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SOCIO ECONOMIC PROFILE
OF
KURRAM AGENCY

FINAL VERSION

SOCIO-ECONOMIC PROFILE

OF

KURRAM AGENCY

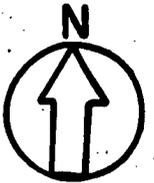
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and Development
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KURRAM AGENCY



UPPER KURRAM

MALANA
ZERAN
YUSUF KHEL KHELI
PARACHINAR
ZIARAT KHELI
MALI KHELI
SULTAN
MAHURA
CHARBINA

SAYID AKBAR
BUSERA

F. R. KURRAM

SADDA

SATIN

DOGAR

MURGHAN

ARAWALI

CHINARAK

SANGROBA

LOWER KURRAM

ALIZAI

LEGEND

INTERNATIONAL BOUNDARY	-x-x-
TRIBAL BOUNDARY	-·-·-
SUB-DIVISION BOUNDARY	-·-·-
METALLED ROAD	—
SHINGLED ROAD	- - -

EXECUTIVE SUMMARY

Geography and Climate

The Agency borders Afghanistan in the north and west, Kohat in the southeast, North Waziristan in the south and Khyber and Orakzai Agencies in the east. The principal river is the Kurram river, which enters the Agency in the northwest, flows due east for about ten miles, then turns southeast and finally south, leaving the Agency by Chappri. Principal tributaries of the Kurram are the Kirman and Khurmana. All are subject to flooding, leading to erosion of the agricultural land on their banks. The northwestern tehsil of Upper Kurram is characterized by the very high Safed Koh mountains in the north, the Parachinar plain, and the Kurram river acting as a boundary with Lower Kurram. Much of the plain is barren due to the lack of water, but annual floods have cut sharp ravines through the basin. The southwestern tehsil of Lower Kurram is characterized by the fertile Kurram river valley, with hills on either side. The third tehsil of FR Kurram which lies to the east is very hilly, with limited agricultural land and water.

Parachinar receives about 30 inches of rainfall per annum. Rainfall decreases as one moves south through the Agency. Winters are cold at Parachinar and mild in summer; it is warmer in Lower Kurram.

Periodic hail storms and flooding can be very damaging to crops.

Administration and Economy

There are three tehsils: Upper Kurram, Lower Kurram and FR Kurram. The first two have long been administered territory. Their geography is more accessible and the largely Shi'a residents in Upper Kurram requested British protection at the end of the Nineteenth Century. Land records exist for most of the farmed area in these two tehsils, although a settlement has not been carried out since the 1940s. FR Kurram has been inaccessible terrain until much more recently. It remains the least tractable of the three tehsils, and government officials remain reluctant to work there. Its level of development lags substantially behind that of the other two tehsils, but efforts are being made to catch up the area. It is only within the last ten years that the first access roads into FR Kurram were completed. Roads of course have made possible the provision of other services, such as education and health.

There are no general indicators that yield information concerning income, employment, migration, or the degree of illicit activity (smuggling). Agriculture and remittances are probably the economic mainstays. Pressure on scarce land resources has led to considerable migration to settled areas of Pakistan and the Gulf.

Opportunities for overseas employment, however, are far more limited now than they were in the 1970s. Remittances have in general not been invested in productive activities, except perhaps for the purchase of trucks or tractors. Land prices in Upper and Lower Kurram are very high. There is very little cottage industry or manufacturing activity - some raising of silk cocoons, production of items from mazri (dwarf palm), and small scale sheet metal working and the like. The principal bazaars are Sadda, Parachinar and Dogar. Sadda has grown enormously in the past ten years due to the concentration of refugees in its neighborhood, while Dogar is an important market for smuggled goods and arms.

