for four percent of the farmers. Small farm size and/or fragmented land holdings were identified as a major problem by only a few farmers. The same statement applies to problems of weeds.

Source of Advice for Farm Problems: As shown in Table VII-4 below, two-thirds of the sample farmers indicated that they relied upon Agricultural Extension for advice on their farm problems. The range was from a low of eight percent in Nowzad to 90 percent in Nad-i-Ali. The next most frequently sought-after source of advice was that of the village chief. Neighbors were the third source. We cannot, however, place as much confidence in the responses to this question as we would like, mainly because an extension agent was often present while the interview was taking place.

TABLE VII-4: FARMERS' SOURCE OF ADVICE FOR AGRICULTURAL PROBLEMS, NUMBER FARMERS RELYING ON SOURCE, AND PERCENT OF ALL FARMERS, BY AREA, RELYING UPON EXTENSION

Area	Source of Advice and Number of Farmers Relying on Source				% of All Farmers Relying on Extension (%)
	Extension	Village Chief	Neighbor	Other	
Nowzad	3	21	17	8	8
Musa Qala	32	24	13	7	60
Zamin Dawar	8	15	10	7	26
Sanguin	55	42	30	10	57
Girishk	59	36	21	9	63
Central	75	35	25	19	73
Nad-i-Ali	70	17	14	6	90
Marja	63	34	19	8	79
Shamalan	110	41	22	9	82
Darweshan	51	20	21	8	75
Khanishin	3	16	8	2	13
Total	529	301	200	93	66

Major Problems -- 1970 vs 1975: In the 1970 Survey, exiguous irrigation water was considered a major farm problem by 55 percent of the respondents. In 1975, however, only 37 percent felt insufficient water was a major problem. The corresponding percentages for drainage/salinization problems were 22 and 39 percent. It is doubtful, however, that changes of these magnitudes have actually occurred. The proportion of farmers experiencing drainage/salinization problems should have been higher in 1975 if for no reason other than that this survey included new land on which settlers were placed since 1970. Much of this land has a high water table and is salty. The 1975 survey shows sharp increases over that of 1970 for the proportion of farmers with major drainage/salting problems in Marja, Nad-i-Ali and Shamalan. The respective percentages, 1970 and 1975, are 33 and 60, 20 and 48, and 11 and 37. Most of the remaining areas show small movements in the opposite direction.

Based on survey data, a higher proportion of farmers experienced financial problems in 1970 than in 1975. However, substantially more farmers perceived the lack of equipment/oxen as a major problem in 1975 than in 1970. These two problems are closely related.

Over the period between the two surveys, the retail price of commercial fertilizer rose by 800-900 percent. This price rise is reflected in the 1975 survey, whereby 17 percent of the sample farmers considered high fertilizer prices a major problem. In 1970 this problem did not appear.

	Percent of all farmers which Considered the Following Problems to be Major			
	Drainage Salinity	Lack of Water	Financial	Lack of Equip./Oxen
1970	22	55	27	9
1975	39	37	18	23

Agricultural problems facing farmers have changed significantly over the past five years. Drainage/salinization are now considered major problems by relatively more farmers and insufficient irrigation water by fewer. The lack of equipment/oxen is also a major problem to more farmers, and high fertilizer prices now constitute a major problem to a significant number of farmers.

Farmer Attitudes/Beliefs: The remainder of this chapter is concerned with farmer attitudes/beliefs as expressed in response to survey questions. Some of the questions to which farmers responded in the 1975 survey did not appear in the 1970 one.

Increasing Net Farm Income: Sample farmers were asked if they could do anything to increase their net farm income, and if so, what. The response to the question is interesting and seems to be generally credible. Ninety percent of the farmers believed they could increase their net farm income (referred to as "Yes" farmers in remainder of this section). The means of so doing, in descending order of numerical importance, were through the utilization of more commercial fertilizer, the acquisition of more and better equipment, the improvement of land (e.g., drainage and leveling) and increase of water supplies. As Table VII-5 shows, the four categories almost exhaust the means given by the respondents for increasing net farm income. By far the dominant constraint on effecting the means was the financial one.

The farmers of Helmand province are some of the nation's largest users of commercial fertilizer. Even so, and although 17 percent of Helmand's farmers consider the high price of fertilizer to be a major problem, more "Yes" respondents (53 percent) indicated they could increase their net farm income by using additional commercial fertilizer than through any other means. The range was not great -- a low of 39 percent in Khanishin to a high of 70 percent in Nowzad.

Forty-one percent of all "Yes" farmers believed they could increase their net income through acquiring more and better equipment (namely, tractors). The corresponding figures for improving land and increasing irrigation water were 36 and 27 percent. The latter is surprisingly low, although there is some problem in interpreting the meaning of this response since the individual farmer cannot in many cases rectify the lack of irrigation water himself. If the response was generally in this context, then it is not low.

One hundred percent of the sample farmers from Khanishin believed they could increase their net income. In this area of large landholdings, where two-thirds of the land is left idle each year because of lack of water and where little commercial fertilizer is now used, the stated means to increased net farm income were through equipment (74 percent), water (70 percent) and fertilizer (39 percent).

TABLE VII-5: PERCENT OF ALL FARMERS WHO BELIEVED THEY COULD INCREASE THEIR NET FARM INCOME; MEANS GIVEN BY "YES" RESPONDENTS ON HOW TO INCREASE; AND REASONS FOR NOT EFFECTING MEANS

Area	Can you Increase Net Farm Income? % Yes	Percent of All "Yes" Farmers Giving Following Response as Means to Increase Net Farm Income					Reasons for not Effecting Means		
		Improving Water Supply	Using Comm'l Fert.	More/ Better Equip	Land Improve-ments	Other	Financial	Water	Oth
Nowzad	87	45	70	15	12	3	61	58	6
Musa Qala	76	49	63	22	7	-	95	17	-
Zamin Dawar	87	67	44	22	-	4	63	63	-
Sanguin	85	10	61	30	33	5	95	1	4
Girishk	82	21	57	36	36	4	99	3	-
Central	96	20	42	37	49	4	89	11	9
Nad-i-Ali	96	-	48	51	64	3	99	-	5
Marja	95	16	53	53	45	3	99	-	4
Shamalan	96	23	55	41	36	6	95	-	6
Darweshan	87	68	54	64	34	7	100	-	2
Khanishin	100	70	39	74	9	-	100	-	9
Total	90	27	53	41	36	4	93	8	4

Underemployment: Interest in Off-Farm Employment. Almost one out of every three heads of households in the sample indicated a willingness to accept seasonal or full-time off-farm employment (see Table VII-6). One out of six indicated a willingness to accept full-time work and one out of eight, to accept a job which would require him to stay away from home. On average, the wage rate the respondents said would be required for them to accept off-farm employment was close to the going market rate for laborers. While there may be substantial divergence between what the respondents said they would do and what they actually would do should the opportunity arise, there nonetheless appears to be a high level of underemployment among Helmand farmers. Based on the average number of days that respondents indicated they would be willing to work off-farm, and assuming a representative four percent sample, there would be approximately 4000 man-years of labor available annually from farmers themselves.

A large proportion (71 percent) of the heads of households of Zamin Dawar indicated a willingness to work off their farms than any other area. Next in relative magnitude were those of Nowzad (61 percent) and then Musa Qala (47 percent). These three areas depend upon karezes for irrigation (the Musa Qala River also provides irrigation water for the Musa Qala area). The karezes flow has been declining for a number of years, and 80 percent of the farmers in these three areas indicated that insufficient irrigation water was a major farm problem.

