1970 FARM ECONOMIC SURVEY

HELMAND and ARGHANDAB VALLEYS of AFGHANISTAN

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G. P. OWENS

USAID/UNIVERSITY of WYOMING CONTRACT TEAM

December 15, 1971

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INTRODUCTION

BACKGROUND

The Helmand-Arghandab Valley Region is a large area. In 1971 it encompasses a cultivated area of about 360,000 acres (145,000 hectares) and has a potential net irrigable area estimated at not less than 540,000 acres (206,000 hectares). The region is one of the major desert irrigation areas of the world. The Helmand-Arghandab Valley Authority (HAVÅ) is the responsible agency of the Royal Government of Afghanistan for development of agriculture and irrigation in Helmand Province, which includes lands irrigated in the upper Helmand Valley. In addition, HAVA is responsible for irrigation and agricultural development in the portion of Kandahar Province irrigated under the storage dam on the Arghandab River. HAVA is also assisting in feasibility studies for development in the lower Helmand Valley and Siestan areas, which lie in Nimroz Province.

Starting in 1946, the Royal Government of Afghanistan has carried out a major program for development in the HAVA. To date, some $82 million has been expended on irrigation and agricultural development. Storage reservoirs were constructed on the Helmand and Arghandab rivers in the early 1950's. Major canals were constructed by the mid-1950's to supply water to project areas in the Darweshan, Shamalon, Nadi Ali, Marja and Girishk areas in Helmand Province and in the Arghandab and Dund-Daman areas in Kandahar Province. Irrigation and drainage facilities were provided in the project areas of Darweshan, Shamalon, Nadi Ali, Marja and Dund. While investments to date have provided a great deal of the basic irrigation facilities required, long-term development in the region will require continued investments by farmers, business and public authorities to bring the Valley to its full potential.

The RGA is taking into account continued investment requirements in its planning for the period 1351-56 (1972-77). To provide a better basis for this planning, a farm economic survey, the 1970 Farm Economic Survey as it has been designated, was begun in October 1970 at the request of H.E. Engineer Mohammed Akbar Reza, Governor of Helmand Province and President of HAVA, and Mr. A.R. Baron, USAID Assistant Director for the Helmand-Arghandab Valley Region (HAVR). At their request, the study was designed to provide a basis for comparison with a survey carried out in 1963/64 by Stevens and Tarzi. The 1970 study was also planned to provide more extensive coverage of farm economics than had hitherto been available. Thus, the farming areas of Nowzad and Zamin Dawar, kariz areas in the upper Helmand Valley, were included in the survey, as were Seraj and Khanishin areas, both irrigated by diversions from the Helmand. Little information on these four areas had been available since the HAVA Extension Department has not been able to include them in its programmed activities.

In all, 12 areas in Helmand Province and five in Kandahar Province were included in the study. These areas represent a total cropland of about 130,000 hectares. Brief descriptions of these project areas,
shown on the maps in Figures I and II, are provided in a later section of this chapter.

As a tool to provide data to be used in future planning and future evaluations of development, the study was designed to cover the following topics:

1. Farm size and tenure
2. Family size; age - sex distribution of farm families
3. Land use - cropping patterns, yields, etc.
4. Farm management practices - especially the use of modern farming methods and new inputs
5. Costs, returns and farm income
6. Farmer attitudes and problems.

As noted above, the 1970 FES was designed to yield information which can be compared directly with data for 1963-1964 as reported by Ira M. Stevens and K. Tarzi in Economics of Agricultural Production in Helmand Valley.

METHODOLOGY

Preliminary plans for the 1970 FES and the first draft of the field schedule were prepared in early November 1970. Plans and instruments through the tabulation and analysis stage were completed, enumerators and statistical clerks trained, and field work started by January 20, 1971. Interviews of over 800 farmers were completed by March 20, 1971. The bulk of tabulation and analysis was finished by early May, 1971.

The survey instruments used by Stevens and Tarzi were followed as closely as possible in designing the 1970 FES field schedule in order to obtain information directly comparable over the seven-year period separating the two surveys. The field schedule was written in English and translated to Pashto for pretesting. After changes suggested by pretest had been incorporated into Pashto draft, it was retranslated to English as a test, and finalized in Pashto. See Appendices I and II.

Twenty enumerators, most of whom had prior experience, were assigned from several HAVA departments and given a week's training. Some participated in the pretest. Four field supervisors received special training in addition to regular enumerator training.

A random sample of HAVA landowners, stratified by project area, was drawn from official government lists. These landowners were contacted by HAVA Extension personnel and asked to list all their tenants. Subsequently, the combined list of landowners and tenants was sampled at random to provide a list of respondents. A small alternate contingency sample was also drawn. The sample and number of usable schedules, are
as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Sample Size</th>
<th>Usable Schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmand</td>
<td>478</td>
<td>475</td>
</tr>
<tr>
<td>Nadi Ali</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Marja</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Shamalon</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Darweshan</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Khanishin</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Seraj</td>
<td>48</td>
<td>47</td>
</tr>
<tr>
<td>Girishk</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Sanguin-Kajakai</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Musa Qala-Zamin Dawar</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Nowzad</td>
<td>40</td>
<td>38</td>
</tr>
<tr>
<td>Kandahar</td>
<td>360</td>
<td>344</td>
</tr>
<tr>
<td>Maiwand</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>Dund-Daman</td>
<td>134</td>
<td>129</td>
</tr>
<tr>
<td>Arghandab</td>
<td>110</td>
<td>103</td>
</tr>
<tr>
<td>Panjwai</td>
<td>76</td>
<td>75</td>
</tr>
<tr>
<td>HAVA</td>
<td>838</td>
<td>819</td>
</tr>
</tbody>
</table>

Enumeration was conducted at pre-selected, centrally located sites in the project area. Respondents were contacted by Extension personnel and invited to share a meal with the enumerators on the appointed day. They were informed that they would be asked to help by giving information about their farms. This approach proved to be far superior to the standard procedure of contacting farmers at their homes for several reasons:

1. A great deal of time was saved in locating farmers when they were free to talk.
2. Farmers were much more cooperative after they had shared food with enumerators. They could see that their neighbors were also cooperating.
3. Enumerators worked under direct supervision at all times. Schedules were checked upon completion by field supervisors, eliminating costly follow-up work.
4. Supervisors were able to collect a great deal of valuable supplementary information from farmers waiting to be interviewed and from extension agents and officials.

The tabulation and analysis stage began when the first completed schedules were received from the field. After an office edit, the schedules were coded as to schedule number, location, and tenure. Data from schedules was then transferred to primary tab sheets from which counts, averages and ranges were derived. Secondary tabulations were necessary in some instances before summary sheets and tables for publication could be put together.

All data presented in this report is for the 1970 year of harvest unless otherwise noted.
LIMITATIONS OF STUDY

Inaccuracies in the listings of landowners used for sampling caused some problems. The principal difficulty was out-dated listings. When this was discovered, the lists were updated as far as possible. It was also found that some of the sampled landowners did not report all their tenant farmers. This was discovered during enumeration when respondents were again asked about their tenants. However, tenant farmers constitute only a small proportion of total farmers. Underreporting of tenants by sampled landowners was found to be small (less than 15% in a check in the Shamalon). These limitations are considered minor and not invalidating the study.

Sampling stratification was carried out in terms of geographical project areas for three reasons:

a) Lists of landowners are maintained by these areas.

b) HAVA Extension Service has compiled crop acreages, yields and production by project area for many years.

c) The 1963-64 study reported information for seven of these areas.

A sampling procedure based on selection of farms by random selection of geographic coordinates was ruled out because of inadequate maps.

The procedure of sampling by project areas suffers a limitation because most project areas contain areas of both relatively high yields and output and relatively low yields and output. Thus, the Seraj project area contains five widely separated tracts with some very good land and farms in the northern tracts and large areas of poor, water-short land in the central and southern tracts. Averages shown for the Seraj area suffer from the limitations inherent in averaging results of good farming areas with less favored ones. Similar considerations apply to a somewhat lesser extent in other project areas.

Obviously, the reliability of the data is a function of the accuracy of the farmers in estimating their yields, acreages, family size and other data. Reliability of summarized data, as presented in this report, is positively related to number of farms reporting up to a certain point. For this reason, yields are not reported if fewer than three farmers reported acreage and production. Area and production data for crops such as peanuts, grown by only a few farmers, are less reliable than data for popular crops such as wheat, mung beans, etc.

PROJECT AREA DESCRIPTIONS

Figures 1 and 2 show the location of the Kajakai and Arghandab reservoirs, main canals and diversion dams and the outline boundaries of project areas in the Kandahar and Helmand provinces. With the exception of Nowzad and Musa Qala-Zamin Dawar, all the project areas are irrigated from either the Helmand or Arghandab rivers and have benefitted from the regulated flow of water made possible by the con-

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\[a/\] By A.R. Baron
struction of the storage dams in 1952 and in 1954. Excluded from the studies are farming areas in the lower Helmand in Nimroz Province which are irrigated from the Helmand but which currently lie out of HAVA's jurisdiction. (In 1969/70, about 25,000 hectares of land are estimated to be under annual irrigation from the Helmand River in Nimroz Province, i.e. the lower Garmsel and the Siestan basin areas.)

According to HAVA data, the project areas in Helmand Province covered by the 1970 FES had about 90,000 hectares of cropland in 1969/70. See Table 39. Estimated potential irrigable area is 128,550 hectares.

The Nadi Ali project area as defined in the study includes the desert project development of Nadi Ali, first settled in 1951, and an older area on the right bank of the Helmand known as Baba-Ji. Both are irrigated from the Boghra canal. The potential irrigable area is estimated at 12,000 hectares, 9,000 hectares in Nadi Ali proper and 3,000 hectares in Baba-Ji. Cropland in 1969/70 is estimated to total 8,900 hectares, 2,200 in Baba-Ji and 6,700 hectares in Nadi Ali.

The Marja area is also a desert development first settled in 1957. It is irrigated by the Boghra canal. The potential irrigable area is estimated at 8,100 hectares. Cropland in 1969/70 is estimated at 6,300 hectares.

The area of Girishk is an older area on the right bank of the Helmand extending from above from Baba-Ji to the area of Musa Qala. It is watered by the Boghra canal and three older diversions. Potential irrigable area is believed to amount to 10,000-11,000 hectares. Cropland in 1969-70 is estimated at 9,200 hectares.

The Shamalon project area lies on the right bank of the Helmand River and is irrigated by the Shamalon canal which extends from its takeoff from the Boghra canal a few kilometers above Lashkar Gah some 60 kilometers downstream. The potential irrigable area is estimated on the basis of extensive surveys, to be 12,707 hectares, not including 4,500 hectares of lands classified as marginal for crop production but invested with water rights. Cropland in 1969/70 totaled an estimated 14,900 hectares.

The Darweshan project area lies on the left bank of the Helmand and is irrigated by the Darweshan canal, which extends some 50 kilometers downstream from the Darweshan diversion dam. The lower Darweshan extends to the area of Binadar, and is irrigated by farmer dug laterals connecting to the main canal. Based on soil surveys, the potential irrigable area equals 20,300 hectares. In 1969/70, cropland totaled an estimated 11,400 hectares.

The Khanishin area, sometimes known as the Garmsel (upper), extends below Darweshan on either side of the Helmand River to below the town of Deshu. The area studied ends at the border between Helmand and Nimroz provinces and is entirely irrigated by farmer diversions from the river. The potential irrigable area is not known for this portion of Garmsel. The Garmsel as a whole extends as far as the town of Deh Khaju in Nimroz Province and has a total potential irrigable area of 18,300 hectares, according to soils studies done in the 1950's. HAVA reported total registered farm land for tax purposes in 1971 at 21,800 hectares of irrigable land in the Khanishin area, of which an estimated 14,600 hectares of cropland were cultivated in 1969/70.
The Seraj area is made up of five separate tracts extending some 60 kilometers up river from Qala Bist and Lashkar Gah to the project area of Sanguin. The area is made up of tracts of land served by the Seraj canal whose construction was carried out in 1910-24. The potential irrigable area, based on the surveys carried out in the 1950's totals about 24,000 hectares. HAVA estimates total cultivable land in 1969/70 of 14,400 hectares and cropland in that year of 6,700 hectares.

Sanguin-Kajakai. This area lies on the left bank of the Helmand and extends above the Seraj area to the Kajakai storage dam. These are highly fertile river bottom lands (as are the lands of Baba-Ji, Shamalon, Darweshan and the northern tracts of the Seraj). Potential irrigable area is estimated roughly at 7,000 hectares. Cropland in 1969/70 is estimated at 6,020 hectares.

The Nowzad area. This area lies some 60 kilometers north of Girishk in the foothills of the Hindu Kush mountains. It is a water deficit area irrigated by numerous karizes. Population reportedly declined significantly during the drought years of 1970 and 1971. Soil surveys of the 1950's estimated the potential irrigable area at 3,000 hectares. HAVA reported total registered farm land for tax purposes in 1971 at 7,150 hectares and total cropland in 1969/70 of 2,860 hectares.

Musa Qala. This area borders about the Musa Qala river which empties into the Helmand river above Girishk. Irrigation is from numerous karizes and also from the Musa Qala River. The potential irrigable area, based on surveys in the 1950's is 8,100 hectares.

Zamin Dawar. This area lies northwest of Kajakai dam. It is irrigated by karizes. As in the case of Nowzad, significant declines in farming population have been reported as a result of the drought in 1970 and 1971. The potential irrigable area, as surveyed in the 1950's is reported to be 3,250 hectares (the area was then termed "West Kajakai").

Much of the project land in Kandahar Province consists of well-established orchards and vineyards. Kandahar is also well-known for vegetable production.

According to HAVA data, the project areas in Kandahar Province covered by the 1970 FES had about 40,000 hectares cropland (see Table 38). The U.S. Bureau of Reclamation Team estimates 61,500 hectares are potentially irrigable in this area.
Figure 2. Arghandab River farming areas included in the study.
CHAPTER 1

TENURE, FARM SIZE AND FARM FAMILIES

Farms in the HAVA area tend to be small, owner-operated and to support large families. Differences exist among areas, due to type of farming, availability of water, degree of modernization and extent of recent settlement. Fruit growing, double cropping and vegetable growing are examples of intensive farming found in certain areas. Relatively small, intensive farms can support a family, whereas larger acreages are necessary when farming is extensive -- growing only one field crop per year.

Some areas in the study are more highly developed in terms of irrigation, drainage and land leveling. Some areas, however, are not adjacent to either of the major rivers and do not benefit from the regulated river flow. Some areas have only limited possibilities for intensive farming (fruit growing and double cropping.) Farm size is affected by land settlement programs in some areas and in other areas by intensive operations.