Population

The 1981 census recorded Kurram's population as 294,000. Approximately 44% of the population is said to be Shi'a, and the balance Sunni. The Shi'a population is in a majority in Upper Kurram. Lower Kurram has a slight majority of Sunnis, while FR Kurram is almost entirely Sunni in population. Upper Kurram contains 40% of the Agency's population, Lower Kurram 18%, and FR Kurram 42%. Population density overall in 1981 was 87 persons per sq. km. This is not a helpful figure since rough terrain in many parts of the Agency limits the agrarian land base. Reliable figures for cultivated acreage do not exist for FR Kurram, but for Upper and Lower Kurram together, density was 4 persons per cultivated acre in 1981, or about the same as in the Peshawar valley. Density per cultivated acre may be higher in FR because, while it is a bigger area, it has a large population and a very limited land base.

The presence of huge numbers of refugees over the last decade has altered the population structure of the Agency. Most of the 350,000 refugees based in the Agency live in Lower Kurram, dramatically increasing density in that tehsil. Refugees outnumber locals in Lower Kurram, and have essentially doubled the population of the Agency. This has had a deleterious effect on grazing land and forestry reserves. The presence of refugees has also exacerbated tensions between the Shi'a and Sunni population in Upper and Lower Kurram.

Literacy is low. In 1981, 18% of the males in Upper Kurram were literate, 15% in Lower Kurram and only 2.5% in FR Kurram. The female rate was less than 1%. Progress has been made in increasing educational opportunities since that time and there is growing interest in education. Still, these statistics indicate a population that is ill equipped to move beyond subsistence agriculture and unskilled trades and commerce.

In 1981, 46% of the population was under fifteen years of age. The dependency ration would probably be even higher now.

Land Use and Agriculture

Among tribal agencies, only Bajaur has a higher proportion of cultivated to total area than Kurram, and Kurram has better surface water possibilities. Upper and Lower Kurram have good agricultural potential. FR Kurram's potential is limited but it appears to have escaped some of the plant diseases and pests that plague farmers in Upper and Lower Kurram.

As noted above, the amount of agricultural land in FR Kurram is not known. In Upper and Lower Kurram combined, roughly 41,000 acres of land are cultivated. Approximately 53% of the cultivated area in these two tehsils can be double cropped. The best farm land borders the Kurram river, but riverain land is subject to constant alluvial- diluvial action.

Farm size generally is small and farms are fragmented. In 1980, approximately 61% of the farms were less than 2.5 acres in size. Between ten and eleven per cent of the farms were tenant-operated in that year. In Upper and Lower Kurram, wheat is the dominant crop. Rice and maize hold roughly equal importance as Rabi crops but vegetables are gaining ground. Rice acreage has decreased since the beginning of the century, presumably because of its high demand for water. Maize acreage appears to have declined in the last five years. The rice grown is a coarse variety considered to be high yielding by Pakistani standards. Maize yields appear to be lower than they are in any other Agency except Orakzai, while wheat yields seem to be higher than in many other tribal agencies. Local and low yielding varieties of maize predominate. Wheat varieties grown are a mix of Mexipak and local ones. Barley acreage has increased in the last five years due to the demand of refugees for fodder. Mong is a staple part of the diet and so is an important crop. Kidney beans are gaining farmer interest. Orchard crops have become increasing important on the Parachinar plain, with apple and walnut predominating. In FR Kurram, maize, some wheat and potatoes are grown.

Farm practices are generally poor. Use of fertilizer and agrochemicals is very limited. Tomatoes and potatoes are often planted improperly. There appears to be very limited understanding of proper orchard management.

Access to improved grain seed is very difficult. There are no commercial outlets in the Agency. The Agriculture Department receives a tiny amount of wheat and maize seed for sale each year but amounts are too small to have much of an impact. Farmers can sometimes buy seed in Kohat but they pay about Rs. 20 per bag more for wheat seed than farmers in the settled area and then they must transport it. The extension service organizes

demonstration plots to show the yields possible from improved seed and correct fertilizer application, but as long as access to seed appears to be a major problem, these plots will have only limited impact. Fertilizer can be bought from shops in the principal bazaars.

The Agriculture Department has a reasonable staffing pattern for Upper and Lower Kurram, but very little means of transportation. There is only one Field Assistant for FR Kurram and he is based in Sadda in Lower Kurram so coverage of this tehsil is very poor. The Department does very little to promote vegetable crops (except for a limited number of demonstration plots for potato). It has three nurseries which sell fruit seedlings, and three farms where wheat seed multiplication is done and orchards have been planted. The department does not do formal trials of new seed varieties or different crops.