TABLE VII-6: HEAD OF HOUSEHOLD INTEREST IN OFF-FARM EMPLOYMENT

Area	% of All Heads of Households willing to Work Off-Farm	% All Heads of Households Willing to Work Off-Farm					% Willing to Stay Away from Home
		All Year	Seasonally				
			Spring	Summer	Fall	Winter	
Nowzad	61	34	11	3	5	11	24
Musa Qala	47	29	7	9	2	7	25
Zamin Dawar	71	58	-	-	3	13	29
Sanguin	31	18	4	2	1	6	13
Girishk	26	13	3	-	2	10	8
Central	28	17	3	-	4	7	14
Nad-i-Ali	13	5	-	-	-	8	5
Marja	15	6	-	-	1	9	3
Shamalan	31	13	1	-	2	16	13
Darweshan	21	7	2	1	2	8	6
Khanishin	30	13	4	4	4	9	13
Total	30	16	3	1	2	9	12

TABLE VII-7: INTEREST IN OFF-FARM EMPLOYMENT

Area	Willing to Work Off-Farm		Number Willing to Work					Would Work:		Willing to Stay Away from Home		Reasons for No			
	Yes	No	All Year	Spring	Summer	Fall	Winter	Days/Yr*	Afs/Day**	Yes	No	Age	Super-vision	Family	Other
Nowzad	23	15	13	4	1	2	4	240	38	9	13	1	5	9	-
Musa Qala	26	29	16	4	5	1	4	259	48	14	12	-	-	12	-
Zamin Dawar	22	9	18	-	-	1	4	299	45	9	17	2	4	14	1
Sanguin	30	67	17	4	2	1	6	244	59	13	16	2	1	13	-
Girishk	24	69	12	3	-	2	9	213	61	7	17	1	5	15	-
Central	29	74	17	3	-	4	7	231	54	14	15	-	3	12	-
Nad-i-Ali	10	67	4	-	-	-	6	172	54	4	6	1	4	2	-
Marja	12	68	5	-	-	1	7	132	37	2	10	-	5	6	-
Shamalan	42	92	18	1	-	3	21	207	63	18	24	-	2	23	-
Darweshan	14	54	5	1	1	1	6	162	51	4	10	-	2	8	1
Khanishin	7	16	3	1	1	1	2	184	93	3	4	-	3	3	-
Total	239	560	128	21	10	17	76	224	54	97	144	7	34	117	2

* Average
** Average Minimum

Agricultural Education/Training Needed: An attempt was also made to determine what farmers perceived as their need for agricultural education/training. On this question, the interviewer typically had to suggest answers. Thus, the results are likely biased, and perhaps strongly so. Given this warning, we present the results.

More farmers (52 percent) indicated a need for education/training in the use of insecticides than in any other single subject area. Since insecticides are little used and farmers are not familiar with them, there undoubtedly is a need for training in their use, provided of course that farmers would use them. Very few farmers, however, perceived insects as being a major problem.While 17 percent of the farmers indicated they used insecticides, utilization by this group was nonetheless very small. The reasons given for not using insecticides were:

Reason	% of All Non-Users Giving Response
No Need	52
Not Familiar With	35
Too Costly	14
Supply Too Far	6
Government	6
Other	8

Surprisingly, the second most frequently felt need for education was in the use of fertilizer. Over 40 percent of the respondents indicated such a need. If this is a true reflection of farmers' felt needs, it has important implications for HAVA extension and research. Thirty-five percent of the sample farmers indicated a need for training in tending orchards and 26 percent in irrigation methods. Only 4 percent indicated that no training was needed.

TABLE VII-8: AGRICULTURAL EDUCATION NEEDED, RESPONSE FREQUENCY, BY CATEGORY AND AREA

Area	Use of Insecticides	Orchards	Weed Control	Use of Fertilizer	Irrigation Methods	Veter. Care	Salt Elimination	Planting Time	Other	None
Nowzad	22	18	1	20	3	2	-	5	14	1
Musa Qala	35	25	2	20	10	1	1	5	18	1
Zamin Dawar	14	18	3	11	5	2	-	1	9	1
Sanguin	51	31	12	36	23	3	2	12	27	3
Girishk	52	36	-	28	24	1	2	13	39	2
Central	45	38	-	54	31	1	3	2	65	1
Nad-i-Ali	38	17	2	22	31	1	2	14	46	10
Marja	46	26	-	36	19	1	6	3	33	3
Shamalan	62	27	-	72	43	1	4	4	84	4
Darweshan	35	34	1	26	18	2	1	10	27	3
Khanishin	15	9	-	10	3	2	-	1	14	-
Total	415	279	21	335	210	17	21	70	376	29

TABLE VII-9: FREQUENCY OF INSECTICIDES USE AND STATED REASONS FOR NOT USING, BY AREA

Area	Used		Reasons for not Using						
	Yes	No	Not Familiar With Kinds	Methods	No Need	Too Costly	Too Far	Govt.	Other
Nowzad	1	36	9	3	22	3	5	5	1
Musa Qala	8	47	18	4	22	5	2	4	-
Zamin Dawar	1	28	7	3	17	-	5	1	1
Sanguin	8	88	14	1	65	6	2	4	2
Girishk	21	72	8	5	57	6	2	4	2
Central	22	80	24	6	40	12	4	5	5
Nad-i-Ali	14	63	12	9	21	19	3	7	7
Marja	26	54	15	11	20	14	-	2	7
Shamalan	17	117	23	23	54	21	5	5	10
Darweshan	12	45	14	3	18	4	9	1	14
Khanishin	0	22	9	4	4	3	4	2	2
Total	130	652	153	72	340	93	41	40	51

Improved Breeds of Livestock and Poultry: While the adoption of high-yielding wheat varieties was very rapid in central Helmand, the adoption of improved breeds of livestock and poultry has proceeded at a much slower pace. Some improved breeds of livestock are available, e.g., oxen with improved work capacity, and cattle which yield both more milk and meat. The superior quality of these improved breeds is reflected in prices, and by far the most common reason given by farmers for not having improved breeds of livestock was the cost. For chickens, the disease problem was a very important reason, second only to the non-availability of the improved birds. A relatively large number of farmers had no knowledge of the existence of such breeds, however, and a few had no such knowledge about cattle.

Survey data do indicate a growth in improved breeds of both chickens and cattle: there were 0.05 birds per farm in 1970 and 0.17 per farm in 1975; and improved cattle per farm in 1970 and 1975 were 0.04 and 0.08, respectively.

Utilization of Veterinary Services: None of the respondents considered animal disease to be a major problem. This is not surprising given the Helmand's very small number of livestock. A surprisingly large number (54 percent) of the sample farmers, however, indicated that they utilized the services of veterinarians; most of these farmers were located in Lashkar Gah. Significantly, the most common reason given for not utilizing the service of veterinarians was that the farmer did not know the services existed.

TABLE VII-10: FREQUENCY OF REASONS FOR NOT HAVING IMPROVED BREEDS OF CATTLE AND CHICKENS, BY AREA

Area	CATTLE					CHICKENS						
	Too Costly	Not Available	Not Aware	Added Care	Other	Not Available	Not Aware	Added Care	Hard To Get	Disease Problem	Too Costly	Other
Nowzad	18	4	-	3	6	9	3	1	1	3	2	3
Musa Qala	35	8	3	2	1	17	11	-	-	5	1	5
Zamin Dawar	21	4	-	2	2	5	13	-	-	1	5	1
Sanguin	71	13	6	1	6	26	14	5	-	12	9	11
Girishk	72	8	2	3	5	19	10	5	-	20	8	11
Central	75	1	1	-	4	18	14	4	6	23	10	7
Nad-i-Ali	42	-	-	1	3	5	2	5	-	18	4	4
Marja	58	1	-	-	3	11	6	4	3	13	18	11
Shamalan	88	3	-	1	5	24	18	5	4	26	9	13
Darweshan	36	3	5	-	4	15	5	2	-	6	9	6
Khanishin	7	2	4	-	5	7	5	-	-	2	1	-
Total	523	47	21	13	44	156	101	32	14	129	76	72

TABLE VII-11: UTILIZATION OF VETERINARY SERVICES, SOURCE, AND REASONS FOR NOT USING BY AREA

Area	Use		Source			Reasons for not Using				
	Yes	No	Lashkar Gah	Offices	Kabul	No Disease	Local Treat.	Not Aware	Too Far	Other
Nowzad	16	22	15	-	-	5	1	14	-	4
Musa Qala	21	32	17	2	2	2	6	22	1	8
Zamin Dawar	6	23	4	2	-	1	4	15	1	4
Sanguin	54	43	20	5	26	8	3	25	-	12
Girishk	62	31	40	11	10	2	1	23	1	7
Central	70	32	60	6	4	6	2	19	2	5
Nad-i-Ali	51	26	31	14	5	3	1	15	3	13
Marja	39	41	23	6	10	-	-	28	5	12
Shamalan	78	54	57	12	4	6	1	33	3	13
Darweshan	27	41	22	-	5	-	-	22	1	19
Khanishin	1	21	1	1	-	-	-	9	5	8
Total	425	366	290	59	66	33	19	225	22	105

Double Cropping: Two-thirds of the sample farmers indicated that they practiced double cropping in 1975, up from 44 percent in the 1970 survey. The 1975 range was from lows of 17 and 23 percent for the water-short Nowzad and Khanishin areas to highs of 82 percent in Girishk and 92 percent in Sanguin (see Table VII-12). Unsuitable land was the most frequently given reason for not expanding double cropping, followed by insufficient water, and then inadequate finances. In the 1970 survey, the dominant constraint to increased double-cropping was clearly the lack of irrigation water. Forty-four percent of the sample farmers gave this reason in the earlier survey, but only 23 percent indicated this reason in 1975.