Family size may have been influenced downward by settlement programs, but seems to be correlated mainly to current land productivity.

This chapter and those following will describe farmers and farming in HAVA by project areas as previously defined. (See Background section for description of areas.)

TENURE

Table 1 shows that over 90 percent of the farmers in HAVA are owner-operators or part-owners. The remaining 8.6 percent are tenant farmers (keshtegars). The study shows there are approximately 1.3 farm laborers (bazgars) per farm.

The newly settled areas of Marja and Nadi Ali have few tenant farmers because the land was parceled out to individual settlers with the understanding that they not resell for a specified period of time. Other areas, such as Seraj and Musa Qala-Zamin Dawar, have few tenant farmers because of limitations on irrigation water or poor quality land. The fruit growing areas in Kandahar Province have many bazgars but few keshtegars, apparently because labor is the major input which cannot be easily supplied by the landowner.

FARM SIZE

Table 2 shows average farm size by area, and Table 3 is a percent distribution of farm size. Table 4 shows changes which have occurred since 1963.

Project area farms are significantly larger in Kandahar Province than in Helmand. In Helmand Province, it is generally true that the more
<table>
<thead>
<tr>
<th>AREA</th>
<th>Owner-Operators</th>
<th></th>
<th>Part-Owners</th>
<th></th>
<th>Keshtegars</th>
<th></th>
<th>Bazgars(^a/)</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>HELMAND:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>38</td>
<td>90.5</td>
<td>2</td>
<td>4.8</td>
<td>2</td>
<td>4.8</td>
<td>26</td>
<td>90.5</td>
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<td>MARJA</td>
<td>35</td>
<td>87.5</td>
<td>2</td>
<td>5.0</td>
<td>3</td>
<td>7.5</td>
<td>49</td>
<td>50.0</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>31</td>
<td>72.1</td>
<td>4</td>
<td>9.3</td>
<td>8</td>
<td>18.6</td>
<td>42</td>
<td>50.0</td>
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<tr>
<td>DARWESHAN</td>
<td>22</td>
<td>50.0</td>
<td>-</td>
<td>-</td>
<td>22</td>
<td>50.0</td>
<td>42</td>
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<tr>
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<td>2.6</td>
<td>2</td>
<td>3.7</td>
<td>2</td>
<td>3.7</td>
<td>22</td>
<td>50.0</td>
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<td>47</td>
<td>87.7</td>
<td>5</td>
<td>6.4</td>
<td>2</td>
<td>3.7</td>
<td>16</td>
<td>50.0</td>
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<td>35</td>
<td>92.1</td>
<td>20</td>
<td>5.7</td>
<td>23</td>
<td>6.6</td>
<td>677</td>
<td>50.0</td>
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<tr>
<td>NOWZAD</td>
<td>100</td>
<td>94.7</td>
<td>4</td>
<td>5.3</td>
<td>47</td>
<td>92.7</td>
<td>2</td>
<td>5.3</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>MAIWAND</td>
<td>34</td>
<td>91.9</td>
<td>2</td>
<td>5.4</td>
<td>1</td>
<td>2.7</td>
<td>48</td>
<td>91.9</td>
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<tr>
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<td>112</td>
<td>85.5</td>
<td>7</td>
<td>5.3</td>
<td>12</td>
<td>9.2</td>
<td>315</td>
<td>91.9</td>
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<tr>
<td>ARGHANDAB</td>
<td>90</td>
<td>81.2</td>
<td>10</td>
<td>9.3</td>
<td>7</td>
<td>6.5</td>
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<td>5.7</td>
<td>23</td>
<td>6.6</td>
<td>677</td>
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</tr>
<tr>
<td>HAVA</td>
<td>720</td>
<td>86.0</td>
<td>45</td>
<td>5.4</td>
<td>72</td>
<td>8.6</td>
<td>1,040</td>
<td>86.0</td>
</tr>
</tbody>
</table>

\(^a/\) Bazgars are not considered as tenant farmers and therefore are not included in percentage calculations of tenure classification.

NOTE: In Tables 1 through 37, (excepting yield tables 11 through 14) averages for Helmand, Kandahar and HAVA are weighted on the basis of sample size. See Table 45 for averages weighted by estimated number of farms per area.
| AREA                  | Average Farm Size N | Hectares | Jeribs | Cropland Per Farm N | Hectares | Jeribs | Average Farm Size - Hectares N | Owners b/ | N | Owners b/ | N | Tenants N | | Afs Per Hectare a/ 1963 |
|-----------------------|----------------------|----------|--------|----------------------|----------|--------|-------------------------------|-----------|---|-----------|---|-----------| |                                    |
| HELMAND:              | 475                  | 8.60     | 44.4   | 5.65                 | 29.2     | 413    | 8.15                          | 25        | 12.92 | 37        | 9.94 | 356       | 31,073                           |
| NADI ALI              | 42                   | 6.89     | 35.6   | 4.72                 | 24.4     | 38     | 6.57                          | 2         | 15.49 | 2         | 4.26 | 31        | 19,028                           |
| MARJA                 | 40                   | 5.89     | 30.4   | 5.39                 | 27.8     | 35     | 5.47                          | 2         | 16.47 | 3         | 6.39 | 25        | 9,442                            |
| SHAMALON              | 62                   | 5.49     | 28.4   | 4.43                 | 22.9     | 59     | 5.61                          | 4         | 24.30 | 5         | 4.49 | 48        | 54,072                           |
| DARWESHAN             | 40                   | 8.53     | 44.1   | 7.54                 | 38.9     | 31     | 7.14                          | 1         | 12.39 | 2         | 4.01 | 31        | 20,660                           |
| KHANISHIN             | 40                   | 26.95    | 139.2  | 18.19                | 94.0     | 22     | 38.53                         | -         | 18    | 12.80     | -   | 29        | 19,234                           |
| SERAJ                 | 47                   | 10.79    | 55.7   | 6.07                 | 31.4     | 43     | 9.82                          | 3         | 22.26 | 1         | 2.03 | 36        | 16,368                           |
| GIRISHK               | 50                   | 7.39     | 38.2   | 5.33                 | 27.5     | 44     | 7.11                          | 4         | 4.55  | 2         | 18.68 | 38        | 46,759                           |
| SANGUIN-KAJAKA       | 54                   | 2.59     | 13.0   | 1.89                 | 9.8      | 47     | 4.46                          | 5         | 4.12  | 2         | 1.84 | 44        | 33,068                           |
| MUSA QALA-Z D         | 62                   | 7.74     | 40.0   | 2.92                 | 15.1     | 59     | 7.40                          | 3         | 15.97 | -         | -    | 46        | 28,914                           |
| NOWZAD                | 38                   | 7.47     | 38.6   | 2.95                 | 15.2     | 35     | 7.59                          | 1         | 5.58  | 2         | 9.00 | 28        | 20,994                           |
| KANDAHAR:             | 344                  | 14.87    | 76.8   | 7.79                 | 40.2     | 307    | 16.01                         | 20        | 6.78  | 18        | 5.18 | 311       | 70,302                           |
| MAIWAND               | 37                   | 18.29    | 94.5   | 8.32                 | 43.0     | 34     | 19.06                         | 2         | 13.60 | 1         | 9.10 | 30        | 28,872                           |
| DUND-DAMAN            | 129                  | 21.70    | 112.1  | 10.75                | 55.5     | 112    | 24.00                         | 7         | 10.02 | 10        | 4.17 | 117       | 74,469                           |
| ARGHANDAB             | 103                  | 6.37     | 32.9   | 3.69                 | 19.1     | 90     | 6.77                          | 10        | 3.38  | 3         | 3.87 | 95        | 123,965                          |
| PANJWAI               | 75                   | 13.27    | 68.5   | 8.22                 | 42.5     | 71     | 13.88                         | 1         | 3.00  | 3         | 30.98 | 69        | 73,663                           |
| HAYA                  | 819                  | 11.23    | 58.0   | 6.55                 | 33.8     | 720    | 11.50                         | 45        | 10.19 | 54        | 8.20 | 667       | 48,364                           |

a/ Average land values in 1970 were obtained after eliminating the three highest and the three lowest reports, including "ties."

b/ Land farmed by garow is included in owned land. It amounts to about 2% of total owned land.
productive areas have smaller farms. For example, Marja, Shamalon and Sanguin, areas of low average farm size, are among the most productive in the Helmand Valley, as will be shown in Chapters 2 and 4. Conversely, Khanishin, Seraj and Musa Qala-Zamin Dawar, areas of high average farm size, are among the least productive in the Helmand Valley.

Table 3, a percent distribution of farm size, is included for the convenience of future analysts who may wish to investigate how changes in average farm size come about: large farms becoming larger, small farms disappearing through consolidation, et cetera.

Cropland in the 1970 FES is defined as farm size less idle and waste land, pasture, house lot, roads and ditches. It does not, therefore, include double cropping and interplanting.

Differences between farm size and cropland among areas shown in Table 2 are largely accounted for by idle land not farmed for reasons such as lack of water, salinity or infertility. In the Helmand, the areas of Nowzad, Musa Qala-Zamin Dawar, Seraj, Khanishin and Nadi Ali have the lowest amount of cropland as percent of farm size and, with the exception of Nadi Ali, are among the least productive. Nowzad, Musa Qala-Zamin Dawar, Seraj and Khanishin are water-short areas. Nadi Ali has problems of salinity and water-logging. In Kandahar Province, lack of water in Maiwand and Panjwai at least partially explain the high ratio of idle land to farm size. In Dund-Daman and Arghandab, inadequate drainage appears to be a major factor explaining idle land.

Land values, shown in Table 2, are generally correlated with productivity. Kandahar values are more than twice as high as those in Helmand, primarily because of the concentrations of orchards and vineyards in Kandahar. The Arghandab area, which is nearest to the water source, has the highest land values of the survey. In Helmand Province, Shamalon and Girishk have the highest land value. Although both are highly productive areas, it is possible that an upward bias exists in Shamalon because of an impending land development program.

The pattern of land values in the 1970 FES appears internally consistent when compared to family size, yield data and value of production. However, there is no established land market in HAVA, and a "price" for land does not actually exist unless and until a sale occurs. Land ownership is seldom transferred except through inheritance, official programs, or garow (see Definition of Terms).

**CHANGES IN FARM SIZE**

Table 4 compares farm size and cropland per farm in 1963 and 1970. Farm size and cropland per farm increased in all areas except Shamalon and Darweshan in Helmand. The comparison for Dund-Daman and Panjwai-Maiwand may not be valid due to differences in coverage between the two surveys. The 1963 report covers only parts of Maiwand and Panjwai and only those parts which were most intensively farmed. See Economics of Agricultural Production in Helmand Valley, by Stevens and Tarzi. These areas were covered in their entirety by the 1970 FES, including water-short areas of extensive farming. The sharp decline in Darweshan can be partly explained by a government program which traded water rights for land.
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### TABLE 4. FARM SIZE IN HAVA - COMPARISON 1963 WITH 1970

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HAVA Farmer with Prize-Winning Brussels Sprout
The Traditional and the Modern - Change comes to HAVA

The Boghra Canal. Nomads on the left, Farmers and Officials at right. Boghra Provides Irrigation Water for Marja, Nadi Ali and Shimalon
FARM FAMILIES

Detailed information on family size and composition is important to investigations of population movements and per capita income calculations.

Average family size is about 11 for HAVA, 9.5 for Helmand and 13 for Kandahar. There are slightly more females than males. Highest average family size is in Dund-Daman, the area around Kandahar city. Lowest average family size is in Khanishin in Helmand Province. Average number of males aged 13 years and older is only slightly higher than males younger than 13. See Table 5 for average family size and age - sex distribution, by area.

Family size is higher for owner-operators and part-owners than for tenants (keshtegars, not including bazgars), as might be expected. Family size is also larger on the larger farms. See Table 6.

Family size has increased since 1963 in all areas reported by Stevens and Tarzi. Some of the increases seem very high due perhaps to differences in coverage by the two studies. See Table 7.
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CHAPTER II

LAND AND CROPS

Land use in HAVA is shown in Table 8. The average farm of 11.2 hectares consists of 6.6 hectares (58%) cropland and 4.7 hectares (41%) "idle land." "Idle land" includes fallow land, wasteland, pasture, house and barn lots, roads, ditches and fences. Very little arable, productive land is set aside for pasture in the study area. Animals graze mostly on fallow land and wasteland, and on public land.

On the average farm, double cropping is practiced on .4 hectares giving a total land in crops of 7 hectares, much of which is in wheat. Only in Arghandab does wheat account for less than 50% of the cropland.

Cropland plus area double cropped does not always equal land in crops (in most cases, land in crops is equal to or more than cropland plus area double cropped). This is partly due to errors in rounding and partly due to interplanting (mostly forage crops in orchards and vineyards). Data on double cropping was derived from an independent section of the field schedule, but is consistent with data for double cropping which can be derived from the cropland section of the schedule.

The typical farm in HAVA devotes more than half its land to wheat production, as in ages past. Some new trends are emerging, however. A significant amount of the wheat land is planted to improved, fertilizer responsive varieties. Corn is also an important crop in many areas and improved varieties are contributing to increases in production. The advent of cotton as an important cash crop since 1963 contributed to a breakdown of subsistence agriculture and helped usher in an era of farm business where capital formation can take place. Although it has not been possible to make a comparison of forage crops between 1963 and 1970, observers have noticed an increase in the amount of forage. This is primarily feed for work animals, but one can hope for a general improvement in the livestock industry through better nutrition.

The key to diversification and commercialization of HAVA farms seems to be the proliferation of improved corn and wheat. As yields and production increase, land can be diverted to the production of other cash crops, in part intensive crops such as fruits, vegetables and perhaps medicinal and cosmetic herbs. (Fruits and vegetables account for less than 6% of cropland in the Helmand Valley in 1969/70.)

When HAVA reaches its long run potential, wheat production may become much less important in the cropping patterns of the region. Cereal grain production is usually considered to be an uneconomical use of irrigated land. Plant scientists claim that most of HAVA has near optimum growing conditions. If this is so, most of the area should be devoted to higher value crops as soon as specialization can replace generalized subsistence farming.

Table 9 shows cropping patterns in detail as of 1970. From this base, planners can seek desirable changes and evaluate progress in future years.
### TABLE 8. LAND USE IN HECTARES PER FARM, BY AREA

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<tr>
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<th>Wheat</th>
<th>Other Field Crops</th>
<th>Fruits, Nuts</th>
<th>Vegetables</th>
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a/ Relatively high area of improved corn in Darweshan due primarily to one sample farmer who had almost 10 jeribs of improved corn, and no local corn.
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a/ Includes double cropping.
The Stevens-Tarzi report allows comparison of cropping patterns over a span of seven years for seven areas in HAVA. See Table 10.