Many farmer problems are due to ignorance and poor farming practices, but the Agriculture Department receives very few resources with which to address such problems. This is unfortunate since agriculture is the Agency's major resource.

Credit is available to farmers in Upper and Lower Kurram but not in FR Kurram. Sixty per cent of the total loans made in 1988-89 were for tractor purchase, indicating considerable local interest in mechanization. Threshers, however, do not seem to be in general use.

Irrigation, Flood Protection and Potable Water

Improvement and development of surface and ground water irrigation schemes are undertaken by FATA development Corporation. There has been significant investment in improving Agency irrigation facilities, but no comparable investment in agriculture per se in order to maximize the investment in irrigation. Improvements to surface schemes or construction of new surface irrigation systems seem to have been undertaken at approximately 86 villages. A few of these villages may be served by the same irrigation system. Three of the schemes were funded by USAID. Most of the schemes that have been improved are in Upper and Lower Kurram, where most of the surface water is, but fourteen schemes have been undertaken in FR Kurram. Improvements cost on average Rs. 1.9 million per scheme and bring 372 new acres into production.

Forty four testwells have been drilled. Fourteen of these have been abandoned, the rest have been converted into functioning tubewells or are awaiting conversion. Evaluation of operating tubewells appears to be needed. There is some evidence that they pump water for relatively few hours per day and therefore irrigate less land than anticipated. While this preserves

groundwater, this is an expensive program, and sufficient numbers of people and acres should benefit in order to justify both the considerable investment cost and the high operating costs, which are borne by the government.

Small dams are a new area of interest. FATA DC is currently investigating potential sites in the Agency.

There is relatively little activity with respect to flood protection. The Local Government and Rural Development Department seems to carry the major responsibility for the construction of small scale bunds, but its efforts are erratic, perhaps because its funding is erratic. It seems to construct between 10 and 30 bunds per year. There is no replacement program for bunds that have come to the end of their useful life.

Since the late 1970s, the Public Health Engineering Department has completed around 44 drinking water schemes in the Agency. Only one of these is in FR. Twenty six are in Lower Kurram, where there are better surface water possibilities, and seventeen are in Upper Kurram. Seventeen of the systems have a tubewell as their source. The LG and RD Department also undertakes development of small scale potable water projects such as the construction of tanks.

Livestock

The large number of refugees has also meant that the number of animals in the Agency (and particularly numbers of sheep and goats) has increased substantially since the last animal census in 1980. The Livestock Department tends to concentrate on curative and preventive care (via vaccinations), but its efforts at increasing animal production are mostly limited to a small scale artificial insemination program for cattle and water buffalo. Department animal health facilities have better coverage in Kurram Agency than in South Waziristan. Coverage is best in Upper and Lower Kurram. There are 4 animal hospitals with DVMS in charge, 14 dispensaries and 3 artificial insemination centers. Refugees do make use of these facilities.

Forestry

The Department has planted approximately 3,500 acres in block plantations and 104 miles of roadside plantings, and has one 3.5 acre nursery. It plans to plant another 5,000 acres and establish a 10 acre nursery in Upper Kurram. It plants block plantations on communal land after coming to an agreement with a village. The Department then looks after and protects the trees for a few years until it considers the trees to be firmly established. The World Bank is funding the planting of 15,000

acres of mazri (dwarf palm), which used to exist abundantly in Lower Kurram but now is scarcely to be found due to commercial harvesting and use as fuel by both locals and refugees. There is a small sericulture effort in the Agency but the number of farmers participating in growing cocoons seems to be declining each year. Only 200 farmers took part in 1989.

Roads

A relatively good road network exists in Upper and Lower Kurram, although villages on the right bank of the Kurram river in Lower Kurram are not well linked with major bazaars and the paved road on the left bank. The road from Thall to Parachinar is the most heavily trafficked one in FATA, and is scheduled for reconstruction and resurfacing, work which will be funded by USAID. This road has assumed greater economic importance now that farmers have begun to turn to growing fragile horticulture crops. There are access roads now into FR Kurram, but parts of the tehsil are not well linked with each other.