Crops Best Suited to Farms: Farmers were asked which crops were best suited for their land, whether or not they were currently growing those crops, and, if not, why not. Almost 90 percent of the respondents indicated that their land was best suited to producing the major crops (wheat and cotton) now being grown. A wide variety of reasons were given by those farmers who indicated that they were not now growing the most suitable crops. Financial constraints and water shortages accounted for the bulk of the reasons. Farmers thus generally believed that their cropping patterns were near optimum, although, as noted earlier most (90 percent) believed that they could increase their net farm income primarily through increased use of fertilizer, better equipment, land improvement, and increased irrigation water.

Sufficiency of Irrigation Water: While 37 percent of all sample farmers indicated that water shortage was a major problem, 47 percent indicated they did not have sufficient irrigation water. The range was from a low of 17 percent in Nad-i-Ali to a high of 96 percent in Khanishin. In Nowzad, 92 percent of the farmers said they did not have enough water; 83 percent in Zamin Dawar; and 73 percent in Musa Qala. These three areas are generally irrigated via karezes. The respondents in these areas indicated that the distribution of water rights accounted for most of the shortages. This is not likely correct, however, since there is simply not enough water to go around given the decreased kareze flow.

As shown in Table VII-13, their location at the end of a canal caused more farmers (21 percent) to be short of water than any other reason. This problem was the most prevalent in Shamalan and Marja, affecting 38 and 37 percent of the farmers in these areas.

Poor distribution of water rights was given as the reason for water shortages by 20 percent of the farmers. As noted above, there is reason to believe that water rights are not mainly responsible for the lack of water in Nowzad, Zamin Dawar and Musa Qala. Limited canal capacity was a reason for water shortages for 14 percent of the farmers. This problem appears to be especially severe in Khanishin.

TABLE VII-12: FARMERS DOUBLE CROPPING AND REASONS FOR NOT INCREASING, PERCENTAGE DISTRIBUTION

Area	% of Farmers Double Cropping	Reasons for not Increasing Double Cropping (Percent of All Farmers Giving Reason)					
		All Land Now Double Cropped	Lack of Water	Land not Suitable	Financial	Timing	Other
Nowzad	17	8	69	11	3	-	19
Musa Qala	57	9	51	13	11	-	19
Zamin Dawar	59	19	37	7	-	-	37
Sanguin	92	8	15	31	15	-	13
Girishk	82	29	20	19	22	5	12
Central	56	10	27	26	21	4	24
Nad-i-Ali	60	1	5	55	45	1	13
Marja	76	8	23	34	33	15	9
Shamalan	75	18	13	25	17	1	20
Darweshan	51	6	10	35	29	9	24
Khanishin	23	-	68	18	14	-	13
Total	66	12	23	28	21	4	17

TABLE VII-13: ADEQUACY OF IRRIGATION WATER; CAUSES OF INADEQUACIES (% OF ALL FARMERS)

Area	Farmers Having Inadequate Irrigation Water (% of All Farmers)	% of All Farmers Which Gave Following Reasons for Inadequate Water			
		End of Canal	Limited Canal Capacity	Poor Management	Water Rights
Nowzad	92	5	8	11	82
Musa Qala	73	13	18	7	50
Zamin Dawar	83	3	13	3	73
Sanguin	33	27	5	9	6
Girishk	35	18	18	5	8
Central	44	14	26	9	16
Nad-i-Ali	17	12	3	4	5
Marja	49	37	9	9	15
Shamalan	50	38	7	11	12
Darweshan	28	4	19	4	7
Khanishin	96	26	65	26	43
Total	47	21	14	8	20

In the 1970 survey, 50 percent of the farmers reported insufficient water. A larger proportion of Marja, Nad-i-Ali and Shamalan farms reported insufficient water in 1975 than in 1970, and for Marja the difference was large -- 49 vs 15 percent. These were the exceptions, however. Insufficient water was generally a problem to a smaller proportion of farmers in 1975 than in 1970. This is significant for a number of reasons. First, the number of farms increased over the period; second, the first crop likely required more water since more HYV seed and fertilizer were used; third, double-cropping increased significantly; and finally the dominant second crop of 1975 (cotton) uses more water than the dominant second crop of 1970 (corn and mung beans).

TABLE VII-14: ADEQUACY OF IRRIGATION WATER; CAUSE OF INADEQUACY, BY AREA

Area	Number of Responses		Reasons for Inadequacy			
	Adequate	Inadequate	End of Canal	Limited Canal Capacity	Poor Management	Water Rights
Nowzad	3	35	2	3	4	31
Musa Qala	15	41	7	10	4	28
Zamin Dawar	5	25	1	4	1	22
Sanguin	65	32	26	5	9	6
Girishk	60	33	17	17	5	7
Central	58	45	14	26	9	16
Nad-i-Ali	64	13	9	2	3	4
Marja	40	39	29	7	7	12
Shamalan	67	67	51	10	15	16
Darweshan	41	16	2	11	2	4
Khanishin	1	22	6	15	6	10
Total	419	368	164	110	65	156

Reasons for Girau-, Sharing- and Renting-out Land: As noted earlier, 119 sample farmers (15 percent) indicated that they had given land under girau. The most common reasons given for this practice were "financial problems" (52 percent, "to pay debts" (24 percent) and "got married" (12 percent). Fifty-nine farmers shared-out land, 53 percent because they were unable to farm, 31 percent lacked plow power, and for 12 percent because their land was "too far away". Only 25 farmers rented-out land. Forty percent did so because of labor shortage, 24 percent were unable to farm, and 20 percent had financial problems. New settlers, who typically were very poor and whose new land requires extra cultivation to get it into shape for planting, often comprise the majority of farmers who rent or share-out their land to others.

CHAPTER VIII

PRODUCTION, COSTS, AND INCOME

The bottom line in the development efforts of both USAID and the Afghan government is farmer income. All our works have been for nought if in the final analysis we have not improved the livelihoods of the inhabitants of the project area. This section attempts to describe the relationship between the costs of production and net farm income and to explain the changes in income which have occurred in the region during the last five years.

Costs: The major inputs in Helmand agricultural production are animal/tractor plowing, labor, seed, fertilizer, and, to a lesser extent, insecticide. As shown in Table VIII-1, less than half of the total farms in the sample have their own oxen team. Those without a team borrow from neighbors or hire a team/tractor. Most farm households contribute their own labor to the production process. This is typically supplemented by hired labor during peak periods; some households, because of internal labor shortages or for prestige reasons, hire full-time laborers. Traditional wheat seed is usually reserved from the previous harvest, while HYV seed is normally purchased from the Afghan Seed Corporation or from other farmers who are known to have quality seed. Fertilizer, which is used only on HYV wheat and cotton is purchased almost exclusively from the Afghan Fertilizer Corporation, usually by means of a ten percent loan. Insecticide is purchased either in the bazaar or from government sources.

Table VIII-2 shows the proportion of total costs per hectare for each of these inputs. Fertilizer was the most expensive input for farmers in the Helmand. On the average, it was 43 percent of the total costs per hectare. This cost was incurred almost entirely by those farmers planting HYV wheat and/or cotton, since local varieties cannot use chemical fertilizer (because of lodging) and other crops (vegetables and fruits) utilize manure. This is reflected in the range of percentage costs of production per hectare for fertilizer. For example, in Nad-i-Ali and Marja, two areas where chemical fertilizer was applied by nearly 95 percent of the farmers, percentage costs of fertilizer were the highest, while in Nowzad and Khanishin, where less than 10 percent of the sample farmers applied fertilizer to their crops, the cost of fertilizer as a percent of total costs was relatively low. The same relationship between costs and production also holds for cotton.

TABLE VIII-1: WORK ANIMALS AND EQUIPMENT, AVERAGE NUMBER AND AVERAGE VALUE PER FARM, BY REGION

Region	Oxen		Donkey		Small Equipment Value	Tractor	
	No.	Value	No.	Value		Total No.	Value/Tractor
Nowzad	.71	5487	.79	866	1386	2	350100
Musa Qala	.93	7364	.95	1093	1335	2	100105
Zamin Dawar	.77	6048	.77	711	718	0	0
Sanguin	1.00	8552	.89	850	1376	1	600000
Girishk	1.33	11388	1.03	1196	2405	8	425524
Central	.98	8350	.73	829	1381	4	409375
Nad-i-Ali	.51	4192	.73	856	1145	5	224600
Marja	.78	6294	.58	714	1603	3	436833
Shamalan	.93	8175	.82	1020	1436	10	371083
Darweshan	.74	5853	.96	991	1302	7	446285
Khanishin	1.00	7087	1.00	1170	1248	2	312500
TOTAL	.91	7565	.83	940	1486	44	373532

TABLE VIII-2: AVERAGE FARM COSTS, RETURNS AND NET INCOME IN Afs PER HECTARE CROPPED BY REGION.