Increases in production (probably the primary short term objective of HAVA) can come from increased yields, increased use of idle land and double cropping. Research results indicate an impressive potential for increased yields through use of improved varieties and fertilizer. In practice, improved varieties of wheat and corn are out-performing native varieties by 186 and 62 percent, respectively, in HAVA, and up to 220 percent for wheat in Marja. See Table 11.

Yields in Table 11 are reported for project areas only if three or more sample farms reported production and area planted. Average yields for Helmand, Kandahar and HAVA are calculated on the basis of total production and area planted and thus are weighted on the basis of the relative importance of the crop in each area. Although this averaging procedure does not take account of the number of farms per area, it is probably more realistic than average yields weighted by number of farms per project area as reported in Table 46.

Table 12 shows significant improvement in yields since 1963 and establishes a rather steep upward trend for some crop yields. The increases in wheat and corn yields are due in part to the increased use of improved varieties. Local and improved varieties were treated separately in the 1970 FES, but combined in Table 12 so that they are comparable to 1963 yields, for local varieties only, as reported by Stevens and Tarzi. If a comparison of local yields is desired, the reader can compare the 1963 columns for wheat and corn (Table 12) with appropriate data for local yields from Table 11.

Table 13, a percent distribution of yields, is presented here so that future comparisons can be made to show where the increases are coming from: top end, middle or low end of the range of yields. Table 14, yields by farm size for selected crops and areas, should be helpful in determinations of efficiency and farm size, in addition to analysis of changing yields.
### TABLE 10.  
**AREA PER FARM IN JERIBS, BY AREA, BY CROP COMPARISON 1963 WITH 1970**

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a/ 1963 data from Table 2, page 10 of Stevens-Tarzi Report.

b/ * - Insignificant amount.
**TABLE 11a.** AVERAGE YIELDS FOR MAJOR FIELD CROPS, BY AREA - IN MONS PER JERIB AND KILOGRAMS PER HECTARE

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1 mon per jerib = 22.809 kg. per hectare, 1 kg. per hectare = 0.04384 mon per jerib

Yields not reported when no. farms reporting is less than 3. However, area and production for these farms are considered in subtotal calculations. Yields for Helmand, Kandahar and HAVA are properly weighted on the basis of area and production per area.
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<td>KG/HA</td>
<td>MON/J</td>
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\(^a\) Seed cotton.
### Table 11c. Average Yield for Major Fruits, By Area - in Mon's Per Jerib and Kilograms Per Hectare

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<th>Pomegranates KG/HA</th>
<th>Apricots MON/J</th>
<th>Apricots KG/HA</th>
<th>Peaches MON/J</th>
<th>Peaches KG/HA</th>
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TABLE 11d. AVERAGE YIELDS FOR MAJOR FRUITS, NUTS AND VEGETABLES, BY AREA - IN MONS PER JERIB AND KILOGRAMS PER HECTARE
### TABLE 12. YIELDS IN MONS PER JERIB BY AREA, BY CROP

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<sup>a</sup> Wheat and barley yield figures for Shamalon and Darweshan, 1963 were combined in the Stevens-Tarzl Report.
### TABLE 13a. PERCENT DISTRIBUTION OF YIELDS - IMPROVED VARIETIES, BY AREA

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a/ Seed cotton.
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TABLE 13c. PERCENT DISTRIBUTION OF YIELDS - IMPROVED VARIETIES, BY AREA
A great deal of the progress in HAVA agriculture can be attributed to the adoption of modern farming practices by area farmers. Largest gains or potential gains are probably from the use of improved seed and fertilizer and from double cropping. Several other practices are also of demonstrable value for increasing yields and production: crop rotation, land leveling, fallowing, mechanization, irrigation timing and water management, use of chemicals for plant protection and animal health, and use of agricultural credit. These will become more and more important in HAVA as the easy gains from improved seeds, fertilizers, and double-cropping become more fully realized.

Improved seed, except for cotton, was virtually absent from the HAVA scene at the time of the Stevens-Tarzi report. By 1970, significant amounts of improved wheat (see Appendix IV) and corn seed were being used over much of the area. Table 15 shows the percent of wheat and corn farmers who reported use of improved seeds, and the area planted to improved seeds. In addition to wheat and corn, all cotton is grown from improved seeds. HAVA farmers are also using some improved vegetable and watermelon seeds, but this was not measured in the 1970 FES.

Table 16 shows the percent of farmers who used fertilizer on any crop, and the percent of farmers who used fertilizer on wheat, corn, cotton, and fruit. Amount and type of fertilizer was not determined by the 1970 FES. (This information is readily available from HAVA and was distributed through official channels. At any rate, fertilizer use has increased greatly since 1963. According to the Stevens-Tarzi report, 218 tons of fertilizer were distributed to HAVA farmers in 1963. Fertilizer distribution increased to 5447 metric tons in 1970. See Appendix IV.

The climate of HAVA is well suited to double cropping -- the growing season is sufficiently long and irrigation water is available in most areas. Major technical problems for double cropping are:

1. **Timing.** It is difficult for a farmer using bullock power to harvest and thresh his first crop (usually wheat) in time to plow and plant his second crop. Bullocks are important to the threshing operation which is very time-consuming, frequently drawn out for two months or more in Afghanistan. Threshing is sometimes delayed, at some inconvenience to the farmer and his family, while a second crop is planted.

2. **Soil Fertility.** Nutrients can be replaced by the use of chemical fertilizers on good land. If fertilizers are available it will generally be profitable for the farmer to use them. However, salinization and water-logging probably preclude profitable double cropping on a significant portion of HAVA, and water shortage will preclude double cropping in some areas.

Table 17 shows the percent of farms which practice double cropping of corn, mung beans, cotton, and other crops (mostly vegetables) and also
**TABLE 14a.** AVERAGE YIELDS, IN MONS PER JERIB, BY FARM SIZE\(^a/) FOR SELECTED CROPS IN SIX AREAS

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<th></th>
<th>Wheat Improved</th>
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<td>6-10</td>
<td>11-19</td>
<td>20+</td>
<td>0-5</td>
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<td>11-19</td>
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\(^a/) Ranges of farm size are in jeribs.
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<th>11-19</th>
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<th>Improved 0-5</th>
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<th>11-19</th>
<th>20+</th>
<th>Grapes 0-5</th>
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a/ Ranges of farm size are in jeribs.
### Table 15: Farms Reporting Use of Improved Seed and Hectares per Farm of Improved Wheat and Corn

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<th>No. Wheat Farms Reporting Use of any Improved Seed</th>
<th>Average Hectares Improved Wheat Per Farm</th>
<th>No. Corn Farms Reporting Use of any Improved Seed</th>
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*1* - insignificantly amount.
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<td>ARGHANDAB</td>
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<td>715</td>
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</table>

**TABLE 16. FARMS REPORTING FERTILIZER USE BY CROP, BY AREA**
### Table 17: Percent of Farms Double Cropping and Average Hectares Double Cropped per Farm by Crop, by Area

<table>
<thead>
<tr>
<th>AREA</th>
<th>Any Crop&lt;sup&gt;a&lt;/sup&gt;</th>
<th>% of All Farms Double Cropping</th>
<th>% of All Farms Double Cropping</th>
<th>Average Hectares Double Cropped per Farm</th>
<th>Corn</th>
<th>Mung Beans</th>
<th>Cotton</th>
<th>Other</th>
<th>All Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>HELMAND:</td>
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<td>17</td>
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<td>.01</td>
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<td>13</td>
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<td>.01</td>
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<td>2</td>
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<td>.09</td>
<td>1&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>31</td>
<td>18</td>
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<td>2</td>
<td>.13</td>
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<td>-</td>
<td>1&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>5</td>
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<td>-</td>
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<td>8</td>
<td>3</td>
<td>-</td>
<td>5</td>
<td>.29</td>
<td>.03</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>24</td>
<td>19</td>
<td>11</td>
<td>-</td>
<td>6</td>
<td>.14</td>
<td>.10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PANJWAI</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.06</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>5</td>
<td>5</td>
<td>.28</td>
<td>.07</td>
<td>.03</td>
<td>.05</td>
</tr>
</tbody>
</table>

<sup>a</sup> Wheat is the first crop; corn, mung beans, cotton are assumed to follow wheat.

<sup>b</sup> 1<sup>b</sup>-Insufficient amount.
the area double cropped. Table 18 shows the percentage of each crop which is grown as a second crop and total area per farm double cropped as a percentage of cropland. It would seem, from Table 18, that there is considerable potential for expanding the area double cropped.

Stevens and Tarzi reported that double cropping was "not practiced widely in Helmand Valley" and presented data on percentages of farmers who did some double cropping and percent of land double cropped in seven areas. This data is compared with 1970 FES results in Table 19. Double cropping is on the increase, especially in Helmand, and is likely to continue to increase even more rapidly in the near future because of a concerted extension effort by HAVA.

Stevens and Tarzi showed farmers' reasoning for not double cropping more. These will be discussed in Chapter V, along with comparable findings in 1970.

Most HAVA farmers practiced land leveling, which is not surprising in a country where flood irrigation is practiced almost exclusively. (Each field must be practically dead level, even if it is on a hillside). As shown in Table 20, most land leveling is done by traditional methods - oxen power and human labor. HAVA has done quite a lot of land leveling on farms in Nadi Ali and Marja, and some in Shamal-e and Darweshan, using heavy equipment. Some farmers have hired machines (usually farm tractors) for leveling, primarily in Kandahar Province.

Most HAVA farmers used some credit. Table 21 shows about two thirds of all farms had some credit during the year and that the major source was from friends and relatives. Credit from HAVA is primarily fertilizer loans, but credit from all other sources could be either producer or consumer credit. Traditionally, no distinction is made between the two. Credit from moneylenders (merchants, landowners, etc.) is sometimes expensive in terms of interest or repayment in kind, but credit from friends and relatives is sometimes interest-free.

Traditional farmers in Afghanistan generally follow a water policy based on scarcity -- they use all the irrigation water they can get. Although irrigation water in HAVA is more plentiful than in most other parts of the country, the water-short areas can be identified by how seldom they irrigate. See Table 22. This table also shows that cotton requires the highest number of irrigations followed by corn, mung beans and wheat. Kandahar farmers irrigate more often than farmers in Helmand.

Only nine respondents (about 1 percent) in the entire 1970 FES reported owning tractors, five in Helmand and four in Kandahar. Three respondents reported owning water pumps; all in Kandahar. There were reports of four Polycultures in Helmand and five in Kandahar.

Most of the privately owned tractors in HAVA are known to be Massey-Ferguson 135's with a few Byelers (Soviet) and International Harvester tractors. Most privately owned water pumps are diesel or gasoline powered four-inch transportable pumps from Pakistan (Beco is the most popular make). The Polyculture is an ox-drawn, multipurpose farm implement of French design made by the Jangalak Company in Kabul.

Stevens and Tarzi reported about 13 tractors in HAVA in 1963. There are probably over 200 in 1970. The number is beginning to increase rapidly as credit becomes available through the Agricultural Development Bank and the Agricultural Finance Agency of HAVA. Many farmers have both the money and inclination for tractor purchase.
HAVA Officials and Visitors Inspecting Improved Dairy Calves at Bolan Station near Lashkar Gah

HAVA Extension Agent and Area Farmers at Improved Corn Demonstration
HAVA Farmer Cleaning Drainage Ditch
Nothing was mentioned in the Stevens-Tarzi report about water pumps. No estimate of use of improved ox-drawn implements was given, although they reported research on and demonstration of such implements.

The use of gypsum, called "gotch" locally, as a soil amendment for alleviating salinization has been suggested. Only five farmers in HAVA reported the use of gypsum -- two in Sanguin and three in Dund-Daman. A considerable amount of "gotch" is produced in Southern Afghanistan for use in mortar and is available for use as a soil amendment.

A number of other new cultural practices, such as row culture, are coming to HAVA. Although not covered by the 1970 FES, these should be investigated in future studies.
### Table 18. Area Double Cropped as Percent of Land in Crop for Corn, Mung Beans, Cotton, and Total Area Double Cropped as Percent of Cropland

<table>
<thead>
<tr>
<th>AREA</th>
<th>Area Double Cropped As Percent of Land in Crop</th>
<th>Total Area Double Cropped As Percent of Cropland</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corn</td>
<td>Mung Beans</td>
</tr>
<tr>
<td>HELMAND:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>52.0</td>
<td>63.8</td>
</tr>
<tr>
<td>MARJA</td>
<td>82.8</td>
<td>100.0</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>86.7</td>
<td>75.6</td>
</tr>
<tr>
<td>DARWESHAN</td>
<td>46.2</td>
<td>58.3</td>
</tr>
<tr>
<td>KHANISHIN</td>
<td>100.0</td>
<td>40.0</td>
</tr>
<tr>
<td>SERAJ</td>
<td>59.3</td>
<td>50.0</td>
</tr>
<tr>
<td>GIRISHK</td>
<td>73.2</td>
<td>77.4</td>
</tr>
<tr>
<td>SANGUIN-KAJAKAI</td>
<td>80.9</td>
<td>36.4</td>
</tr>
<tr>
<td>MUSA QALA-ZAMIN DAWAR</td>
<td>44.1</td>
<td>50.0</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KANDAHAR:</td>
<td>52.02</td>
<td>73.02</td>
</tr>
<tr>
<td>MAIWAND</td>
<td>80.0</td>
<td>-</td>
</tr>
<tr>
<td>DUND-DAMAN</td>
<td>73.0</td>
<td>56.2</td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>35.2</td>
<td>98.1</td>
</tr>
<tr>
<td>PANJWAI</td>
<td>1.4</td>
<td>-</td>
</tr>
<tr>
<td>HAVA</td>
<td>63.60</td>
<td>64.65</td>
</tr>
<tr>
<td>AREA</td>
<td>Percent of Farmers Who Did Some Double Cropping</td>
<td>Percent of Land(^a)/ Double Cropped</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>NADI ALI</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>MARJA</td>
<td>37</td>
<td>60</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>47</td>
<td>59</td>
</tr>
<tr>
<td>DARWESHAN</td>
<td>4</td>
<td>37</td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>DUND-DAMAN</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>PANJWAI</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

From Stevens-Tarzi Table V, page 14 and 1970 FES Tables 17 and 18.