Education

In 1981, the primary level participation rate was probably around 27% (the national rate was 54% in 1978). For males, the primary participation rate was perhaps around 49%, and it was under 4% for females. With respect to boys, the primary participation rate may now be close to the national average in Upper and Lower Kurram. There is a relatively good distribution of primary schools, particularly for boys, in Upper and Lower Kurram. Since FR Kurram lags substantially behind the other two tehsils in terms of educational opportunities, Agency-wide figures drag down the participation rates for Upper and Lower Kurram and do not reflect the progress made there. There has been a conscientious effort to increase the number of primary schools in FR Kurram in recent years - it remains difficult, however, to recruit teachers for this area.

Attrition is a problem and drop out rates are high from each class of primary school. For boys and girls starting first class in 1983-84, only 53% were left in fourth class in 1988-89, so primary level completion rates are low.

Some primary schools suffer from serious over-crowding, with very unfavorable student-teacher ratios for the earliest grades. This limits learning and probably adds to attrition.

The overall participation rate in middle school of the age-eligible group was around 7% in 1981; with about 13% of the appropriate age of boys attending and less than 1% of eligible females. This was in good measure a reflection of limited

opportunities for middle schooling. Opportunities have since improved. FR Kurram appears to have around 3 boys' middle schools, with the first established in 1981 and the next two in 1987. There is also a high school with a middle section. There is no girls' middle school in FR.

There are 18 boys' high schools, only one of which is in FR Kurram. There is only one girls' high school, and that is at Parachinar.

Girls' middle school education requires more investment, as do all levels of education in FR Kurram.

Health

A relatively good network of health facilities of different kinds exists in Upper and Lower Kurram. Once again, FR Kurram is under-served but it is no doubt extremely difficult to recruit qualified staff for facilities in FR. As a referral network, however, the system does not appear to operate very well. Most referrals are made to the civil hospital in Parachinar or to hospitals and physicians in the settled area. The hospital carries a very heavy outpatient case load and is the only Agency hospital that admits in-patients. Many BHUs lack physicians, and none has an LHV, so it is difficult for them to operate as referral points from the dispensary level. The shortage of female practitioners has an adverse impact on care for Agency females. There are five MCH centers, but at least one of these hardly functions since the LHV is permanently resident in Peshawar.

Unlike in other tribal agencies, most facilities appear to have a vaccinator assigned. This should allow better EPI coverage in Kurram (at least in Upper and Lower Kurram) than in other Agencies. EPI coverage in FR Kurram is probably under five per cent.

Electrification

The grid has been extended to much of Upper and Lower Kurram, which have accessible terrain and a good road network. The grid has begun to move out along the new access roads into FR, but few villages in FR have received electricity at this point. The terrain is too inhibiting, and the costs too high.

Investment

Investment has steadily increased since 1971-2 and now runs around Rs. 100 million annually. Priority in the early years was

given to the need for establishing an infrastructure (roads in particular). C&W's characteristically high share of annual investment in the 1970s and early 1980s has declined in recent years. FATA DC has received the second highest amount of investment monies. Education has received increasing priority in recent years and now takes about 22% of the investment allocation. Health appears to be a lower priority than in the 1970s, but if investment in potable water is counted as a health expenditure, then the health sector is garnering about 11% of the annual investment allocation for the Agency. Agriculture has received a pitifully small amount of investment given that it is the chief source of livelihood for many in the Agency.