Region	Average Returns per Hectare					Average Costs/Hectare								Net Income Ha Cropped
	Ave. Ha's Planted	Crops	Vegs.	Fruits	Total Revenue/ha	Fertilizer	Tillage	Seed	Interest	Animal	Equipment	Hired Labor	Total Cost	
Nowzad	3.30	4294	18	2602	6914	116	762	332	12	313	356	246	2137	4777
Musa Qala	3.00	11156	206	2812	14174	1234	1163	622	121	392	445	268	4245	9929
Zamin Dawar	2.33	9504	39	3484	13027	2222	1157	543	218	424	308	485	5357	7670
Sanguin	2.66	15306	114	1556	16976	3357	1368	660	329	409	518	380	7021	9955
Girishk	5.77	14576	436	2154	17166	2824	1302	677	277	214	416	653	6363	10803
Central	4.26	10707	2076	1060	13843	2150	1244	675	211	225	324	486	5315	8528
Nad-i-Ali	5.38	10921	107	699	11727	3810	1074	742	373	175	213	667	7054	4673
Marja	4.12	11909	185	1424	13518	4186	1268	722	410	199	389	864	8038	5480
Shamalan	4.25	14476	1213	1502	17191	1980	1116	542	194	247	338	598	5015	12176
Darweshan	9.18	10909	147	810	11866	1300	1050	597	127	142	169	483	3868	7998
Khanishin	11.14	5551	40	518	6109	39	983	662	4	106	112	348	2254	3855
Weighted Ave.	4.75	11966	599	1567	14132	2405	1173	630	231	252	344	537	5573	8559
Percent of Totals		(85%)	(4%)	(11%)	(100%)	(43%)	(21 %)	(11%)	(4%)	(5%)	(6%)	(10%)	(100%)	

The second most expensive input was tillage (animal or tractor), which averaged approximately 21 percent of the average total costs of production per hectare. Tillage by tractor is generally more expensive than by oxen, but the former plows deeper and breaks up the soil more effectively, resulting ultimately in slightly higher yields which off-set the higher costs. It was shown earlier that 55 percent of the land is plowed by oxen and 45 percent is by tractor. This proportion, however, is not evenly distributed throughout the project area. Nad-i-Ali, Khanishin, Shamalan, and Darweshan have more than half of their land plowed by tractor, a fact reflected in the higher relative tillage costs incurred in each of these four areas.

Seed costs were approximately 11 percent of the average total costs incurred per hectare. Costs for seed were higher for cotton and HYV than for local varieties, and it is not surprising therefore that seed costs correlate closely with fertilizer costs. That is, those areas with high average fertilizer expenditures per hectare also have high seed costs.

Hired labor was the fourth largest expenditure per hectare. In general, 10 percent of the total costs were for this purpose. Since the production of HYV crops, particularly cotton, requires more labor inputs than traditional varieties, labor expenditures are usually higher in areas where larger percentages of land are under HYV wheat and cotton. This is generally corroborated in the table.

As discussed earlier, a good deal of borrowing is for production purposes, and the bulk of that is for fertilizer. Thus, it is not unexpected to find that those areas having high fertilizer usage (or high HYV production) have high interest charges. Interest was on the average only four percent of the total average costs per hectare.

Total average costs per hectare were 5573 afs. These ranged from a high of a little more than 8000 afs in Marja to a low of 2137 afs in Nowzad. High costs to a large extent reflect the use of high cost inputs, particularly fertilizer associated with HYV. Costs of production on a per farm basis are shown in Table VIII-3.

TABLE VIII-3 : Costs of Production in Afs Per Farm as Percent of Total Cost

	Fertilizer		Tillage		Seed		Interest		Animal (donkey)		Equipment		Hired Labor		Sharecropper (Net)		Total Cost	
	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%
Nowzad	383	3.9	2516	25.7	1097	11.2	38	0.4	1033	10.5	1175	12.0	811	8.3	2748	28.0	9802	100
Musa Qala	3701	19.6	3489	18.4	1866	9.9	363	1.9	1177	6.2	1335	7.1	803	4.2	6177	32.7	18911	100
Zamin Dawar	5177	34.1	2696	17.8	1266	8.3	507	3.3	988	6.5	718	4.7	1131	7.5	2687	17.7	15170	100
Sanguin	8929	37.7	3638	15.4	1755	7.4	875	3.7	1088	4.6	1377	5.8	1010	4.3	4986	21.1	23659	100
Girishk	16293	33.0	7511	15.2	3905	7.9	1597	3.2	1238	2.5	2398	4.9	3770	7.6	12701	25.7	49413	100
Central	9160	28.3	5299	16.3	2874	8.9	898	2.8	958	3.0	1380	4.3	2072	6.4	9783	30.2	32424	100
Nad-i-Ali	20498	47.8	5776	13.5	3992	9.3	2009	4.7	944	2.2	1145	2.7	3589	8.4	4897	11.4	42850	100
Marja	17248	47.8	5225	14.5	2974	8.3	1690	4.7	820	2.3	1603	4.4	3560	9.9	2927	8.1	36047	100
Shamalan	8417	27.7	4745	15.6	2302	7.6	825	2.7	1050	3.5	1436	4.7	2543	8.4	9014	29.7	30333	100
Darweshan	11939	24.4	9642	19.7	5485	11.2	1170	2.4	1307	2.7	1555	3.2	4438	9.1	13374	27.3	48908	100
Khanishin	433	1.1	10955	28.8	7371	19.4	42	0.1	1182	3.1	1248	3.3	3881	10.2	12973	34.1	38085	100
Total	10855	(32.5%)	5485	(16.4%)	3023	(9.1%)	1064	(3.2%)	1061	(3.2%)	1494	(4.4%)	2600	(7.8%)	7816	(23.4%)	33398	100.0

The second most expensive input was tillage (animal or tractor), which averaged approximately 21 percent of the average total costs of production per hectare. Tillage by tractor is generally more expensive than by oxen, but the former plows deeper and breaks up the soil more effectively, resulting ultimately in slightly higher yields which off-set the higher costs. It was shown earlier that 55 percent of the land is plowed by oxen and 45 percent is by tractor. This proportion, however, is not evenly distributed throughout the project area. Nad-i-Ali, Khanishin, Shamalan, and Darweshan have more than half of their land plowed by tractor, a fact reflected in the higher relative tillage costs incurred in each of these four areas.

Seed costs were approximately 11 percent of the average total costs incurred per hectare. Costs for seed were higher for cotton and HYV than for local varieties, and it is not surprising therefore that seed costs correlate closely with fertilizer costs. That is, those areas with high average fertilizer expenditures per hectare also have high seed costs.

Hired labor was the fourth largest expenditure per hectare. In general, 10 percent of the total costs were for this purpose. Since the production of HYV crops, particularly cotton, requires more labor inputs than traditional varieties, labor expenditures are usually higher in areas where larger percentages of land are under HYV wheat and cotton. This is generally corroborated in the table.

As discussed earlier, a good deal of borrowing is for production purposes, and the bulk of that is for fertilizer. Thus, it is not unexpected to find that those areas having high fertilizer usage (or high HYV production) have high interest charges. Interest was on the average only four percent of the total average costs per hectare.

Total average costs per hectare were 5573 afs. These ranged from a high of a little more than 8000 afs in Marja to a low of 2137 afs in Nowzad. High costs to a large extent reflect the use of high cost inputs, particularly fertilizer associated with HYV. Costs of production on a per farm basis are shown in Table VIII-3.