\(^a\)/ Percent of cropland double cropped in 1970. Presumably, it was the same in 1963, although this is not clear from the Stevens-Tarzi Report.
### TABLE 20. FARMS REPORTING LAND LEVELING, AND METHOD BY WHICH LAND WAS LEVELED

<table>
<thead>
<tr>
<th>AREA</th>
<th>Farms Reporting Land Leveling</th>
<th>Method by Which Land Was Leveled Percent of Farms Reporting Land Leveling&lt;sup&gt;a/&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td><strong>HELMAND:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>28</td>
<td>67</td>
</tr>
<tr>
<td>MARJA</td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td>DARWESHAN</td>
<td>19</td>
<td>48</td>
</tr>
<tr>
<td>KHANISHIN</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>SERAJ</td>
<td>35</td>
<td>74</td>
</tr>
<tr>
<td>GIRISHK</td>
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<td>96</td>
</tr>
<tr>
<td>SANGUIN-KAJAKAI</td>
<td>38</td>
<td>70</td>
</tr>
<tr>
<td>MUSA QALA-ZAMIN DAWAR</td>
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<td>66</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>24</td>
<td>63</td>
</tr>
<tr>
<td><strong>KANDAHAR:</strong></td>
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<td></td>
</tr>
<tr>
<td>MAIWAND</td>
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<td>76</td>
</tr>
<tr>
<td>DUND-DAMAN</td>
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</tr>
<tr>
<td>ARGHANDAB</td>
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<td>74</td>
</tr>
<tr>
<td>PANJWAI</td>
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<td>81</td>
</tr>
<tr>
<td><strong>HAVA</strong></td>
<td>578</td>
<td>71</td>
</tr>
</tbody>
</table>

<sup>a/</sup> May not add to 100% due to rounding and land being leveled by more than one method. Also, there was an insignificant number of reports of leveling by "other methods" and a few "no replies."

<sup>b/</sup> See text for explanation of land leveling methods.
### Table 21. Farms Reporting Borrowing and Sources of Credit

<table>
<thead>
<tr>
<th>AREA</th>
<th>Farms Borrowing in 1970</th>
<th>Indicated Source of Credit</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>Friends &amp; Relatives (By Percent of Borrowers)</td>
</tr>
<tr>
<td>HELMAND:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>26</td>
<td>62</td>
<td>50</td>
</tr>
<tr>
<td>MARJA</td>
<td>30</td>
<td>75</td>
<td>73</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>39</td>
<td>63</td>
<td>54</td>
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<td>DARWESHERAN</td>
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<td>73</td>
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<td>78</td>
<td>48</td>
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<td>SERAJ</td>
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<td>50</td>
</tr>
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</tr>
<tr>
<td>HAVA</td>
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<td>65</td>
<td>41.8</td>
</tr>
</tbody>
</table>

*a/ May not add to 100% due to rounding or to borrowing from more than one source. Some reported borrowing from "other sources" (Not significant) and some borrowers did not indicate the source (also insignificant).

*b/ In 1970, HAVA distributed fertilizer on credit.
<table>
<thead>
<tr>
<th>AREA</th>
<th>Wheat</th>
<th>Corn</th>
<th>Mung Beans</th>
<th>Cotton</th>
</tr>
</thead>
<tbody>
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<td><strong>HELMAND:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>6.5</td>
<td>8.3</td>
</tr>
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<td>7.2</td>
<td>5.9</td>
<td>8.7</td>
</tr>
<tr>
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<td>5.4</td>
<td>6.1</td>
</tr>
<tr>
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<td>5.2</td>
<td>3.5</td>
<td>5.2</td>
</tr>
<tr>
<td>KHANISHIN</td>
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<td>2.0</td>
<td>3.1</td>
<td>2.5</td>
</tr>
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<td>5.8</td>
<td>4.9</td>
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<td>5.5</td>
<td>7.4</td>
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<tr>
<td>SANGUIN-KAJAKAI</td>
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<td>6.1</td>
<td>4.3</td>
<td>6.0</td>
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<td>4.0</td>
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<td>5.8</td>
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<td>9.6</td>
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<td>6.0</td>
<td>4.6</td>
<td>4.5</td>
</tr>
<tr>
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<td>6.8</td>
<td>6.6</td>
<td>8.0</td>
</tr>
<tr>
<td>PANJWAI</td>
<td>4.0</td>
<td>6.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HAVA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.32</td>
<td>6.17</td>
<td>5.21</td>
<td>6.91</td>
</tr>
</tbody>
</table>
CHAPTER IV
COSTS, RETURNS AND NET INCOME

Returns to farming, for purposes of the 1970 FES, come from three major sources: Value of production of field crops, of fruits and vegetables, and of livestock (excluding work animals). Total income is defined as value of production plus off-farm income.

Major categories of cost are seed, feed, depreciation and labor (both day labor and bazgar). The "Other Cost" category includes such items as taxes and interest on borrowed money.

Net income is defined as total income less costs of production and is the return to family labor, management and investment.

Table 23 summarizes Returns, Costs and Net Income. Highest net income per farm is in Dund-Daman and lowest is in Khanishin. Highest per farm income in Helmand is in the Girishk area. The study shows that net income is considerably higher in Kandahar than in Helmand, undoubtedly because much of Kandahar is an established fruit growing area, whereas large areas of Helmand are devoted to the production of extensive field crops.

Table 24 shows returns (value of production) in more detail. Table 25 is a breakdown of costs of production.

Actual costs per farm were not determined in the 1970 FES, but by a Supplemental Survey which was conducted at the same time as the 1970 FES by FES field supervisors. Table 25 shows average costs per farm. Depreciation schedules and other cost items as determined by the Supplemental Survey, are shown in Appendices VI and VII.

Prices used in valuing production were determined from the Supplemental Survey, The Sales Section of the 1970 FES and from Weekly Price Reports from HAVR. Income from livestock was determined by a separate Livestock Survey and from the Supplemental Survey. These elements of value of production are also shown in the Appendices.

Off-farm income, as shown in Table 24, is quite important to farmers in several areas.

Tables 26 and 27 show average amount of livestock and equipment per farm and value. Table 28 shows substantial increases in average per farm livestock numbers from 1963 to 1970.

Table 29 compares 1970 costs, returns and net income with data for 1963. The indicated increase in net income per farm over the seven-year period is encouraging. However, some of the increase can be attributed to inflation -- the foreign exchange rate went from 65 to 75 afs per U.S. dollar. (Very stable for this part of the world, considering that this is a free market exchange rate.) The general price structure has increased since 1963. The following comparison of farm
### Table 22. Costs, Returns and Net Income in AFS, per farm - by area

<table>
<thead>
<tr>
<th>Area</th>
<th>Returns</th>
<th></th>
<th></th>
<th>Gross Income</th>
<th>Costs</th>
<th></th>
<th></th>
<th></th>
<th>Other Costs</th>
<th>Total Costs</th>
<th>Net Farm Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crops</td>
<td>Fruits and Vegetables</td>
<td>Livestock</td>
<td></td>
<td>Seed</td>
<td>Feed</td>
<td>Depreciation</td>
<td>Labor</td>
<td>Other</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KANDAHAR:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAIWAND</td>
<td>53,860</td>
<td>29,655</td>
<td>3,334</td>
<td>2,682</td>
<td>3,673</td>
<td>4,106</td>
<td>1,571</td>
<td>13,044</td>
<td>6,856</td>
<td>29,250</td>
<td>60,281</td>
</tr>
<tr>
<td>DUND- DAMAN</td>
<td>45,330</td>
<td>49,575</td>
<td>3,421</td>
<td>46,413</td>
<td>14,730</td>
<td>3,907</td>
<td>1,662</td>
<td>25,686</td>
<td>6,930</td>
<td>42,083</td>
<td>102,656</td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>25,027</td>
<td>39,711</td>
<td>2,497</td>
<td>12,517</td>
<td>79,552</td>
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<td>2,207</td>
<td>10,977</td>
<td>4,368</td>
<td>19,524</td>
<td>60,028</td>
</tr>
<tr>
<td>PANJWAI</td>
<td>24,607</td>
<td>80,555</td>
<td>3,034</td>
<td>4,577</td>
<td>113,073</td>
<td>2,591</td>
<td>3,128</td>
<td>22,271</td>
<td>8,391</td>
<td>37,785</td>
<td>75,288</td>
</tr>
<tr>
<td><strong>HAYA</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,854</td>
<td>3,690</td>
<td>1,513</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,814</td>
</tr>
</tbody>
</table>

**Notes:**

- Highly suspect cost figures - explained in texts. Labor costs are unrealistically high.

- High figure due primarily to large amounts of off-farm income of three farmers who own large blocks of income-producing property in Kandahar city.

- Fertilizer and chemicals, interest on borrowed money, and land tax.
<table>
<thead>
<tr>
<th>AREA</th>
<th>CROPS</th>
<th>HELMAND:</th>
<th>NADI ALI</th>
<th>MARJA</th>
<th>SHAMALON</th>
<th>DARWESHAN</th>
<th>KHANISHIN</th>
<th>SERAJ</th>
<th>GIRISHK</th>
<th>SANGUIN-KAJAKA</th>
<th>MUSA QALA-Z D</th>
<th>NOWZAD</th>
<th>KANDAHAR:</th>
<th>MAIWAND</th>
<th>DUND-DAMAN</th>
<th>ARGHANDAB</th>
<th>PANJWAI</th>
<th>HAVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wheat</td>
<td>Local</td>
<td>17,506</td>
<td>14,529</td>
<td>30,551</td>
<td>31,354</td>
<td>41,843</td>
<td>19,816</td>
<td>15,005</td>
<td>10,150</td>
<td>14,059</td>
<td>9,570</td>
<td>47,058</td>
<td>36,837</td>
<td>11,523</td>
<td>19,728</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Improved</td>
<td>12,337</td>
<td>14,108</td>
<td>1,446</td>
<td>2,782</td>
<td>517</td>
<td>1,481</td>
<td>11,991</td>
<td>2,423</td>
<td>2,909</td>
<td>945</td>
<td>1,478</td>
<td>2,307</td>
<td>1,478</td>
<td>1,478</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Local</td>
<td>Corn</td>
<td>2,630</td>
<td>1,127</td>
<td>3,956</td>
<td>794</td>
<td>2,615</td>
<td>1,481</td>
<td>14,361</td>
<td>6,845</td>
<td>2,535</td>
<td>945</td>
<td>1,921</td>
<td>1,921</td>
<td>1,478</td>
<td>1,335</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Improved</td>
<td>1,050</td>
<td>827</td>
<td>794</td>
<td>101</td>
<td>612</td>
<td>52</td>
<td>260</td>
<td>6,845</td>
<td>2,535</td>
<td>163</td>
<td>155</td>
<td>155</td>
<td>518</td>
<td>2,325</td>
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<tr>
<td></td>
<td></td>
<td>Barley</td>
<td>87</td>
<td>17</td>
<td>92</td>
<td>101</td>
<td>64</td>
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<td>112</td>
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<td>183</td>
<td>43</td>
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<td>1,078</td>
<td>81</td>
<td>1,335</td>
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<td>Mung Beans</td>
<td>600</td>
<td>369</td>
<td>387</td>
<td>1,939</td>
<td>612</td>
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<td>750</td>
<td>222</td>
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<td>1,441</td>
<td>57</td>
<td>3</td>
<td>1,474</td>
<td>1,474</td>
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<td>451</td>
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<tr>
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<td></td>
<td>Clover</td>
<td>443</td>
<td>19</td>
<td>381</td>
<td>24</td>
<td>2</td>
<td>738</td>
<td>518</td>
<td>49</td>
<td>2,517</td>
<td>57</td>
<td>3</td>
<td>1,474</td>
<td>1,474</td>
<td>259</td>
<td>451</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alfalfa</td>
<td>865</td>
<td>916</td>
<td>1,751</td>
<td>274</td>
<td>41</td>
<td>515</td>
<td>2,325</td>
<td>518</td>
<td>189</td>
<td>1,441</td>
<td>57</td>
<td>3</td>
<td>1,474</td>
<td>1,474</td>
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<td>451</td>
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<td>Cotton</td>
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<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Field Crops</td>
<td>4,070</td>
<td>6,283</td>
<td>6,031</td>
<td>5,968</td>
<td>4,066</td>
<td>4,066</td>
<td>306</td>
<td>2,325</td>
<td>2,078</td>
<td>306</td>
<td>3,956</td>
<td>3,956</td>
<td>306</td>
<td>3,956</td>
<td>306</td>
<td>3,956</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All Field Crops</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>269</td>
<td>269</td>
<td>7</td>
<td>2,325</td>
<td>2,078</td>
<td>7</td>
<td>3,956</td>
<td>3,956</td>
<td>7</td>
<td>3,956</td>
<td>7</td>
<td>3,956</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tobacco</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Rice</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<td>--</td>
<td>--</td>
<td>--</td>
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<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

TABLE 24a. **VALUE OF PRODUCTION IN AFS., PER CROP, PER FARM - BY AREA**
## TABLE 24b. VALUE OF PRODUCTION IN AFS., PER CROP, PER FARM - BY AREA - FRUITS, NUTS, MELONS, AND VEGETABLES