Data Concerning the Agency

Quantitative data concerning various aspects of life in the tribal agencies are surprisingly abundant given political circumstances but are also in large measure partial or unreliable. The GOP routinely tries to collect data related to agriculture, education, health and other sectors. Some of the data collection has been via surveys which are based on a sample of the population in the accessible areas, a process which is the best one can hope for but which still omits large chunks of FATA. The 1981 census, for example, relied on sample surveys designed to test and permit adjustment of the population estimates given by maliks. Many surveys conducted nationally, however, omit the tribal agencies because of the difficulties of house to house enumeration in these areas. Some data are collected via department records (school enrollments, health workers, etc). These should be least prone to error because the subjects are easily quantifiable, but problems still exist. Some data are collected via estimates of field staff. Agricultural production and acreage figures for example do not result from surveys or land records, except in Upper and Lower Kurram tehsils and the Tochi valley) but are estimates made by field officers and as such can be very crude. Given the extreme difficulties and sometimes the impossibility of gathering information in FATA, it is not surprising to find that there are problems with the data. The researcher occasionally uncovers inconceivable inconsistencies moving from one source to another and sometimes from one year to another within the same source. Problems with the deletion of necessary zeros and the addition of unwanted ones are frequent and can lead the unwary researcher to form a very mistaken picture. Many adjustments must be made in the figures, and the researcher needs to have a good idea of what is there "on the ground" in order to assess the degree of reliability of the data. Examples of specific data problems occur throughout the profile. Appendix A also deals with this subject.

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**LIST OF
ACRONYMS**

ADP	Annual Development Programme
APA	Assistant Political Agent
APO	Assistant Political Officer
C&W	Communication and Works Department
EADA	Extra Assistant Director of Agriculture
EXEN	Executive Engineer
FATA	Federally Administered Tribal Areas
FATA-DC	Federally Administered Tribal Areas Development Corporation
FR	Frontier Region
GOP	Government of Pakistan
LG&RDD	Local Government and Rural Development Department
MNA	Member, National Assembly
NWFP	Northwest Frontier Province
PA	Political Agent
PHED	Public Health Engineering Department
RTV	Refugee Tented Village
SDO	Sub-Divisional Officer
UNHCR	United Nations High Commission for Refugees
USAID	U.S. Agency for International Development
WAPDA	Water and Power Development Authority

Preface

This is the first in a series of socio-economic profiles dealing with individual Tribal Agencies. These profiles have two primary audiences:

- o those concerned with government administration and development in the concerned Agency; and
- o donor and development assistance agencies providing support to activities in the Tribal Agency.

As such, the narratives assume a certain degree of familiarity with the workings of the government and its various agencies, but they try not to presume too much knowledge. Definitions and explanations are offered when it is thought that an expatriate advisor might require them, but questions which might occur to a newcomer in reading this report may not be answered.

The reader as he proceeds through the Kurram profile will find that problems with government statistics were frequent - and sometimes unresolvable. Such problems greatly lengthened the time required to complete the research. The need to rely sometimes on uncertain data suggests that there may be small errors in this report and perhaps also on the accompanying maps. Whatever could be done within a reasonable time frame to derive accurate data was done. However, the researchers were not able to go out and count or survey all schools, irrigation schemes, health units, nurseries and the like. It is hoped that any resulting mistakes are few in number and minor in consequence, and that they make no difference in understanding Kurram's level of development and its resource base. Problems with data are mentioned in each relevant section. There is also a short appendix at the back of this report that highlights some of these problems for those who have a particular interest in data collection.

Most of the research for this report was carried out between June and December 1989. Some additional research was undertaken in 1990. I would first like to thank Ms. Ali Begum, Director of FATA at the Planning and Development Department. She provided help on numerous occasions and generously shared her great knowledge of Kurram with me. I am also grateful for the assistance of Mr. Mansoor-ul-Islam Shah, Assistant Director of the Bureau of Statistics, who was very helpful in interpreting data and resolving data problems. Mr. Assadullah Khan, Assistant Chief of the SDP section of P&D was also helpful in obtaining information from various departments. Finally, I very much appreciate the time and hospitality of the staff of the line agencies present in Kurram. Their understanding of the Agency was critical in writing this report.

I would like to thank Mr. Abdul Rauf Sharooki, a cartographer who drew three of the maps. I am also grateful for the assistance of Mr. Iftikhar Hussain of USAID/Peshawar for his yeoman efforts in researching education. Mr. Shahzad Raza gathered field data related to bazaars and helped fill gaps in information in December 1989. In addition, Ms. Nazli Sardar, also of USAID, was primarily responsible for researching PHED and Health Dept. activities in the Agency. Ms. Rashida Khanum of USAID provided me with information concerning women's centers. Mr. Asif Niazi of the FATA-DC Computer Center did the research necessary to produce the tables and graphs in the section on ADP investment. Mr. Shakil Tabassum, also of USAID, helped with the "numbers crunching." I am also happy to have had the assistance of Ms. Shaheen Kauser, who undertook much of the mapping and who helped greatly with the field research, and of Mr. Jamil Butt, who assisted her.