TABLE VIII-3 : Costs of Production in Afs Per Farm as Percent of Total Cost

	Fertilizer		Tillage		Seed		Interest		Animal (donkey)		Equipment		Hired Labor		Sharecropper (Net)		Total Cost	
	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%
Nowzad	383	3.9	2516	25.7	1097	11.2	38	0.4	1033	10.5	1175	12.0	811	8.3	2748	28.0	9802	100
Musa Qala	3701	19.6	3489	18.4	1866	9.9	363	1.9	1177	6.2	1335	7.1	803	4.2	6177	32.7	18911	100
Zamin Dawar	5177	34.1	2696	17.8	1266	8.3	507	3.3	988	6.5	718	4.7	1131	7.5	2687	17.7	15170	100
Sanguin	8929	37.7	3638	15.4	1755	7.4	875	3.7	1088	4.6	1377	5.8	1010	4.3	4986	21.1	23659	100
Girishk	16293	33.0	7511	15.2	3905	7.9	1597	3.2	1238	2.5	2398	4.9	3770	7.6	12701	25.7	49413	100
Central	9160	28.3	5299	16.3	2874	8.9	898	2.8	958	3.0	1380	4.3	2072	6.4	9783	30.2	32424	100
Nad-i-Ali	20498	47.8	5776	13.5	3992	9.3	2009	4.7	944	2.2	1145	2.7	3589	8.4	4897	11.4	42850	100
Marja	17248	47.8	5225	14.5	2974	8.3	1690	4.7	820	2.3	1603	4.4	3560	9.9	2927	8.1	36047	100
Shamalan	8417	27.7	4745	15.6	2302	7.6	825	2.7	1050	3.5	1436	4.7	2543	8.4	9014	29.7	30333	100
Darweshan	11939	24.4	9642	19.7	5485	11.2	1170	2.4	1307	2.7	1555	3.2	4438	9.1	13374	27.3	48908	100
Khanishin	433	1.1	10955	28.8	7371	19.4	42	0.1	1182	3.1	1248	3.3	3881	10.2	12973	34.1	38085	100
Total	10855	(32.5%)	5485	(16.4%)	3023	(9.1%)	1064	(3.2%)	1061	(3.2%)	1494	(4.4%)	2600	(7.8%)	7816	(23.4%)	33398	100.0

Yields: Yields varied widely throughout the project area. One of the major causes of these differences was the variability in the water supply. Where it was sufficient, HYV crops were usually cultivated; but where it was scarce or undependable, traditional, lower yielding, varieties were planted. In certain cases the difference in yields was as high as 4:1 in favor of HYV (e.g., in Girishk).

In some parts of the project area, particularly Nad-i-Ali and Marja, soil quality was the major factor in yield determination. Due to salinity, sodicity, and drainage problems, yields in those areas were greatly reduced, even when HYV was cultivated. As shown in Table VIII-4, the yields in these two areas (dominated by HYV cultivation) were the 9th and 6th lowest respectively of all project areas. For other yield data and distribution of yields see Tables VIII-5 through VIII-12.

Revenue: Revenue per hectare was derived from three major sources: crop production (mainly wheat and cotton), vegetables, and fruits. Eighty-five percent of the total revenue came from crop production, fruits accounted for 11 percent, and vegetables four percent. (See Table VIII- .)

The range of average sales revenue per hectare for crop production was from a high of 15,306 afs in Sanquin to a low of 4,294 in Nowzad. Income from fruits was highest in Shamalan (17,191 afs) and lowest in Khanishin (6,109 afs). Vegetable revenue ranged from a high of 2,076 in the Central Region to a low of only 18 afs in Nowzad.

In most areas with relatively high average revenues per hectare from crop production, HYV and double-cropping were the prevalent cultural practices. Since yields for HYV are higher than for local varieties, the revenues in those areas are expected to be higher. Where double-cropping is practiced, per hectare revenues are even higher.

As noted earlier, vegetable production is increasing while the cultivation of fruit trees in decreasing. As more farmers undertake HYV wheat, less land is needed for wheat and more is available for other crops. Much of the latter has tended to have been cotton (i.e., cotton is replacing wheat), but vegetable production can be expected to make increasing shares to revenue generation in the future.

TABLE VIII-4 : AVERAGE YIELDS FOR MAJOR FIELD CROPS BY REGION IN MT/HA

Region	Wheat		Cotton [a/]		Corn		Mung Beans	Barley	Clovers [b/]
	Local	Improved	Single	Double	Local	Improved			
Nowzad	.96	1.05	.58	-	.85	-	.50	.25	9.75
Musa Qala	1.13	1.59	1.04	1.17	1.50	-	.50	1.33	11.73
Zamin Dawar	1.25	1.87	.74	.67	1.24	-	-	.29	22.67
Sanguin	-	2.17	.89	.83	1.20	1.50	.40	-	25.22
Girishk	.58	2.00	1.05	.47	1.23	1.25	.56	.33	24.19
Central	.85	1.66	.89	.53	.86	-	.33	1.20	20.00
Nad-i-Ali	1.51	1.56	.97	.42	.92	.47	.28	1.00	9.38
Marja	.79	1.71	.91	.53	.84	1.14	.38	-	16.90
Shamalan	1.12	2.29	1.07	.75	1.34	1.17	.57	-	23.53
Darweshan	1.31	1.90	1.45	.53	1.17	1.80	.46	1.00	26.37
Khanishin	.93	1.24	.48	-	.50	-	.28	.38	12.33
Total	1.03	1.89	1.06	.64	1.19	1.13	.42	.75	21.20

a/ Seed Cotton

b/ Fresh Clovers

TABLE VIII-5 : AVERAGE YIELDS, IN MON PER JERIB, BY FARM SIZE[a/] GROUPS IN JERIBS. FOR WHEAT AND COTTON.

Region	Improved Wheat						Single Cotton					
	0-5	6-10	11-19	20-29	30-99	100 +	0-5	6-10	11-19	20-29	30-99	100 +
Nowzad	60	25	67	-	-	-	25	-	15	-	26	29
Musa Qala	107	71	77	96	54	45	-	40	38	59	43	41
Zamin Dawar	114	80	50	-	82	-	-	5	-	-	36	-
Sanguin	108	116	96	81	112	60	71	68	76	34	17	20
Girishk	122	104	106	91	76	87	80	71	53	45	43	48
Central	76	92	61	62	82	92	48	74	47	43	32	27
Nad-i-Ali	-	52	76	65	72	81	-	30	46	41	44	56
Marja	-	94	95	71	41	-	-	10	60	40	17	-
Shamalan	86	84	112	98	101	75	43	43	60	52	49	6
Darweshan	63	103	52	72	88	101	56	16	44	48	42	85
Khanishin	-	60	-	-	-	-	-	35	10	-	16	25
Total	53	92	93	73	80	85	51	42	54	44	40	53

a/ Land farmed only, idle land not included.

1.0 Mon/Jerib = 22.81 Kg/ha.

TABLE VIII-6 : AVERAGE YIELDS FOR MAJOR FRUITS AND MELONS, BY REGION

Region	Melons MT/Ha	Fruits in Kg/Tree [a/]		
		Grapes	Pomegranates	Almonds
Nowzad	-	4	18	15
Musa Qala	-	51	10	1
Zamin Dawar	-	46	3	6
Sanguin	7.00	11	11	-
Girishk	4.80	15	2	7
Central	25.56	12	6	-
Nad-i-Ali	2.83	16	2	-
Marja	11.00	10	5	-
Shamalan	18.00	33	2	-
Darweshan	2.50	77	2	-
Khanishin	-	-		
Total	16.11	23	5	7

a/ Since orchards are generally mixed, it is not possible to determine the yield per Hectare for each kind of fruit.

TABLE VIII-7 : PERCENT DISTRIBUTION OF YIELDS WEIGHTED BY PRODUCTION FOR EACH YIELD GROUP, IMPROVED WHEAT

Region	Total Mons in Sample	Yield Groups in Mon per Jerib									
		0-10	11-20	21-30	31-40	41-50	51-60	61-80	81-100	101-130	131+
Nowzad	1,199	-	-	26.9	-	-	8.6	64.5	-	-	-
Musa Qala	32,152	.2	-	1.5	1.6	22.1	5.4	15.9	21.4	17.6	14.3
Zamin Dawar	8,262	-	-	.2	7.3	6.6	3.1	3.9	54.6	18.6	5.7
Sanguin	92,758	-	.3	.2	.3	2.1	11.5	16.8	15.6	17.7	35.5
Girishk	182,186	-	.1	.6	1.4	2.2	.6	32.6	32.5	19.0	11.0
Central	68,500	.2	1.1	4.2	4.2	5.5	6.4	18.4	29.0	11.7	19.4
Nad-i-Ali	100,942	0.4	.9	2.3	5.2	5.1	5.1	28.0	24.2	13.7	15.2
Marja	87,351	1.2	.9	2.6	4.1	2.5	3.4	14.3	17.3	20.9	32.7
Shamalan	131,282	0.0	.2	1.0	1.9	1.6	6.4	9.5	17.7	19.7	42.0
Darweshan	50,764	-	.2	.5	2.9	4.2	5.8	20.6	26.1	18.5	21.1
Khanishin	271	-	-	-	-	-	100.0	-	-	-	-
Total	755,662	0.2	0.4	1.5	2.6	3.9	5.1	20.8	23.9	17.7	23.9