<table>
<thead>
<tr>
<th>AREA</th>
<th>Grapes</th>
<th>Pomegranates</th>
<th>Apricots</th>
<th>Mulberries</th>
<th>Peaches</th>
<th>Almonds</th>
<th>Other Fruits &amp; Nuts</th>
<th>Melons</th>
<th>Watermelons</th>
<th>Vegetables</th>
<th>All Fruits and Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HELMAND:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>4,056</td>
<td>570</td>
<td>1,012</td>
<td>--</td>
<td>19</td>
<td>--</td>
<td>66</td>
<td>--</td>
<td>75</td>
<td>191</td>
<td>300</td>
</tr>
<tr>
<td>MARJA</td>
<td>2,817</td>
<td>1,672</td>
<td>37</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>224</td>
<td>240</td>
<td>709</td>
<td>--</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>5,066</td>
<td>515</td>
<td>526</td>
<td>--</td>
<td>44</td>
<td>--</td>
<td>210</td>
<td>184</td>
<td>251</td>
<td>480</td>
<td>7,276</td>
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<td>DARNESHAN</td>
<td>6,552</td>
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<td>--</td>
<td>--</td>
<td>450</td>
<td>--</td>
<td>51</td>
<td>500</td>
<td>7,764</td>
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<tr>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>403</td>
<td>--</td>
<td>1,161</td>
</tr>
<tr>
<td>SERAJ</td>
<td>1,479</td>
<td>118</td>
<td>198</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>64</td>
<td>--</td>
<td>252</td>
<td>1,380</td>
<td>10,654</td>
</tr>
<tr>
<td>GIRISHK</td>
<td>5,811</td>
<td>205</td>
<td>506</td>
<td>60</td>
<td>52</td>
<td>--</td>
<td>412</td>
<td>48</td>
<td>--</td>
<td>3,480</td>
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<tr>
<td>SANGUIN-KAJAKAI</td>
<td>2,727</td>
<td>165</td>
<td>128</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>8,024</td>
<td>--</td>
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<tr>
<td>KUSA QALÁ-2 D</td>
<td>2,783</td>
<td>554</td>
<td>618</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1,846</td>
<td>--</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>789</td>
<td>274</td>
<td>253</td>
<td>--</td>
<td>330</td>
<td>200</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

| **KANDAHAR:**    | 458    | 299          | 86       | 299        | 3       | 117     | 994                 |        |             |            |                          |
| MAIWAND          | 27,466 | 182          | 293      | 99         | 900     | 640     | 7                   | 25     | 43          | 29,655     |                          |
| DUND-DAMAN       | 38,198 | 4,237        | 4,128    | 752        | --      | --      | 501                 | --     | 179         | 1,580      | 49,575                   |
| ARGHANDAB        | 18,350 | 11,059       | 7,248    | 506        | 675     | 326     | --                  | 151    | --          | 1,340      | 39,711                   |
| PANJMAI          | 78,975 | 330          | 1,126    | 63         | --      | 61      | --                  | --     | --          | 80,555     |                          |
| **MAIA**         | 196    | 133          | 51       | 654        | 45      | 161     | 593                 |        |             |            |                          |

*Note:* Does not include value of home gardens less than ½ jerib.
<table>
<thead>
<tr>
<th>AREA</th>
<th>Milk Cows</th>
<th>Sheep</th>
<th>Goats</th>
<th>Hens</th>
<th>Other Poultry</th>
<th>All Livestock</th>
<th>Total Value of Production</th>
<th>Other Income</th>
<th>( N^a )</th>
<th>HAVA</th>
<th>Business</th>
<th>Labor</th>
<th>Other</th>
<th>( % ) of Reports</th>
</tr>
</thead>
<tbody>
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<td>2,378</td>
<td>864</td>
<td>267</td>
<td>1</td>
<td>3,510</td>
<td>2,862</td>
<td>49,192</td>
<td>2542</td>
<td>95</td>
<td>12.4</td>
<td>14.3</td>
<td>49.5</td>
<td>23.8</td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>1,891</td>
<td>303</td>
<td>257</td>
<td>-</td>
<td>2,451</td>
<td>46,394</td>
<td>1,831</td>
<td>6</td>
<td>33</td>
<td>17</td>
<td>50</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MARJA</td>
<td>1,501</td>
<td>799</td>
<td>200</td>
<td>-</td>
<td>2,500</td>
<td>47,673</td>
<td>2,332</td>
<td>135</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>100</td>
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<td></td>
</tr>
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<td>417</td>
<td>-</td>
<td>4,922</td>
<td>57,587</td>
<td>2,862</td>
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<td>3</td>
<td>--</td>
<td>33</td>
<td>67</td>
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<td>228</td>
<td>-</td>
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<td>57,225</td>
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<td>16</td>
<td>25</td>
<td>75</td>
<td>--</td>
<td>40</td>
</tr>
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<td>KHANISHIN</td>
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<td>116</td>
<td>-</td>
<td>3,633</td>
<td>47,673</td>
<td>2,862</td>
<td>735</td>
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<td>--</td>
<td>33</td>
<td>67</td>
<td>--</td>
<td>20</td>
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<td>3,469</td>
<td>30,016</td>
<td>4,322</td>
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<td>7</td>
<td>7</td>
<td>36</td>
<td>50</td>
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<td></td>
</tr>
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<td>4</td>
<td>4,531</td>
<td>67,308</td>
<td>4,843</td>
<td>14</td>
<td>23</td>
<td>18</td>
<td>35</td>
<td>24</td>
<td></td>
<td></td>
</tr>
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\( a/ \) N - number of respondents reporting other income

\( b/ \) Includes a significant number of reports of sale of firewood in Seraj and Arghandab; few reports in Girishk, Nowzad and Panjwai. If firewood is from their own farm, it should properly be considered farm income. This was not determined by the 1970 FES, but it is known that some farmers dig stumps on public lands and others sell dead trees from their own land.

\( c/ \) Columns may not add up to 100% as some respondents had more than one source of income.
### Table 25a. Costs of Production in Afs. Per Farm - By Area

<table>
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<th>Seed</th>
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<th>Feed Wheat</th>
<th>Other</th>
<th>Oxen</th>
<th>Donkey</th>
<th>Camel</th>
<th>Horse</th>
<th>Chemicals</th>
<th>Land Tax</th>
<th>Interest on Borrowed Money</th>
<th>Labor</th>
<th>Part Time</th>
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**Seed, Feed, Fertilizer, Taxes, Interest and Labor**
TABLE 25b. COST OF PRODUCTION IN AFS. PER FARM - BY AREA

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<th>Total Depreciation</th>
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<td>Camel</td>
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*a/ Includes sickles, harness, other implements. Tractor depreciation is not included. If calculated at cost = 450,000 afs, life = 10 years and salvage value = 100,000 afs and averaged for all areas; tractor depreciation would be about 385 afs per farm.
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## Table 27. Income Producing Livestock, Average Value Per Head.

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<th>No. Improved Milk Cows</th>
<th>No. Local Sheep</th>
<th>No. Improved Sheep</th>
<th>No. Local Goats</th>
<th>No. Improved Goats</th>
<th>No. Local Chickens</th>
<th>No. Improved Chickens</th>
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<td>.01 100.0</td>
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*a/* Insufficient amount.
**TABLE 28. LIVESTOCK, AVERAGE NUMBER PER FARM - COMPARISON 1963 WITH 1970**

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<td>.75</td>
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<td>.46</td>
<td>1.64</td>
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### TABLE 29. COSTS, RETURNS AND NET INCOME. COMPARISON 1963 WITH 1970

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<td>13,379</td>
<td>113,073</td>
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<td>37,785</td>
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</table>

^a/ From Stevens-Tarzi Table VIII, page 44.

^b/ From 1970 FES Table 23.

^c/ In 1963, Stevens-Tarzi reported Panjwai-Maiwand combined; the 1970 FES treated them separately. For this table, 1970 data is for Panjwai only because Stevens-Tarzi had only a few interviews in Maiwand.
Commodity prices in afs per mon shows the increase:

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<td>COTTON</td>
<td>19</td>
<td>43</td>
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<tr>
<td>POMEGRANATES</td>
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</table>

Although commodity prices increased significantly, so did costs of production.

By no means all of the farms in HAVA are subsistence farms; most farms reported some sales. Wheat, fruit and cotton are the important cash crops, but many farms also produce other field crops, vegetables and livestock products for sale. Value of production is not affected by whether the farmer sold or consumed the production from his farm. However, average sales per farm are shown in Table 30, and compared with total value of production as a measure of the extent to which farms have become commercialized. Table 31 shows the amount of sales in mons, unit prices in afs and value of sales in afs (amount x price) for major commodities and value of sales for combined and miscellaneous categories. If necessary, mons can be converted to kilograms as follows: 1 mon = 4.416 kg. Or 1 kg = .2264 mon. U.S. $1.00 = afs 75 in 1970. Table 31 shows which crops are commercially important in each area.

\[a/\] Prices used by Stevens and Tarzi for value of production.

\[b/\] Prices used by FES for value of production.
<table>
<thead>
<tr>
<th>AREA</th>
<th>Wheat</th>
<th>All Other Field Crops</th>
<th>Grapes</th>
<th>All Other Fruits, Nuts &amp; Vegetables</th>
<th>Livestock Products</th>
<th>Misc.</th>
<th>Value of Sales</th>
<th>Sales as % of Value of Production</th>
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<td>Afs Income</td>
<td>Mung Beans Afs Per Mon</td>
<td>Afs Income</td>
<td>Cotton Afs Per Mon</td>
<td>Afs Income</td>
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<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAIWAND</td>
<td>9 168 30</td>
<td>5,058</td>
<td>1 5 23 124</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUND-DAMAN</td>
<td>22 217 30</td>
<td>6,505</td>
<td>14 68 24 1,662</td>
<td>6 4 32 140</td>
<td>2 2 36 56</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>10 28 36</td>
<td>1,036</td>
<td>27 64 16 1,056</td>
<td>10 20 34 667</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANJWAI</td>
<td>3 8 35</td>
<td>280</td>
<td>1 40 24 960</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAVA</td>
<td>182 112</td>
<td>27.0 3,131</td>
<td>133 56 24.1 1,348</td>
<td>65 9 28.5 243</td>
<td>161 60 41.9 2,518</td>
<td>5 29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a/ N = No. farms reporting sales.

b/ 1 mon = 4.416 kg. or 1 kg. = .2264 mon.

U.S. $1.00 = Afs. 75 in 1970. Stevens and Tarzi used exchange rate of U.S. $1.00 = Afs. 65 in 1963.

Note: Amount and price have been rounded for convenience. Figures in Income column are products of amount times price before rounding. Amount is average amount sold per farm, including farms that reported no sales (Total amount sold per are in mons divided by total number of sampled farms in that area).
TABLE 31b. SALES—N\(^2\)/ AMOUNT, PRICE, AND TOTAL INCOME FROM SALES PER FARM, BY ITEM, BY AREA

<table>
<thead>
<tr>
<th>AREA</th>
<th>Grapes</th>
<th>Pomegranates</th>
<th>Apricots</th>
<th>Raisins</th>
<th>Other Fruits And Nuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELMAND:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>33</td>
<td>18.4</td>
<td>617</td>
<td>7</td>
</tr>
<tr>
<td>NADI ALI</td>
<td>3</td>
<td>20</td>
<td>16</td>
<td>315</td>
<td>-</td>
</tr>
<tr>
<td>MARJA</td>
<td>1</td>
<td>38</td>
<td>10</td>
<td>375</td>
<td>-</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>7</td>
<td>86</td>
<td>20</td>
<td>1,746</td>
<td>3</td>
</tr>
<tr>
<td>DARWSHAN</td>
<td>3</td>
<td>110</td>
<td>28</td>
<td>3,125</td>
<td>-</td>
</tr>
<tr>
<td>KHANISHIN</td>
<td>2</td>
<td>10</td>
<td>17</td>
<td>170</td>
<td>-</td>
</tr>
<tr>
<td>SERAJ</td>
<td>2</td>
<td>10</td>
<td>22</td>
<td>223</td>
<td>-</td>
</tr>
<tr>
<td>GIRISHK</td>
<td>2</td>
<td>8</td>
<td>20</td>
<td>160</td>
<td>1</td>
</tr>
<tr>
<td>SANGUIN-KAJAKAI</td>
<td>1</td>
<td>4 10 37</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MUSA QALA-Z</td>
<td>6</td>
<td>68 10 680</td>
<td>2 5 10 50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KANDAHAR:</td>
<td>80</td>
<td>298</td>
<td>20.7</td>
<td>6,166</td>
<td>61</td>
</tr>
<tr>
<td>MAIWAND</td>
<td>4</td>
<td>54</td>
<td>14</td>
<td>770</td>
<td>2</td>
</tr>
<tr>
<td>DUNO-DAMAN</td>
<td>25</td>
<td>274</td>
<td>26</td>
<td>6,992</td>
<td>17</td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>41</td>
<td>590</td>
<td>18</td>
<td>10,657</td>
<td>41</td>
</tr>
<tr>
<td>PANJMAI</td>
<td>10</td>
<td>55</td>
<td>22</td>
<td>1,210</td>
<td>1</td>
</tr>
<tr>
<td>HAVA</td>
<td>107</td>
<td>144</td>
<td>20.4</td>
<td>2,944</td>
<td>68</td>
</tr>
</tbody>
</table>

\(N\) = number of farms reporting sales.
TABLE 31C  SALES—NA\(^a\) AND TOTAL INCOME FROM SALES PER FARM, BY ITEM, BY AREA

<table>
<thead>
<tr>
<th>AREA</th>
<th>Vegetables</th>
<th></th>
<th>Livestock</th>
<th></th>
<th>Miscellaneous</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N(^a)</td>
<td>Income Afs</td>
<td>N</td>
<td>Income Afs</td>
<td>N</td>
<td>Income Afs</td>
</tr>
<tr>
<td>HELMAND:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>7</td>
<td>161</td>
<td>48</td>
<td>320</td>
<td>33</td>
<td>302</td>
</tr>
<tr>
<td>MARJA</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>155</td>
<td>10</td>
<td>356</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>4</td>
<td>401</td>
<td>5</td>
<td>372</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>DARWESHAN</td>
<td>1</td>
<td>360</td>
<td>4</td>
<td>261</td>
<td>3</td>
<td>107</td>
</tr>
<tr>
<td>KHANISHIN</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>241</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>SERAJ</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>532</td>
<td>5</td>
<td>1,313</td>
</tr>
<tr>
<td>GIRISHK</td>
<td>2</td>
<td>750</td>
<td>8</td>
<td>1,107</td>
<td>6</td>
<td>486</td>
</tr>
<tr>
<td>SANGUIN-KAJAKAI</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>57</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>MUSA QALA-ZAMIN DAWAR</td>
<td>-</td>
<td>8</td>
<td>8</td>
<td>284</td>
<td>2</td>
<td>584</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>38</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>KANDAHAR:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAIWAND</td>
<td>23</td>
<td>647</td>
<td>13</td>
<td>97</td>
<td>48</td>
<td>1,968</td>
</tr>
<tr>
<td>DUND-DAMAN</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>241</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>11</td>
<td>1,020</td>
<td>2</td>
<td>54</td>
<td>36</td>
<td>4,193</td>
</tr>
<tr>
<td>PANJWAI</td>
<td>12</td>
<td>883</td>
<td>4</td>
<td>97</td>
<td>8</td>
<td>1,282</td>
</tr>
<tr>
<td>HAVA</td>
<td>30</td>
<td>365</td>
<td>61</td>
<td>226</td>
<td>81</td>
<td>1,001</td>
</tr>
</tbody>
</table>

\(^a\) N = number of farms reporting sales.

\(^b\) Includes hides, wool, ghee, eggs, firewood, straw, etc. See Q.17, Appendix I.
CHAPTER V

FARMER ATTITUDES AND PROBLEMS

Many HAVA farmers appear to respond quite well to financial incentives, as evidenced by the rather widespread adoption of new farming practices in a few short years.