Dr. Lynn Carter
Peshawar
May 1991

Introduction to the 1:100,000 Maps

Mapping resources in the Agency was an important part of the work of developing this profile. It was also the most difficult part because, for mapping to make any sense, the information must be very accurate. The profile maps were developed using 1:250,000 U.S.-made maps as a base. These were the only recent maps to which we had timely access. While the Survey of Pakistan was contacted the first week of this exercise, no maps were forthcoming for 4 1/2 months. Accordingly, the process of correcting the new base map by comparing it to Survey of Pakistan 1:50,000 maps continued into late 1989, long after the first draft of this report was circulated. It should be pointed out that both the Survey of Pakistan and the U.S. maps to which we had access were old. On the U.S. map of the Agency, the tehsil of FR Kurram is a region for which the Mappers made clear that they had no reliable data - in other words, the aerial photographs were difficult to interpret, for technical reasons. While the Survey of Pakistan maps show more detail, they must have relied on the same aerial survey data. Therefore, FR Kurram geographical data may be most subject to error. A decision was made not to show contours on the base map because of inadequate information for FR Kurram.

The set of maps accompanying this narrative report includes the following:

- 1) 1:250,000 climate map showing temperature and rainfall, taken from David A. Dichter, The North-West Frontier of West Pakistan: A Study in Regional Geography, Oxford: Clarendon Press, 1967. This map is based primarily on rainfall and temperature data collected in the first half of the century.
- 2) 1:250,000 population density map. This was compiled using 1980 population data for Upper and Lower Kurram inhabitants and June 1989 data with respect to the refugee population. No attempt was made to try to show density in FR Kurram because the census data are suspect for FR Kurram. Also the census summary report gives the population of relatively few villages in FR so it would have been difficult to map the findings.
- 3) 1:100,000 base map with villages, roads, administrative divisions, elevation contours, rivers and refugee camps.
- 4) 1:100,000 transparent overlay for the base map, showing elevation and vegetation shadings. This was taken directly from the US map, and no information was available to permit updating or amendment. The area of vegetation may have changed. No elevation data is shown for FR Kurram, because of the unreliability of the data.

5) two 1:100,000 transparent overlays for the base map, one showing girls' and the other showing boys' schools as of October 1988. Primary, middle and high schools are shown separately. The viewer should keep in mind that middle schools generally offer primary classes and high schools offer middle and primary sections.

6) 1:100,000 transparent overlay for the base map, showing ground and surface water irrigation schemes as well as potable water supply projects.

7) 1:100,000 transparent overlay for the base map showing health facilities.

8) 1:100,000 transparent overlay for the base map showing agricultural staff and facilities.

9) 1:100,000 transparent overlay for the base map showing forestry facilities.

10) 1:100,000 transparent overlay for the base map showing livestock facilities.

11) 1:100,000 transparent overlay for the base map showing the electricity grid.

12) 1:100,000 transparent overlay showing roads under construction

It was not possible to develop a land use map because the researchers lacked adequate recent materials from which to draw one. It was equally impossible to do a map showing the cropping pattern or irrigated/unirrigated land.

A decision was made not to mark planned projects on the map since plans can change and projects sometimes run into political difficulties. No distinction was made on the maps between projects under construction and projects completed, in order to keep the maps current a little longer. Projects under construction could be completed the week after the map was submitted, requiring changes in the map. Where appropriate, plans are mentioned in the narrative report. These maps will, in any case, require annual revision. New schools or the upgrading of existing schools, roads, health facilities, irrigation schemes, and the like will need to be added, if the maps are to continue to be useful.