1.0 Mon/Jerib = 22.81 Kg/Ha.

TABLE VIII-8 : PERCENT DISTRIBUTION OF YIELDS WEIGHTED BY LAND IN EACH YIELD GROUP, IMPROVED WHEAT

Region	Total Jeribs in Sample	Yield Groups in Mon per Jerib										Range Mon/Jerib	
		0-11	11-20	21-30	31-40	41-50	51-60	61-80	81-100	101-130	131+	High	Low
Nowzad	26	-	-	48.8	-	-	7.3	43.9	-	-	-	67	25
Musa Qala	462	1.7	-	3.7	2.7	34.5	6.7	16.3	16.7	11.1	6.7	200	10
Zamin Dawar	101	-	-	.5	17.6	11.7	4.5	4.1	45.0	14.0	2.7	200	30
Sanguin	974	-	2.5	.9	.9	4.0	18.5	21.5	15.5	14.8	21.3	200	12
Girishk	2,081	-	.7	2.0	3.1	4.5	.9	37.9	29.8	15.0	6.1	200	13
Central	944	1.7	4.0	12.5	8.5	8.3	8.0	18.5	22.4	7.3	8.9	181	8
Nad-i-Ali	1,473	4.8	3.4	6.2	9.7	7.1	6.1	27.5	19.6	8.1	7.4	150	5
Marja	1,162	13.2	4.5	8.3	8.3	3.6	4.2	14.8	13.9	13.9	15.3	227	4
Shamalan	1,310	.4	1.5	3.6	5.6	3.4	11.4	13.5	19.1	17.2	24.4	260	13
Darweshan	609	-	.9	2.0	7.1	7.8	8.4	25.7	23.0	13.6	11.5	171	16
Khanishin	5	-	-	-	-	-	100.0	-	-	-	-	-	-
Total	9,142	2.8	2.3	4.9	5.9	6.8	7.2	23.7	21.3	12.9	12.3	260	4

1.0 Mon/Jerib = 22.81 Kg/Ha.

TABLE VIII-9 : PERCENT DISTRIBUTION OF YIELDS WEIGHTED BY PRODUCTION FROM EACH YIELD GROUP.
LOCAL WHEAT

Regions	Total Mons in Sample	Yield Groups in Mon/Jerib									
		0-10	11-20	21-30	31-40	41-50	51-60	61-80	81-100	101-130	131 +
Nowzad	18,050	-	3.0	12.5	29.1	13.7	14.7	26.2	0.7	-	-
Musa Qala	7,155	0.5	-	4.2	16.9	40.0	16.8	1.4	20.3	-	-
Zamind Dawar	7,041	-	2.1	15.5	-	24.8	10.4	7.7	8.1	16.0	15.4
Sanguin	685	-	-	-	-	-	-	-	-	-	100.0
Girishk	7,235	-	26.2	41.3	20.2	12.3	-	-	-	-	-
Central	28,944	0.8	4.7	29.1	7.0	21.4	7.8	6.9	3.5	18.8	-
Nad-i-Ali	1,254	-	-	-	-	21.7	26.1	-	52.2	-	-
Marja	3,509	7.3	9.0	12.4	17.1	9.3	-	-	-	-	45.0
Shamalan	9,541	0.0	0.5	24.7	9.1	5.2	-	12.2	30.4	-	17.8
Darweshan	70,026	-	0.8	1.8	12.6	14.3	5.8	48.7	13.7	2.3	-
Khanishin	50,167	1.1	1.1	16.6	28.5	8.9	4.5	39.3	-	-	-
Total	203,607	0.5	2.7	13.5	17.0	14.6	6.6	30.6	8.0	4.0	2.5

1.0 Mon/Jerib = 22.81 Kg/ha.

TABLE VIII-10: PERCENT DISTRIBUTION OF YIELDS WEIGHTED BY LAND IN EACH YIELD GROUP, LOCAL WHEAT

Region	Total Jeribs in Sample	Yield Groups in Mon per Jerib											
		0-10	11-20	21-30	31-40	41-50	51-60	61-80	81-100	101-130	131+	High	Low
Nowzad	428	-	7.2	21.1	32.2	13.3	10.8	15.1	0.3	-	-	100	17
Musa Qala	144	2.8	-	7.0	23.7	41.1	14.6	0.7	10.1	-	-	100	5
Zamin Dawar	128	-	7.0	33.7	-	28.1	9.8	6.0	4.2	7.7	3.5	240	17
Sanguin	3	-	-	-	-	-	-	-	-	-	100.0	-	-
Girishk	283	-	35.3	43.3	14.3	7.1	-	-	-	-	-	50	14
Central	781	3.3	11.9	45.4	7.0	16.8	4.9	3.4	1.6	5.7	-	122	5
Nad-i-Ali	19	-	-	-	-	35.3	29.4	-	35.3	-	-	100	41
Marja	101	29.8	18.1	18.1	14.9	7.4	-	-	-	-	11.7	132	6
Shamalan	194	5.3	2.1	47.3	11.2	5.3	-	8.5	15.4	-	4.8	185	13
Darweshan	1,218	-	3.3	3.9	18.6	16.8	5.8	41.4	9.0	1.2	-	109	12
Khanishin	1,225	5.7	3.1	25.1	30.0	8.1	3.2	24.8	-	-	-	80	8
Total	4,524	3.1	7.4	24.0	19.8	14.0	5.2	20.4	4.0	1.6	0.6	240	5

1.0 Mon/Jerib = 22.81 Kg/Ha

TABLE VIII-11 : PERCENT DISTRIBUTION OF YIELDS WEIGHTED BY PRODUCTION FROM EACH YIELD GROUP, SINGLE COTTON

Region	Total Mons in Sample	Yield Groups in Mon per Jerib									
		0-10	11-20	21-30	31-40	41-50	51-60	61-80	81-100	101-130	131+
Nowzad	767	1.7	8.4	89.9	-	-	8.6	64.5	-	-	-
Musa Qala	6,535	-	-	13.2	11.2	36.4	19.0	12.5	7.7	-	-
Zamin Dawar	292	0.9	18.6	-	-	80.5	-	-	-	-	-
Sanguin	5,086	1.4	9.6	0.6	4.6	18.1	15.0	10.6	35.2	-	4.8
Girishk	39,053	1.0	1.9	9.8	28.8	5.5	6.6	21.6	11.4	11.7	1.6
Central	27,011	0.9	6.2	18.2	17.4	8.8	6.6	16.6	21.0	2.9	1.6
Nad-i-Ali	28,693	0.7	6.4	10.5	10.8	16.6	22.8	14.4	15.9	-	1.9
Marja	14,487	2.4	9.7	5.2	5.2	13.2	12.6	23.9	18.2	6.5	3.0
Shamalan	47,330	1.5	1.1	9.2	12.5	9.4	9.0	18.4	13.1	14.3	11.5
Darweshan	54,954	0.2	1.0	1.9	17.1	13.6	5.2	10.4	4.1	1.8	44.7
Khanishin	2,148	2.6	24.2	65.8	7.4	-	-	-	-	-	-
Total	226,356	0.9	3.5	9.3	16.0	11.8	9.7	16.0	12.4	6.2	14.3

1.0 Mon/Jerib = 22.81 Kg/Ha

TABLE VIII-12 : PERCENT DISTRIBUTION OF YIELDS WEIGHTED BY LAND IN EACH YIELD GROUP, SINGLE COTTON

Region	Total Jeribs in Sample	Yield Groups in Mon per Jerib										Range Mon/Jerib	
		0-10	11-20	21-30	31-40	41-50	51-60	61-80	81-100	101-130	131+	High	Low
Nowzad	30	4.3	13.0	82.6	-	-	-	-	-	-	-	29	10
Musa Qala	144	-	-	22.2	13.2	38.2	14.6	7.6	4.2	-	-	83	23
Zamin Dawar	9	5.3	31.6	-	-	63.2	-	-	-	-	-	44	6
Sanguin	130	29.3	18.8	0.8	5.3	15.0	9.8	5.3	14.3	-	1.5	160	1
Girishk	846	6.5	5.4	17.7	34.6	5.2	5.2	13.7	6.2	4.9	0.6	200	6
Central	696	5.1	17.0	28.3	19.0	7.2	4.5	9.2	8.4	1.0	0.3	167	6
Nad-i-Ali	677	5.0	17.2	17.4	12.2	14.8	16.8	9.0	7.1	-	0.5	167	3
Marja	364	15.8	25.1	7.8	6.0	10.7	9.0	13.4	7.8	3.6	0.9	133	2
Shamalan	1,008	17.6	3.5	17.8	16.6	9.2	7.6	12.0	6.6	5.9	3.3	240	2
Darweshan	862	5.5	3.8	4.5	30.0	18.1	6.2	9.2	2.8	1.0	19.0	150	5
Khanishin	103	7.8	32.2	55.6	4.4	-	-	-	-	-	-	35	7
Total	4,869	9.4	10.3	16.9	20.3	11.5	7.9	10.4	6.2	2.7	4.4		