A marketing system exists through which incentive can operate, although many experts can see a great need for improvement as specialization and commercialization continue. Cotton, most fruits, some vegetables and a few specialty crops are primarily cash crops -- produced for sale through an established market. In addition, a significant part of the HAVA wheat crop is marketed, especially in good years. See Chapter IV.

The 1970 FES concerned itself to some extent with farmer attitudes and problems, as did Stevens and Tarzi in 1963.

MAJOR FARM PROBLEMS

Table 32 shows how farmers perceived their own problems (problems of farmers in their area). For HAVA and Helmand, water shortage was mentioned most often. In Kandahar, lack of capital seemed to be the major problem. Water shortage was the major problem only in areas without access, or with poor access, to major water sources. These include Khanishin, Seraj, Kajakai, Musa Qala-Zamin Dawar and Nowzad in Helmand and Maiwand and parts of Panjwai in Kandahar Province. Water shortage was mentioned as a problem in all areas; only in Nad Ali and Arghandab could it be considered insignificant. It is probably true in this arid nation that water shortage is expected and therefore many farmers will mention it out of habit, even though modern developments have changed the traditional situation. In Marga, for example, where 18 percent of the respondents mentioned water shortage as a problem, it is known that adequate water was available and that more than the optimum amount of water was actually used. Inequities in distribution may have caused some needless shortages.a

Lack of capital was the second most widely perceived problem. Unlike water shortage, it was rather uniformly recognized in all areas.

Salinization and its usual cause, high water table, was the third most important problem mentioned by HAVA farmers. According to Table 32, this problem was most serious in Darweshan, Dund-Daman, Girishk and Sanguin-Kajakai. It was not considered by farmers as significant in the water-short areas of Seraj, Musa Qala-Zamin Dawar, Nowzad and

a/ Author's note. As this publication goes to press in the fall of 1971 there is an acute water shortage over most of Afghanistan due to two years of drought. Arghandab reservoir became dry during the summer of 1971 and Kajakai is alarmingly low at present.
TABLE 32. MAJOR FARM PROBLEMS, IN PERCENTS, BY AREA

<table>
<thead>
<tr>
<th>AREA</th>
<th>Poor</th>
<th>Salinization, High Water</th>
<th>Water Shortage</th>
<th>Bad Dam</th>
<th>Lack of Capital</th>
<th>Weeds</th>
<th>Insects</th>
<th>Not Enough Land</th>
<th>Lack of Machinery</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELMAND:</td>
<td>0.9%</td>
<td>21.9%</td>
<td>54.7%</td>
<td>27.4%</td>
<td>2.9%</td>
<td>0.8%</td>
<td>1.7%</td>
<td>9.3%</td>
<td>12.0%</td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>5%</td>
<td>20%</td>
<td>18%</td>
<td>35%</td>
<td>8%</td>
<td>-</td>
<td>-</td>
<td>8%</td>
<td>16%</td>
<td>3%</td>
</tr>
<tr>
<td>MARJA</td>
<td>6%</td>
<td>32%</td>
<td>88%</td>
<td>32%</td>
<td>2%</td>
<td>-</td>
<td>-</td>
<td>24%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>SHAMALONa/</td>
<td>3%</td>
<td>11%</td>
<td>32%</td>
<td>18%</td>
<td>2%</td>
<td>5%</td>
<td>-</td>
<td>16%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>DARWESHAN</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>42%</td>
<td></td>
</tr>
<tr>
<td>KHANISHIN</td>
<td>1%</td>
<td>4%</td>
<td>85%</td>
<td>19%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>SERAJ</td>
<td>1%</td>
<td>4%</td>
<td>30%</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8%</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>GIRISHK</td>
<td>1%</td>
<td>4%</td>
<td>63%</td>
<td>33%</td>
<td>4%</td>
<td>2%</td>
<td>-</td>
<td>4%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>SANGUIN-KAJAKAI</td>
<td>1%</td>
<td>4%</td>
<td>94%</td>
<td>29%</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>3%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>MUSA QALA-ZAMIN DAWAR</td>
<td>1%</td>
<td>4%</td>
<td>100%</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>13%</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>1%</td>
<td>4%</td>
<td>34.3%</td>
<td>29.6%</td>
<td>41.3%</td>
<td>24.7%</td>
<td>2.9%</td>
<td>3.8%</td>
<td>4.6%</td>
<td></td>
</tr>
<tr>
<td>KANDAHAR:</td>
<td>7.0%</td>
<td>34.3%</td>
<td>29.6%</td>
<td>41.3%</td>
<td>24.7%</td>
<td>2.9%</td>
<td>3.8%</td>
<td>4.6%</td>
<td>7.6%</td>
<td></td>
</tr>
<tr>
<td>MAIWAND</td>
<td>1%</td>
<td>3%</td>
<td>92%</td>
<td>24%</td>
<td>3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>DUND-DAMAN</td>
<td>4%</td>
<td>64%</td>
<td>16%</td>
<td>59%</td>
<td>37%</td>
<td>2%</td>
<td>4%</td>
<td>6%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>ARGHANDAB</td>
<td>16%</td>
<td>11%</td>
<td>5%</td>
<td>27%</td>
<td>34%</td>
<td>8%</td>
<td>6%</td>
<td>3%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>PANJWAI</td>
<td>1%</td>
<td>31%</td>
<td>57%</td>
<td>39%</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td>3%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>HAVA</td>
<td>4.0%</td>
<td>27.1%</td>
<td>44.2%</td>
<td>33.2%</td>
<td>12.1%</td>
<td>1.7%</td>
<td>2.6%</td>
<td>7.3%</td>
<td>10.1%</td>
<td></td>
</tr>
</tbody>
</table>

Percentages by area may add to more than 100% because some farmers mentioned more than one problem. Question asked was "What are the major problems of farmers in this area?" (Question 27, Appendix I). Question 27 was unstructured, replies categorized during editing.

a/ 10% of Shamalon farmers reported "No major problems," bringing the total to 100%.

b/ 35% "Bad Transportation."

c/ 14% "No improved seed and fertilizer."

d/ 10% "No improved seed and fertilizer."
Problems of "poor land" and "not enough land" were mentioned by relatively few HAVA farmers. Only in Arghandab, an area of relatively high yields, did a significant number of farmers perceive poor land as a major problem.

Weeds as a problem were perceived mostly in Dund-Daman and Arghandab in Kandahar Province -- in the fruit growing area.

Insects were seldom mentioned as a problem -- only in Arghandab and Shamalon to any significant degree.

In the "Other" category, farmers in Khanishin complained about the lack of transportation in their area, and farmers in the Kandahar areas of Maiwand and Arghandab claimed improved seeds and chemical fertilizer were not sufficiently available to meet their needs.

REASONS FOR WATER SHORTAGE

Table 33 shows that over half the farmers in HAVA felt that they did not have enough water and the main reason was that there just wasn't enough water to go around during the summer months. Water shortage seemed to be more acute in Kandahar than Helmand, although essentially all farmers in Khanishin, Seraj and Musa Qala-Zamin Dawar reported water shortage.

Many farmers in areas where there had been little or no irrigation development complained of a poor (diversion) dam.a/ Farmers in developed areas who had insufficient water sometimes complained of being discriminated against because they were near the end of the irrigation ditch.

Kariz irrigation is practiced to a significant extent only in Musa Qala-Zamin Dawar, Nowzad and Maiwand, where there were significant reports of "Dry Karizes."

Economic problems causing water shortage were mentioned mostly in Arghandab and Dund-Daman. This refers primarily to lack of funds for purchasing water pumps or to pay labor for maintaining irrigation ditches.

The fact that significant numbers of farmers in developed areas (where water is adequate) reasoned their water shortage (problems were due to their being near the end of the irrigation ditch (juei)) seems to point to a need for better water policies. This sort of reasoning strikes terror into the thoughts of many development workers because it implies needed changes in local customs and power structures. However, it is an example of worthwhile gains in productivity which can be obtained through administrative and policy channels. It is encouraging to note that HAVA and particularly HAVR are aware of this problem and have mounted a campaign to institute water policy and water management reforms.

---

a/ Traditional diversion dams are rather temporary structures and frequently wash out with spring floods.
### Table 33. Water Availability, Percent of Farms Reporting Insufficient Water

<table>
<thead>
<tr>
<th>AREA</th>
<th>Percent of Farms Reporting Insufficient Water</th>
<th>Reasons For Shortage</th>
<th>Percent of Farms With Salinization Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lateral Too Small</td>
<td>End of Juni</td>
<td>Dry Kariz</td>
</tr>
<tr>
<td>HELMAND:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>49.9</td>
<td>8.0%</td>
<td>8.0</td>
</tr>
<tr>
<td>MARJA</td>
<td>14.3</td>
<td>16</td>
<td>67</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>15.0</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>DARWESHAH</td>
<td>37.5</td>
<td>7</td>
<td>-</td>
</tr>
</tbody>
</table>
| KHANISHIN             | 100.0            | 8           | -        | 8        | 30                | 90                 | 38    | 8        | 10                      | 82
| SERAJ                 | 95.7             | 18          | -        | -        | 53                | 47                 | -     | 10       | 27                      | 53
| GISHIK                | 40.0             | 10          | -        | -        | 50                | 25                 | 10    | 15       | 58                      |
| SANGUN-KAJAKAI        | 59.3             | -           | -        | 67       | -                 | -                  | -     | 33       | 54                      |
| MUSA QALA-ZAMIN DAWAR| 93.5             | 12          | 33       | 52       | 92                | -                  | 3     | 3        | 11                      |
| NOWZAD                | 100.0            | 10          | -        | 63       | 5                 | 97                 | -     | 8        | 10                      |
| KANDAHAR:             |                  |             |          |          |                   |                    |       |          |                       |
| MAIwand               | 64.5             | 9.9         | 3.9      | 10.8     | 32.0              | 33.1               | 2.3   | -        | 51.5                    |
| DUND-DAMAN            | 97.3             | 25          | 14       | 33       | 6                 | 64                 | 8     | 13       | -                       | 30
| ARGHANDAAB            | 77.5             | 7           | -        | 1        | 14                | 58                 | 34    | 2        | -                       | 73
| PANJWAI               | 76.0             | 20          | 9        | 2        | 21                | 46                 | 2     | 5        | -                       | 75
| HAYA                  | 56.0             | 11.5        | 6.3      | 13.0     | 29.6              | 56.0               | 26.4  | 16.6     | 49.8                    |

Percentages by area may add to more than 100% because some farmers mentioned more than one reason for the water shortage. Question was unstructured and replies were categorized in editing.
REASONS FOR NOT USING ALL LAND

Farmers who did not grow crops on all land gave water shortage as the major reason for not doing so. Economic problems were the only other overall significant reason. Poor land was mentioned in several areas, and fertilizer shortage was given as an important reason in Marja and Seraj. See Table 34.

REASONS FOR NOT USING CHEMICAL FERTILIZER

Reasons for not using chemical fertilizer were given as too expensive, not enough water, and fertilizer not available; in that order of importance. See Table 35

REASONS FOR NOT DOUBLE CROPPING

Respondents were asked about double cropping -- reasons for not double cropping were ascertained from those who reported no double cropping and reasons for not double cropping more land were ascertained from those who reported some double cropping. See questions 11, 12 and 13, Appendix I.

Table 36 shows that "lack of water" was the major reason for not double cropping, followed by "poor land" and "lack of capital." "Salinization" was specifically mentioned to a significant extent, and could be considered about the same as "poor land." "Reluctance" was the fifth most important reason for not double cropping. Lack of fertilizer and weed problems were mentioned by a significant number of farmers. As the farmer's awareness of modern cultural practices increases, he can be expected to recognize more and more the importance of chemical fertilizer, herbicides, pesticides and insecticides as measures enabling him to farm more intensively.

At the HAVA level, reasons for not double cropping more land followed the same pattern as reasons for not double cropping any land. "Poor land" and "lack of capital" were relatively more important. See Table 37

Water shortage has shaped up as the major problem, even though HAVA is certainly beset by water shortage to a much lesser extent than Afghanistan as a whole. As previously mentioned, many farmers probably complain of water shortage out of habit, or according to tradition. However, water shortage, in its several manifestations, is still a major problem in HAVA.
### TABLE 3L. PERCENT OF FARMS W/CROPS ON ALL IRRIGABLE LAND AND REASONS FOR THOSE NOT GROWING CROPS ON ALL LAND, IN PERCENTS, BY AREA

<table>
<thead>
<tr>
<th>AREA</th>
<th>Percent Crops on All Land</th>
<th>Reasons for Not Growing Crops on All Land</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Labor Shortage</td>
</tr>
<tr>
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<td>37.0</td>
<td>1.4%</td>
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<tr>
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<td>40</td>
<td>4</td>
</tr>
<tr>
<td>MARJA</td>
<td>48</td>
<td>-</td>
</tr>
<tr>
<td>SHAMALON</td>
<td>48</td>
<td>4</td>
</tr>
<tr>
<td>DAWESHAN</td>
<td>55</td>
<td>-</td>
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<tr>
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<td>2</td>
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<td>28</td>
<td>-</td>
</tr>
<tr>
<td>GIRISHK</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>SANGUIN-KAJAKI</td>
<td>43</td>
<td>-</td>
</tr>
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<td>MUSA QALA-ZAMIN DAWAR</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>NOWZAD</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>KANDAHAR:</td>
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<td>1.4</td>
</tr>
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<td>-</td>
</tr>
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<td>-</td>
</tr>
<tr>
<td>HAVA</td>
<td>37.1</td>
<td>1.4</td>
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</table>

Area percentages may add to more than 100% as some respondents cited more than one reason.
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<th>Too Expensive</th>
<th>Not Available</th>
<th>Poor Land</th>
<th>No Water</th>
<th>Used Manure</th>
<th>Other</th>
<th>No Reply</th>
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<tbody>
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<td>18.1</td>
<td>2.1</td>
<td>9.0</td>
<td>30.1</td>
</tr>
<tr>
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<td>-</td>
<td>7</td>
<td>27</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>MARJA</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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</table>

Area percentages may add to more than 100% as some respondents cited more than one reason.

\[\text{a/ Not informed about the advantages of chemical fertilizer.}\]
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<th>AREA</th>
<th>Lack of Water</th>
<th>Poor Land</th>
<th>Reluc-</th>
<th>Lack of Fertilizer</th>
<th>Lack of Capital</th>
<th>Salini-</th>
<th>Weeds</th>
<th>Other</th>
<th>No Reply</th>
</tr>
</thead>
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<td>-</td>
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<td>6.0</td>
<td>.9</td>
<td>11.7</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Per cents may add to more than 100% because some respondents reported more than one reason for not double cropping.
<table>
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<th>AREA</th>
<th>Lack of Water</th>
<th>Poor Land</th>
<th>Reluctance</th>
<th>Lack of Fertilizer</th>
<th>Lack of Capital</th>
<th>Salinization</th>
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<td>9.3</td>
<td>4.5</td>
<td>8.2</td>
<td>18.6</td>
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</tbody>
</table>

Percents may add to more than 100% because some respondents reported more than one reason for not double cropping more land.
Data from the Farm Economic Survey, as reported in the foregoing chapters, was obtained from a random sample of HAVA farms, and reported on a per farm, or average per farm, basis. In order to obtain data for the universe (HAVA) the total number of farms must be known, or estimated. Unfortunately, this statistic is not available. However, HAVR has what are believed to be reliable estimates of cropland for the ten Helmand areas and four Kandahar areas. When total cropland per area is divided by average cropland per farm (FES Table 8) an estimate of number of farms is obtained, as shown in Table 38.

For expansion purposes, number of farms per sub-area, obtained by division, are assumed to be correct, and are added to obtain number of farms for Helmand, Kandahar and subsequently for HAVA. The reader will note that number of farms in Helmand, Kandahar and HAVA, obtained by addition, do not agree with the number as obtained by dividing total cropland by cropland per farm for Helmand, Kandahar and HAVA. This is because average cropland per farm for Helmand, Kandahar and HAVA, as reported in Tables 8 and 9, are averages weighted by sample size. Since sample size is not in proportion to number of farms per area or to amount of cropland per area (these were unknown quantities at time of enumeration), a more appropriate weighting of cropland per farm can be obtained by dividing total cropland by number of farms in Helmand, Kandahar and HAVA as obtained by addition. See Table 38 for derivation of number of farms and adjusted average cropland per farm figures. Table 45 shows other adjusted statistics for Helmand, Kandahar and HAVA; reweighted by estimated number of farms.

POPULATION

Table 38 also shows how number of farms is used to expand FES data, in this case - average family size from Table 5. Family size times number of farms by areas within Helmand and Kandahar yields farm population by area. These are added to obtain subtotals and total for HAVA, and, when divided back by the appropriate numbers of farms, provide revised averages of family size for Helmand, Kandahar and HAVA. These revised averages differ from those in Table 5 in that they are weighted by estimated number of farms rather than by sample size.

Population figures shown in Table 38 do not include bazgars, bazgar families or farm laborers, nor do they include the non-farm population (urban or city dwellers, rural artisans, officials, etc.). Although many farm laborers and some bazgars have already been counted as members of farm families, an estimate of bazgar families might give
### Table 38. Derivation of Number of Farms and Expansion of Farm Family Sample Data in Hava, by Area - 1970

<table>
<thead>
<tr>
<th>AREA</th>
<th>Total Cropland/ Hectares</th>
<th>Average Cropland per Farm Hectares</th>
<th>Number of Farms</th>
<th>Expansion of Farm Families</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>Table 8, FES</td>
<td>First Approximation</td>
<td>Final Adjustment</td>
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<tr>
<td>HELMAND:</td>
<td></td>
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<td>(2)</td>
<td>(3)</td>
</tr>
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<td>3,363</td>
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<td>1,947</td>
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<td>MAIWAND</td>
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<td>8.32</td>
<td>613</td>
<td>613</td>
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<td>10.75</td>
<td>1,250</td>
<td>1,250</td>
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<td>10,890</td>
<td>3.69</td>
<td>2,967</td>
<td>2,967</td>
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<td>130,060</td>
<td>6.55</td>
<td>19,856</td>
<td>24,498</td>
</tr>
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</table>

a/ Total cropland estimates provided by HAVR.

b/ Not including bazgars and hired laborers.
Pomegranates in the Marja Area

Demonstrating an Improved Ox-Drawn Plow to HAVA Farmers
Kajakai Dam and Reservoir Regulate the Flow of the Helmand River, Assuring an Even Supply of Irrigation Water to Thousands of HAVA Farmers and Providing Electrical Power for a Large Portion of Southern Afghanistan
a clearer picture of farm population in HAVA.

<table>
<thead>
<tr>
<th>Area</th>
<th>Farm Population (Table 38)</th>
<th>Bazgar Population a/</th>
<th>Farm Population Including Bazgars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmand</td>
<td>175,502</td>
<td>.764</td>
<td>112,381</td>
</tr>
<tr>
<td>Kandahar</td>
<td>74,301</td>
<td>1.968</td>
<td>96,211</td>
</tr>
<tr>
<td>HAVA</td>
<td>249,803</td>
<td>---</td>
<td>208,592</td>
</tr>
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</table>

a/ No. bazgars per farm from 1970 FES. Estimated bazgar family size = 8 provided by HAVR.

LAND USE

Table 39 is an expansion of parts of Table 8, showing total crop land in HAVA by area, land in wheat and other field crops, land in fruits - nuts - vegetables and area double cropped. Total land in farms and idle land can be easily obtained, if necessary, by multiplying number of farms in each area (col. 5, Table 38) times data in the appropriate column of Table 8. Data for subtotals and total must be obtained by addition rather than multiplication, as explained above.

LAND IN CROPS

Expansion of data from Table 9 was done for all areas in HAVA.

See Table 40 for total land devoted to production of various crops in 1970.

LIVESTOCK NUMBERS

Expansion of data from Tables 26 and 27 shows only livestock owned by farmers, excluding livestock owned by nomads. Most of the camels in HAVA are owned by nomads, as are a large proportion of the cattle and even fewer draft animals.

See Table 41 for estimates of farm livestock holdings in HAVA.

VALUE OF PRODUCTION, NET FARM INCOME AND SALES

Table 42 shows the value of important crops and income producing livestock in HAVA, by province and project area. Total value of production and net farm income are also shown. Expanded data for value of other crops, for costs of production, gross farm income, and off-farm income can be obtained by multiplying number of farms (Table 38) times average farm data in Tables 23, 24 and 25. Adjusted data for Helmand, Kandahar and HAVA are shown in Tables 45 and 46. Table 42 shows total value of production of over 1.3 billion afs and a net farm income in excess of .9 billion afs. Table 43 shows farm sales of almost .43 billion afs which is about one third of total value of production.
<table>
<thead>
<tr>
<th>AREA</th>
<th>Area</th>
<th>Cropland</th>
<th>Wheat</th>
<th>Other Field Crops</th>
<th>Fruits, Nuts &amp; Vegetables</th>
<th>Land in Crops</th>
<th>Area Double Cropped</th>
</tr>
</thead>
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<td></td>
<td></td>
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<td>14,107</td>
<td>797</td>
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Area figures may not add across due to rounding.
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<th>Wheat Impro</th>
<th>Corn Local</th>
<th>Corn Impro</th>
<th>Cotton Local</th>
<th>Cotton Impro</th>
<th>Mung Beans</th>
<th>Barley Crops</th>
<th>Other Field Crops</th>
<th>Grapes</th>
<th>Pomegranates</th>
<th>Apricots</th>
<th>Other Fruits, Nuts &amp; Melons</th>
<th>Vegetables</th>
</tr>
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<td>503</td>
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</table>

**TABLE 40.** LAND IN CROPS - HECTARES PER AREA
### TABLE 4.1. LIVESTOCK - NO. BY AREA

<table>
<thead>
<tr>
<th>AREA</th>
<th>Milk Cows</th>
<th>Chickens</th>
<th>Other</th>
<th>Oxen</th>
<th>Donkey</th>
<th>Horse</th>
<th>Camel</th>
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<tbody>
<tr>
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<td>Improved</td>
<td>Sheep</td>
<td>Goats</td>
<td>Local</td>
<td>Improved</td>
<td>Fowl</td>
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<td>Corn</td>
<td>Grapes</td>
<td>Pomegranates</td>
<td>Apricots</td>
<td>Milk Cows</td>
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<td>-</td>
<td>-</td>
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<td>98,404</td>
<td>286,812</td>
<td>46,222</td>
<td>30,623</td>
<td>61,008</td>
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a/ Includes off-farm income.

b/ Unusually large amount of off-farm income in Dund-Daman (58,016,250 Afs).
<table>
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<tr>
<th>AREA</th>
<th>Wheat</th>
<th>All Other Field Crops</th>
<th>Grapes</th>
<th>Other Fruits, Nuts &amp; Vegetables</th>
<th>Livestock</th>
<th>Miscellaneous</th>
<th>Total</th>
</tr>
</thead>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADI ALI</td>
<td>53,003</td>
<td>90,869</td>
<td>14,006</td>
<td>12,734</td>
<td>5,703</td>
<td>5,077</td>
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<td>8,523</td>
<td>438</td>
<td>538</td>
<td>1,251</td>
<td>163</td>
<td>29,553</td>
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<tr>
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<td>22,609</td>
<td>5,872</td>
<td>4,971</td>
<td>398</td>
<td>163</td>
<td>43,868</td>
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<td>15,314</td>
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<td>-</td>
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<td>3,650</td>
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<td>168</td>
<td>184</td>
<td>52</td>
<td>30,254</td>
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<td>-</td>
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<td>1,879</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KANDAHAR:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MAIWAND</td>
<td>14,665</td>
<td>11,372</td>
<td>42,381</td>
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<td>630</td>
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<td>243,025</td>
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<td>472</td>
<td>5,109</td>
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<td>-</td>
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<td>5,241</td>
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<td>5,714</td>
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<td>64,105</td>
<td>288</td>
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<td>1,550</td>
<td>49,133</td>
<td>126</td>
<td>55</td>
<td>52,453</td>
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</table>
FARMS USING IMPROVED SEEDS AND FERTILIZER

In 1970, 4,212 HAVA farms (about 17 percent) used improved seeds and 5,632 (23 percent) used chemical fertilizer, according to Table 44 which is an expansion of data in Tables 15 and 16. This is probably far above the national average for fertilizer and improved seed use.
<table>
<thead>
<tr>
<th>AREA</th>
<th>All Crops</th>
<th>Wheat</th>
<th>Corn</th>
<th>Cotton</th>
<th>Fruit</th>
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<td></td>
<td>Improved Seed</td>
<td>Chemical Fertilizer</td>
<td>Improved Seed</td>
<td>Chemical Fertilizer</td>
<td>Improved Seed</td>
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<td>504</td>
<td>437</td>
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<td>458</td>
<td>152</td>
<td>198</td>
<td>46</td>
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<td>-</td>
<td>24</td>
<td>-</td>
</tr>
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<td>31</td>
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<td>-</td>
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<tr>
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<td>518</td>
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<td>872</td>
<td>678</td>
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<td>42</td>
<td>106</td>
<td>42</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>KANDAHAR:</td>
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<td>98</td>
<td>-</td>
<td>-</td>
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<td>162</td>
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<td>237</td>
<td>237</td>
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<td>-</td>
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<td>4,136</td>
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</table>

\[ a/ \] The 1970 FES assumes all, or nearly all cotton seed in HAVA is of an improved variety.
TABLE 45a. REVISED DATA FOR HELMAND, KANDAHAR AND HAVA

AVERAGE PER FARM

WEIGHTED BY ESTIMATED NUMBER OF FARMS PER AREA

<table>
<thead>
<tr>
<th></th>
<th>HELMAND</th>
<th>KANDAHAR</th>
<th>HAVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Farm Size - Hectares</td>
<td>7.33</td>
<td>12.15</td>
<td>8.53</td>
</tr>
<tr>
<td>Cropland per Farm - Hectares</td>
<td>4.90</td>
<td>6.54</td>
<td>5.31</td>
</tr>
<tr>
<td>Area Double Cropped - Hectares</td>
<td>.57</td>
<td>.28</td>
<td>.49</td>
</tr>
<tr>
<td>Land in Crops - Hectares</td>
<td>5.48</td>
<td>6.81</td>
<td>5.81</td>
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<tr>
<td>Family Size - No. Persons</td>
<td>9.54</td>
<td>12.43</td>
<td>10.26</td>
</tr>
<tr>
<td>Area Planted - Hectares:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat - Local</td>
<td>3.55</td>
<td>3.67</td>
<td>3.58</td>
</tr>
<tr>
<td>Wheat - Improved</td>
<td>.31</td>
<td>.10</td>
<td>.26</td>
</tr>
<tr>
<td>Corn - Local</td>
<td>.49</td>
<td>.32</td>
<td>.45</td>
</tr>
<tr>
<td>Corn - Improved</td>
<td>.05</td>
<td>-</td>
<td>.04</td>
</tr>
<tr>
<td>Cotton</td>
<td>.33</td>
<td>.04</td>
<td>.25</td>
</tr>
<tr>
<td>Alfalfa &amp; Clover</td>
<td>.21</td>
<td>.28</td>
<td>.23</td>
</tr>
<tr>
<td>Mung Beans</td>
<td>.15</td>
<td>.06</td>
<td>.13</td>
</tr>
<tr>
<td>Barley</td>
<td>.08</td>
<td>.21</td>
<td>.12</td>
</tr>
<tr>
<td>Other Field Crops</td>
<td>-</td>
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<td>.03</td>
</tr>
<tr>
<td>Grapes</td>
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<tr>
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<td>.02</td>
<td>.19</td>
<td>.06</td>
</tr>
<tr>
<td>Apricots</td>
<td>.02</td>
<td>.18</td>
<td>.06</td>
</tr>
<tr>
<td>Other Fruits, Nuts and Melons</td>
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<td>.17</td>
<td>.13</td>
</tr>
<tr>
<td>Vegetables</td>
<td>.04</td>
<td>.11</td>
<td>.06</td>
</tr>
<tr>
<td>No. Animals Per Farm:</td>
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<td>1.19</td>
<td>1.25</td>
</tr>
<tr>
<td>Milk Cows - Improved</td>
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<td>.06</td>
<td>.06</td>
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<td>Chickens - Local</td>
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<td>3.57</td>
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<tr>
<td>Chickens - Improved</td>
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<td>1*2/</td>
<td>.07</td>
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<tr>
<td>Sheep</td>
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*1* - Insignificant amount.
<table>
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<th>KANDAHAR</th>
<th>HAVA</th>
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</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>Wheat</td>
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<td>23,135</td>
<td>23,977</td>
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<tr>
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<tr>
<td>Corn</td>
<td>4,671</td>
<td>1,877</td>
<td>3,974</td>
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<tr>
<td>Grapes</td>
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<td>32,189</td>
<td>10,791</td>
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<td>634</td>
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<tr>
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<tr>
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<td>103</td>
<td>259</td>
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<tr>
<td>Miscellaneous</td>
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<td>579</td>
</tr>
<tr>
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<td>39,769</td>
<td>17,325</td>
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<td>16,765</td>
<td>6,240</td>
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<tr>
<td>Gross Income - Afs</td>
<td>46,632</td>
<td>100,913</td>
<td>60,174</td>
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<td>HELMAND</td>
<td>KANDAHAR</td>
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<td>---------</td>
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<tr>
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\(a/\) In case of average yields, weighting by number of farms per area, as in this table, may be less appropriate than weighting by relative importance of crop per area. See Table 11.
APPENDIX I

1970 FES FIELD SCHEDULE

English Version

Code No.________________________ Schedule No.________________________

Interviewer's Name:________________________

1. Village __________________ Area __________________ Region __________________ Province __________________

2. Number in Family ________________

3. Males: 0-12 years __________ 13 and over __________

4. Able to work in fields: 0-12 __________ 13 and over __________

* 6. For Tenants Only:

   Yes  No
   Do you provide seed? _______ _______
   Do you provide oxen? _______ _______
   Do you provide labor? _______ _______
   Do you provide water? _______ _______

7. Number Jeribs farmed, not owned __________
   Number Jeribs rented in __________
   Number Jeribs shared in __________
   Number Jeribs reared in __________

8. For Owners Only:

   No. Jeribs owned __________
   No. Jeribs rented out __________
   No. Jeribs shared out __________
   No. Jeribs reared out __________
   No. Jeribs planted by owner __________
   No. Jeribs planted by others __________
   No. Jeribs idle land __________
   No. keshtegars __________
   No. bazgars __________

9. Crop  Jeribs  Yield  Total Production  Tenant's Share

   Local Wheat
   Improved Wheat
   Barley
   Cotton
   Rice
   Clover
   Alfalfa
   Chick Peas
   Local Corn
   Improved Corn
   Mung Beans
   Other

   Grapes
   Pomegranates
   Apricots
   Peaches
   Figs
   Almonds
   Peanuts
   Other

   * No Question 5 due to mistake in numbering.
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</table>

11. Did you double crop last year? YES ____ NO ____

12. How many jeribs:
   - Corn ________
   - Cotton ________
   - Mung Beans ________
   - Other ________

13. a) If yes, why not more?
   b) If no, why not?