1.0 Mon/Jerib = 22.81 Kg/Ha

Non-Farm Income: While the bulk of gross income comes from on-farm production, salaries and rents also contribute importantly. In Nowzad, for example, nearly one fourth of the total gross revenue was derived from off-farm sources. Additionally, Musa Qala and Sanguin each received about 12 percent of their gross revenue from off-farm sources. (See Table VIII-13.) Salary and wage income in these areas is rather high, since no double-cropping is done there and the farmers are thus free to work for wages on farms in other regions of the project area where double-cropping/cash-cropping is more prevalent. Similarly, income from rents in Khanishin is high because the holdings there tend to be larger than most farmers care or are able to cultivate, and a good deal of land is rented or shared-out to others.

TABLE VIII-13 : Returns/Income in Afs Per Farm and as Percent of Gross Income, By Region.

Region	F A R M								O T H E R					
	Crops		Vegetables		Fruits		Livestock(Net)		Salaries		Rents 1/		Gross Revenue	
	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%	Afs	%
Nowzad	14172	31.8	58	0.1	8587	19.3	11087	24.9	8236	18.5	2400	5.4	44540	100
Musa Qala	33469	56.5	617	1.0	8437	14.2	8964	15.1	6264	10.6	1474	2.5	59226	100
Zamin Dawar	22144	53.7	91	0.2	8118	19.7	8306	20.1	2498	6.1	81	0.2	41240	100
Sanguin	40715	66.7	303	0.5	4140	6.8	8565	14.0	4533	7.4	2784	4.6	61040	100
Girishk	84106	72.5	2514	2.2	12429	10.7	11912	10.3	2597	2.2	2503	2.2	116061	100
Central	45613	63.6	8844	12.3	4514	6.3	9271	12.9	2806	3.9	636	0.9	71683	100
Nad-i-Ali	58756	79.2	578	0.8	3759	5.1	6980	9.4	2842	3.8	1281	1.7	74196	100
Marja	49067	78.4	763	1.2	5865	9.4	6561	10.5	307	0.5	-	0.0	62563	100
Shamalan	61521	67.3	5155	5.6	6383	7.0	12233	13.4	3101	3.4	2973	3.3	91366	100
Darweshan	100145	82.6	1353	1.1	7432	6.1	10484	8.7	1075	0.9	707	0.6	121199	100
Khanishin	61836	71.6	443	0.5	5771	6.7	11593	13.4	252	0.3	6522	7.5	86417	100
Total	55527		2588		6735		9730		3086		1821		79587	

1/ Includes income from rental of houses, apartments etc and income from trucks, buses, taxis; flour mills etc.

Net Income: Net income per hectare is a reflection of both costs of production and yields. Under traditional cultivation methods, low costs and good yields generally result in high incomes. HYV production is somewhat different. Large doses of high-costing fertilizer are necessary if the plant's genetic yield-potential is to be reached. Ceteris paribus, the economic return for cultivating HYV is higher than that of the traditional varieties. In the project area, however, all things are not equal. Soil quality varies greatly, and where it is rather poor, yields for even HYV are greatly reduced, despite high inputs of fertilizer. For example, Marja had the highest production costs, mainly as a result of its large fertilizer input, yet it had only the 8th highest income; and in Nad-i-Ali, where production costs were next to highest, net income per hectare was next to lowest. Clearly in these two settler areas it takes a good deal of cash expenditure on inputs before the farmer receives minor returns on his investment. Unfortunately, there appears to be an investment threshhold which must be attained before even these meager returns are achieved. Many farmers who fail to make this minimal investment in inputs suffer losses and negative incomes in the short term.

In general, average net income per hectare was 8,559 afs, varying from a high of 12,176 in Shamalan to a low of 3,855 in Khanishin. The latter area, Nowzad, and Zamin Dawar are water-short areas and cannot therefore cultivate HYV on a wide scale, accounting, in part, for their low incomes. (See Table VIII-2.)

Farm Revenues and Costs: The previous section gave revenue and cost figures per hectare which are most useful for comparing areas. Since not all farms in the project area are of equal size, however, it is also necessary to compare revenue and cost figures per farm (i.e., for average total hectares planted per household).

Table VIII-2 shows that there was rather wide disparity between farm sizes. Khanishin and Darweshan had areas under cultivation which were three to four times larger than the smaller farms of Zamin Dawar, Sanguin, Musa Qala, and Nowzad.

Considering the net farm income, these inequities in landholdings do not seem to have resulted in gross farm income inequities. For example, Darweshan's farm income is only 2.7 times higher than Zamin Dawar's, while the difference in farm size is nearly four-fold. Similarly, Khanishin has 4.8 times the holding of Zamin Dawar, but only 1.85 times the income. (See Table VIII-14.)

Eliminating the two largest areas from consideration, the disparity in farm size is greatly reduced. In this case, the differences in farm income are attributable almost exclusively to differences in productivity. In general, low incomes per hectare correlate positively with low net farm income (compare Table VIII-2 with Table VIII-6). For example, Shamalan, Girishk, and Sanguin, areas with the highest incomes per hectare had fairly high net farm incomes (Girishk was second highest, Shamalan was third, and Sanguin seventh). On the other hand, Nowzad, Zamin Dawar, Marja, and Nad-i-Ali had the lowest farm incomes, primarily because their incomes per hectare were so low. Some of these low income areas would have has even lower net farm incomes if it had not been for additional revenues gained from off-farm labor or from livestock. Nowzad, for example, has the highest income derived from both off-farm labor and livestock.

Net Income: 1970 and 1975. The 1970 Farm Economic Survey showed significant increases in farm income compared to the Stevens-Tarzi data of 1963 (see Table 29, 1970 FES). Similarly, the 1975 FES shows a significant increase in farm income compared to the 1970 FES data. This comparison is shown below in Table VIII-15.

Main net owner income in 1975 was afs 46,682. This represents an increase of 8.9 percent per year since 1970 in real terms. Median net owner income was afs 27,118. (See Table VIII-16.) This equates to afs 2,885 per capita median owner income. Median net farm income was afs 30,625. (See Table VIII-17.)

TABLE VIII-14 : COSTS, RETURNS AND NET INCOME IN Afs, PER FARM BY REGION

	Returns					Costs								
Region	Crops	Fruits & Veg.	Livestock	Other Income	Total Revenue	Fertilizer	Tillage	Seed	Interest	Animal & Equip.	Hired Labor	Net Share to Sharecropper	Total Costs	Net Farm Income
Nowzad	14172	8645	11087	10636	44540	383	2516	1097	38	2208	811	2748	9802	34738
Musa Qala	33469	9054	8964	7738	59226	3701	3489	1866	363	2512	803	6177	18911	40315
Zamin Dawar	22144	8209	8306	2579	41240	5177	2696	1266	507	1706	1131	2687	15170	26070
Sanguin	40715	4443	8565	7317	61040	8929	3638	1755	875	2465	1010	4986	23659	37381
Girishk	84106	14943	11912	5100	116061	16293	7511	3905	1597	3636	3770	12701	49413	66648
Central	45613	13358	9271	3442	71683	9160	5299	2874	898	2338	2072	9783	32424	39259
Nad-i-Ali	58756	4337	6980	4123	74196	20498	5776	3992	2009	2089	3589	4897	42850	31346
Marja	49067	6628	6561	307	62563	17248	5225	2974	1690	2423	3560	2927	36047	26516
Shamalan	61521	11538	12233	6074	91366	8417	4745	2302	825	2486	2543	9014	30333	61033
Darweshan	100145	8785	10484	1782	121199	11939	9642	5485	1170	2862	4438	13374	48908	72291
Khanishin	61836	6214	11593	6774	86417	433	10955	7371	42	2430	3881	12973	38085	48332
Weighted Ave.	55527	9423	9730	4907	79587	10855	5485	3023	1064	2555	2600	7816	33398	46189