14. Did you have any income from sources other than farming? YES ____ NO ____
   How much? _______
   Source of income or place of employment _________________
   (Be sure to list all sources)

* 

16. LIVESTOCK NUMBER VALUE
   - Oxen
   - Local Cattle
   - Improved Cattle
   - Sheep
   - Donkeys
   - Horses
   - Camels
   - Goats
   - Local Chickens
   - Improved Chickens
   - Turkeys
   - Geese & Ducks
   - Other

17. SALES
   PRODUCT Quantity Unit Unit Price Total Price Sold To
   - Wheat
   - Cotton
   - Corn
   - Barley
   - Rice
   - Mung Beans
   - Grapes
   - Raisins
   - Pomegranates
   - Apricots
   - Dried Apricots
   - Peaches
   - Figs

* Due to mistake in numbering, there is no question 15.
17. **SALES** continued

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</table>

18. Did you use commercial fertilizer last year? YES ___ NO ___
   a) If yes, on what crops? ____________________________
   b) If no, why not? ____________________________
   c) Did you use gypsum on your land last year? YES ___ NO ___

19. Did you use improved seed last year? YES ___ NO ___
   a) If yes, how many jeribs wheat? ________
   b) If yes, how many jeribs corn? ________
   c) If yes, how many jeribs cotton? ________

20. Has your land ever been leveled? YES ___ NO ___
    If yes, by whom and by what method? __________________

21. Did you borrow money last year? YES ___ NO ___
    a) If yes, for what purposes: Consumption ___ Production ___
       Fertilizer ___ Seed ___ Other ___
    b) If yes, from what sources: Friends and relatives ______
       Bank ___ Rich People ___ HAVA ___

22. **EQUIPMENT**

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**"**

24. Last year how many times did you irrigate: Mung Beans ______?  
   Cotton ______?  
   Wheat ______?  
   Corn ______?  

25. Do you have enough water? YES ___ NO ___
   a) If no, why not? ____________________________

* No question 23 due to mistake in numbering.
26. How much could you sell your irrigated farm land for? 
________________ Afghanis.

27. What are the major problems of farmers in this area?

28. Do you grow crops on all your land? YES __ NO __
   a) If no, why not? ____________________________

29. Has salt lowered the productivity of your land? YES __ NO __
APPENDIX 11

د مصاحبه کوئنی نوم یخ یک

1. غیر از نیمه‌یازد صاحب

2. ریک‌های سالنویس گروه شمشیر

3. دواستارنویس سنین 1

4. پیامدهای مولفی‌های اکبری

5. کوئنی گروه

الف. خمیشه

نبه

6. کوئنی لیاره

الف. خمیشه کوئنی تاکلیف در هوا می‌گردد

ب. دلشادگی می‌بخشند کولاید دو راهی پرست

ج. خودت گزارشیدن کوئنی موسیقی‌پخش یک دیوانیما

مکان

7. دکتر لیاره نامه کوئنی توله جریب چی کر سپره

الف. همه مکانی که تاکلیف دو هوریش در یک باره می‌ده

ب. دلشادگی که تاکلیف دو راهی پرست

ج. خودت گزارشیدن کوئنی موسیقی‌پخش یک دیوانیما

مکان

8. دکتر لیاره نامه کوئنی توله جریب چی کر سپره

الف. توله مکانی که تاکلیف دو هوریش در یک باره می‌ده

ب. دلشادگی که تاکلیف دو راهی پرست

ج. خودت گزارشیدن کوئنی موسیقی‌پخش یک دیوانیما

مکان

9. دکتر لیاره نامه کوئنی توله جریب چی کر سپره

الف. توله مکانی که تاکلیف دو هوریش در یک باره می‌ده

ب. دلشادگی که تاکلیف دو راهی پرست

ج. خودت گزارشیدن کوئنی موسیقی‌پخش یک دیوانیما

مکان

tedad کیست

بر می‌گردد

93
<p>| بیمه‌گذاری | جامعه‌های استان-شهر | توجهات و توصیعات | برخه‌ها | میرزا | باید | کاهو | خاصیت \ خاکی | بالک | کادر | کد و | بانجن | بادنگی | کد و | بانجن | کاهو | مرچک | شلغم | خیر خیال | گذته | نیم | نور | بینجی | سوپر | رویان | این‌لیست |</p>
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**توضیحات:**

- فرم: فرم محصولات
- واردات: تعداد واردات
- یک‌ها: تعداد یک‌ها
- دوباره: تعداد دوباره
- کیفیت: کیفیت محصول
- عدد: عدد محصول
- شکسته: تعداد شکسته
- شوی: تعداد شوی
- مقدار: مقدار محصول
- کیفیت: کیفیت دوباره
- دوباره: تعداد دوباره
- یک‌ها: تعداد یک‌ها
- واردات: تعداد واردات
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## APPENDIX III

### VILLAGES SURVEYED

Number of Villages, by Area

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## APPENDIX IV

### FERTILIZER AND IMPROVED WHEAT SEED DISTRIBUTION

<table>
<thead>
<tr>
<th>AREA</th>
<th>Urea Bags</th>
<th>Urea Metric Tons</th>
<th>D.A.P. Bags</th>
<th>D.A.P. Metric Tons</th>
<th>Mexipak</th>
<th>17778</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nadi Ali</td>
<td>21,133</td>
<td>1,056.65</td>
<td>10,750</td>
<td>537.50</td>
<td>6,200</td>
<td>5,672</td>
</tr>
<tr>
<td>Babaji</td>
<td>3,500</td>
<td>175.00</td>
<td>1,500</td>
<td>75.00</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Marja</td>
<td>11,250</td>
<td>562.50</td>
<td>5,350</td>
<td>267.50</td>
<td>5,660</td>
<td>2,152</td>
</tr>
<tr>
<td>Shamalon</td>
<td>6,000</td>
<td>300.00</td>
<td>3,000</td>
<td>150.00</td>
<td>22,400</td>
<td>3,186</td>
</tr>
<tr>
<td>Darweshan</td>
<td>2,661</td>
<td>133.05</td>
<td>1,420</td>
<td>71.00</td>
<td>13,000</td>
<td>4,675</td>
</tr>
<tr>
<td>Girishk</td>
<td>6,783</td>
<td>399.15</td>
<td>3,463</td>
<td>173.15</td>
<td>9,750</td>
<td>1,177</td>
</tr>
<tr>
<td>Sanguin</td>
<td>10,279</td>
<td>513.95</td>
<td>5,109</td>
<td>255.45</td>
<td>3,000</td>
<td>---</td>
</tr>
<tr>
<td>Kajakai</td>
<td>2,248</td>
<td>112.40</td>
<td>1,133</td>
<td>56.65</td>
<td>3,130</td>
<td>---</td>
</tr>
<tr>
<td>Musa Qala</td>
<td>1,168</td>
<td>58.40</td>
<td>584</td>
<td>29.20</td>
<td>4,140</td>
<td>---</td>
</tr>
<tr>
<td>Seraj</td>
<td>738</td>
<td>36.90</td>
<td>269</td>
<td>13.45</td>
<td>2,926</td>
<td>---</td>
</tr>
<tr>
<td>Kandahar</td>
<td>7,000</td>
<td>350.00</td>
<td>3,600</td>
<td>180.00</td>
<td>16,000</td>
<td>2,300</td>
</tr>
<tr>
<td></td>
<td>72,760</td>
<td>3,638.00</td>
<td>36,178</td>
<td>1,808.90</td>
<td>86,240</td>
<td>19,162</td>
</tr>
</tbody>
</table>

Total No. 50 kg. bags of urea & D.A.P. = 108,938

Total No. metric tons of urea & D.A.P. = 5,446.9

Total muns improved wheat distributed = 105,402

Total metric tons improved wheat distributed = 479

Data provided by Shah Mohammed, Director General of Agriculture Extension & Forestry - January 1971

Distributed in 1970 during planting season Oct.-Dec. for wheat crop harvested in May 1971
## APPENDIX V

**SCHEDULE OF PRICES USED IN EVALUATING PRODUCTION FOR 1970 FES\(^a/\)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Helmand</th>
<th>Kandahar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Wheat</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Improved Wheat</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>Local Corn</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>Improved Corn</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>Cotton</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Mung Beans</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Barley</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Forage</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tobacco</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Rice</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Grapes</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>Pomegranates</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Apricots</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Mulberries</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Peaches</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Almonds</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Apples</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Melon</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Watermelon</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Carrots</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Onions</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Eggplant</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Spinach</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Leeks</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Garlic</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Okra</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Pepper</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

\(^a/\) Afs per mon.
## APPENDIX VI

### Helmand Depreciation Schedules

<table>
<thead>
<tr>
<th>Cost</th>
<th>Salvage Value</th>
<th>Useful Life</th>
<th>Depreciation Afs Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxen</td>
<td>7,400</td>
<td>2,140</td>
<td>8.9</td>
</tr>
<tr>
<td>Donkey</td>
<td>871</td>
<td>105</td>
<td>9.0</td>
</tr>
<tr>
<td>Camel</td>
<td>7,014</td>
<td>1,593</td>
<td>11.1</td>
</tr>
<tr>
<td>Horse</td>
<td>5,480</td>
<td>621</td>
<td>12.7</td>
</tr>
<tr>
<td>Plow</td>
<td>253</td>
<td>43</td>
<td>2.1</td>
</tr>
<tr>
<td>Mallah</td>
<td>50</td>
<td>43</td>
<td>2.0</td>
</tr>
<tr>
<td>Shovel</td>
<td>75</td>
<td>43</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### Kandahar Depreciation Schedules

<table>
<thead>
<tr>
<th>Cost</th>
<th>Salvage Value</th>
<th>Useful Life</th>
<th>Depreciation Afs Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxen</td>
<td>6,567</td>
<td>1,973</td>
<td>8.6</td>
</tr>
<tr>
<td>Donkey</td>
<td>1,537</td>
<td>243</td>
<td>10.0</td>
</tr>
<tr>
<td>Camel</td>
<td>6,000</td>
<td>1,825</td>
<td>10.1</td>
</tr>
<tr>
<td>Horse</td>
<td>5,600</td>
<td>1,900</td>
<td>14.7</td>
</tr>
<tr>
<td>Plow</td>
<td>344</td>
<td>30</td>
<td>3.2</td>
</tr>
<tr>
<td>Mallah</td>
<td>72</td>
<td>12</td>
<td>3.2</td>
</tr>
<tr>
<td>Shovel</td>
<td>84</td>
<td>10</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*Note: "Other Equipment" (Harness, tools, etc.) is depreciated on the basis of 8.25 afs per jerib of cropland or 42.61 afs per hectare of cropland. Other items calculated by straight line method on the basis of data from Supplemental Survey, as shown above.*
APPENDIX VII
COST FACTORS

Wheat Seed - 105 afs per jerib (3 1/2 seers per jerib times 30 afs) or 542 afs per hectare times average land in wheat in Helmand and Kandahar.

Other Seed - 50 afs per jerib or 258 afs per hectare times average land in field crops other than wheat.

Livestock Feed - Cost (see below) times average work animals per farm, by area.

- oxen - 2,500 afs
- camel - 500 afs
- donkey - 300 afs
- horse - 600 afs

Note: Cost of feed for income producing animals (milk cows, sheep, chickens, etc.) has been considered against gross income per head to provide a net income per animal for the Returns Section of Chapter IV.

Fertilizer and Chemicals - 250 afs per jerib or 1,290 afs per hectare times average land in improved wheat, improved corn and cotton in Helmand. Kandahar same as Helmand but add 100 afs per jerib or 517 afs per hectare times average land in fruits, nuts and vegetables.

Land Tax - 10 afs per jerib or 51.65 afs per hectare in Helmand and Kandahar.

Interest on Borrowed Money - 20 percent per annum in Helmand and Kandahar.

Hired Labor

<table>
<thead>
<tr>
<th>Hired Labor</th>
<th>Daily Rate</th>
<th>Man-days</th>
<th>afs per jerib</th>
<th>afs per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmand</td>
<td>39.48</td>
<td>2.56</td>
<td>101.0</td>
<td>521</td>
</tr>
<tr>
<td>Kandahar</td>
<td>38.92</td>
<td>1.27</td>
<td>49.4</td>
<td>255</td>
</tr>
</tbody>
</table>

The above rates are applied to average cropland per farm by area.

Bazgar Labor - Helmand - 20 percent of Value of Field Crops, Melons and Vegetables times average number of bazgars per farm.

Kandahar - 10 percent of Total Value of Production times average number of bazgars per farm.