TABLE VIII-15: GROSS RETURNS AND NET INCOME COMPARISON 1970 with 1975

Area	Gross Income		Total Costs		Net Income	
	1970	1975	1970	1975	1970	1975
Nowzad	16,710	44,540	9,768	9,802	9,768	34,738
Musa Qala	40,711	59,226	12,517	18,911	12,517	40,315
Zamin Dawar		41,240				26,070
Sanguin		61,040				37,381
Girishk	72,151	116,061	31,754	49,413	40,397	66,648
Central		71,683				
Nad-i-Ali	49,734	74,196	18,429	42,850	31,305	31,346
Marja	47,149	62,563	15,374	36,047	31,775	26,516
Shamalan	59,418	91,366	20,417	30,333	39,001	61,033
Darweshan	59,557	121,199	27,514	48,908	32,043	72,291
Khanishin	47,808	86,417	44,388	38,085	3,420	48,332

TABLE VIII-16: NET OWNER INCOME DISTRIBUTION BY REGION

Region	% -10,000-0	% 0-12,000	% 12,001-20,000	% 20,001-30,000	% 30,001-50,000	% 50,001-100,000	% 100,001-500,000	5
Nowzad	0.0	42.1	13.2	15.8	7.9	7.9	13.2	
Musa Qala	0.0	16.4	29.1	23.6	7.3	14.5	9.1	
Zamin Dawar	0.0	22.6	29.0	29.0	9.7	3.2	6.4	
Sanguin	1.1	11.3	16.5	22.7	30.9	12.4	5.2	
Girishk	1.1	10.6	13.8	26.6	20.2	12.8	13.8	
Central	3.9	22.3	21.4	15.5	15.5	16.5	3.9	
Nad-i-Ali	16.7	17.9	12.8	14.1	16.7	15.4	5.1	
Marja	22.5	12.5	12.5	10.0	20.0	18.8	2.5	
Shamalan	3.0	9.7	6.7	14.2	19.4	31.3	15.7	
Darweshan	5.4	8.9	14.3	12.5	16.1	17.8	23.2	
Khanishin	0.0	34.8	13.0	21.7	13.0	8.7	8.7	
Total	5.6	16.3	14.9	18.1	17.9	16.9	9.8	

CONCLUSIONS

Based upon comparisons with the earlier Farm Economic Survey, we can conclude several things from the data presented in this 1975 survey. First, the farmers of the Helmand are increasingly being transformed from subsistence cultivators to market-oriented farmers. Second, farmer incomes are increasing at a fairly rapid rate. Third, new, but not unexpected, agricultural problems are emerging which must be solved if the gains of the past five years are to continue. Each of these conclusions is discussed in more detail below.

1) By almost every major indicator, agricultural production for the market, as opposed to production for home consumption, has increased dramatically. For example, the percentage of land doulbe-cropped has increased from nine percent in 1970 to more than 23 percent in 1975. In the earlier period, wheat and corn were the major crops; today, the major crops are wheat and cotton, with more than 25 percent of the land under either single or double-cropped cotton. Another indication of the move from subsistence to market-orientation is the rapid expansion of HYV wheat. In 1970 only 6 percent of the farmland was under improved wheat; today, some 44 percent of the land is under new varieties. Whereas less than 20 percent of the farmers in the Helmand reported using HYV in 1970, the 1975 survey shows that more than seventy-five percent of the farmers now use HYV.

This transformation from subsistence to market has also had an important impact upon the national economy. There are only some 104,000 hectares of land under crops in any year in the Helmand, but this nevertheless accounts for more than 19 percent (in 1975) of the nation's total cotton production. In addition, the Helmand is a net exporter of wheat, contributing importantly to the Herat, Kandahar, and Kabul grain markets.

2) Farmer incomes in the Helmand have been increasing at a fairly rapid rate. Net farm income in 1975 averaged about $823.00 U.S., or about $89.00 U.S. per capita. While this is still rather low when compared to the nation-wide average, there has been a large improvement in the past 5 years. The 1970 FES found the average net farm income to be only $306.00 U.S., or about $32.00 per capita. In real terms, then, per capita farm owner income grew at better than 9 percent per annum over the 1970-1975 period measured in dollars. Few other areas in Afghanistan can boast of similar growth during this period.

3) The movement from subsistence to market-orientation, however, has not been without costs, costs which in some cases are just barely off-set by the increased income. In the earlier periods, water shortages were the primary constraint to increased production and farm incomes. As the network of irrigation canals expanded and water dependability increased, farmers were able to move from their traditional wheat varieties into improved varieties and/or cash crops. While this permitted a rapid increase in production and income, it also brought problems, since water use practices for the most part have failed to keep pace with the new technologies. Today, salinization and water-logging are major problems. Generally speaking, almost all farmers in the Helmand over-irrigate their land, using far more water than their crops need and their soils can accommodate.

Another problem which appears to be emerging is insects. Both cotton and wheat have been increasingly damaged by insects and worms during the past few years, and the decrease in yields has become noticeable to the farmers. Currently, however, little research has been conducted on these pests, supplies of insecticide are both limited and expensive, and farmers are relatively unaware of how to prevent infestation, detect the presence of pests, or to treat their crops.

A third problem is credit. Although the Agricultural Development Bank supplies loan credits for the purchase of fertilizer, many smallholders are in need of other types of loans. Throughout the year every farmer has non-agricultural financial needs, and these have an important effect on the smallholders' capability of undertaking agricultural production. For example, a wedding or a sickness in the family may cut deeply into the farmers' financial or credit reserves. He may not therefore have enough cash or credit to obtain a plow, to hire laborers, or to purchase sufficient fertilizer or insecticide. Some farmers even sell their Ag Bank fertilizer to others, using the cash to pay off previously contracted debts. Low-interest credit, then, for both agricultural and non-agricultural purposes needs to be expanded.

The discussion of these problems here is not meant to detract from the successes that have been achieved in the Helmand. Rather, it is to remind us that the task is not yet complete and that much still remains if we are to consolidate the gains of the past. The problems are neither intractable nor easily solvable. The education of farmers regarding correct water-use, for example, will require a major effort by the Helmand's agricultural extension workers, but the effort will be well worthwhile and will have a significant impact on farmers' incomes. Some success in farmer education has already been achieved. Where this has occurred, we need now to capitalize on those successes and expand into new areas. Where success remains elusive, we need to double our efforts.

APPENDIX

The National Demographic Survey.* This survey placed the settled population of Helmand province at 325,006 at the beginning of 1973. A growth rate of 2.3 percent annually would have increased the settled population to 348,000 by the end of 1975. On the survey's classification, 6.43 percent (19071 persons, 2966 households) were urban and 93.57 percent rural. The latter was comprised of 48,446 households containing 305,935 members for an average family size of 6.31. Overall, the average family size was 6.32 persons. The population was young: 17 percent was less than 5 years of age; 33 percent less 10; 45 percent less than 15; and 55 percent less than 20. Ten percent of the population was over 50. The literacy rate was 7.5 percent (0.3 percent for rural females), with the rate higher in the urban areas (18.2 percent) than in rural (6.9 percent). The rural community is not terribly keen on education for its females. For example, only 4.7 percent of rural girls of age 9 were attending school and 94.7 percent had never attended. However, 36.2 percent of rural boys of this age were in school. The population has not been very mobile -- the residence of three-fourths of the rural population of age 20 and over was in the same province (Helmand) of birth:

Percent Distribution: Place of Residence Against Place of Birth

	Same Village	Different Village Same Province	Different Province	Different Country
Total Rural	43.0	33.4	20.2	1.7
Male	47.3	26.7	21.9	2.0
Female	37.4	42.2	18.0	1.3

According to the survey, 14.9 percent of all males in the 17-55 age group were unemployed. Table following comes from Volume V of the National Demographic Survey. While there are some problems in interpretation, it shows that there are relatively few renters -- renters and their families comprised three-fourths of one percent of the total population. It also suggests that a good portion of the landlords own small parcels of land which will not support the landlord and his family and they have consequently accepted substantial off-farm employment. Sharecroppers include both bazgars and keshtagars; the unemployed includes the female population as well as infants and children. Consistent with other sources of information, the table shows that farm laborers have the smallest family size (5.4) and landlords the largest (9.2).

* National Demographic and Family Guidance Survey of the Settled Population of Afghanistan, Volume V, Provincial Reports - Helmand Demographic, Social and Economic Statistics, Sponsored by Government of Afghanistan and Agency for International Development, Government of the United States, 1975.