I. GEOGRAPHY*

A. Topography

Kurram Agency lies at a longitude of 33° 20' and 34° 10' and at latitudes of 69° 50' and 70° 50'. It is bordered in the west and north by Afghanistan (the provinces of Paktya and Ningarhar respectively), Orakzai and Khyber Agencies in the east, Kohat to the southeast and North Waziristan to the south. The Agency is 72 miles long moving in a northwest direction from Thall to Peiwar Kotal, on the Afghan border. The width of the two tehsils of Upper and Lower Kurram varies between 22 to 43 km., while the width of the third tehsil of FR Kurram varies from 43 to 86 km. FR Kurram is the largest tehsil in area, followed by Upper Kurram and then Lower Kurram. The Agency's total area is 3380 sq. km. The principal mountain range in the Agency is the Safed Koh or Spin Ghar Mountains which form a natural boundary with Afghanistan. It also forms a watershed between Afghanistan and the Agency. The range rises northeast of Ghazni city, peaks at over 15,000 feet in the northwest corner of the Agency (Sikaram Sar is 15,602 feet) and then runs almost due east, descending rapidly in altitude across the central part of the Northwest Frontier, ending at Attock. Even in late June, some snow remains on the mountain tops visible from Parachinar. While acting as a frontier, the mountain range's average elevation is 13,000 feet, but as it becomes the Sarghar range further east, its elevation drops rapidly. The upper slopes of the Safed Koh used to be covered with fine forests but those forests are now a matter of history. The other mountain ranges bordering or found in the district are not as high as the Safed Koh. The Safed Koh's southern slope is about eight miles wide and covers a total area of 114 square miles. It runs the entire length of the Parachinar plain. Its southern slope is very steep, falling in altitude almost 10,000 feet within a six mile stretch of territory. A number of streams drain the southern slopes and, due to steepness, bring a lot of debris down with them. The plain of Parachinar is in fact formed by such accumulated deposits. The hills are heavily eroded. These streams have carved narrow, gorged valleys which provide access to the interior of the range. Important valleys (and streams) include Peiwar, Shalozan, Shian, Zeran, and Daradar. Some of these valleys extend into passes through which one can reach Ningarhar on the other side of the mountains. Most of the passes lie at altitudes between 11,000 and 13,000 feet.

* This chapter draws heavily on David Dichter's excellent geography, *The North-West Frontier of West Pakistan: A Study of Regional Geography*, Oxford: Clarendon Press, 1967.

Practically all these streams have a perennial flow, although the flow is less in winter, when much of the mountain range is covered with snow. During the discharge of these streams is often violent March-April and July-August owing to rainstorms and much of the water goes to waste. The soil of the plain is very porous. All but one of these streams, the Kirman, has its primary catchment area outside of Upper Kurram. The catchment areas are given below:

o Peiwar	18 sq. miles
o Shalozan	28 sq. miles
o Shian	6.5 square miles
o Malana	7 square miles
o Zeran	23 sq. miles
o Daradar	14.5 sq. miles
o Kirman	73 sq. miles

South of the Safed Koh is the Parachinar basin or plain, which is an oval-shaped plain sloping south-eastward and surrounded by mountains. The Parachinar plain at its south/southeast portion has an altitude of around 1500 meters, rising to an elevation of 1745 meters at Parachinar and 2000 meters at Peiwar in the northwest portion of the plateau. The plain is in the slow process of becoming horizontal, as hill torrents erode the top of the plain and carry debris toward the bottom end. These torrents have cut ravines of varying depth and breadth through much of the plain. Above Parachinar, the plain has a breadth of 15 miles. Much of the plain is not particularly fertile and has hard and rocky soil with a large component of grit and gravel on both the surface and in profile. It relies on water from uncertain run-off on the villages directly to the north, at the foot of the mountain range. There is good recharge of the water table, although its depth ranges from quite close to the surface along the Mali Khel-Shingak road to very deep. At Parachinar, tubewells must be drilled to a depth of 700 feet.

Other important alluvial plains in the Agency include the Satin plain, Chulam Chakmani on the right bank of the river, both in Lower Kurram, and the ill-defined area of Khoidad Khel in FR Kurram.

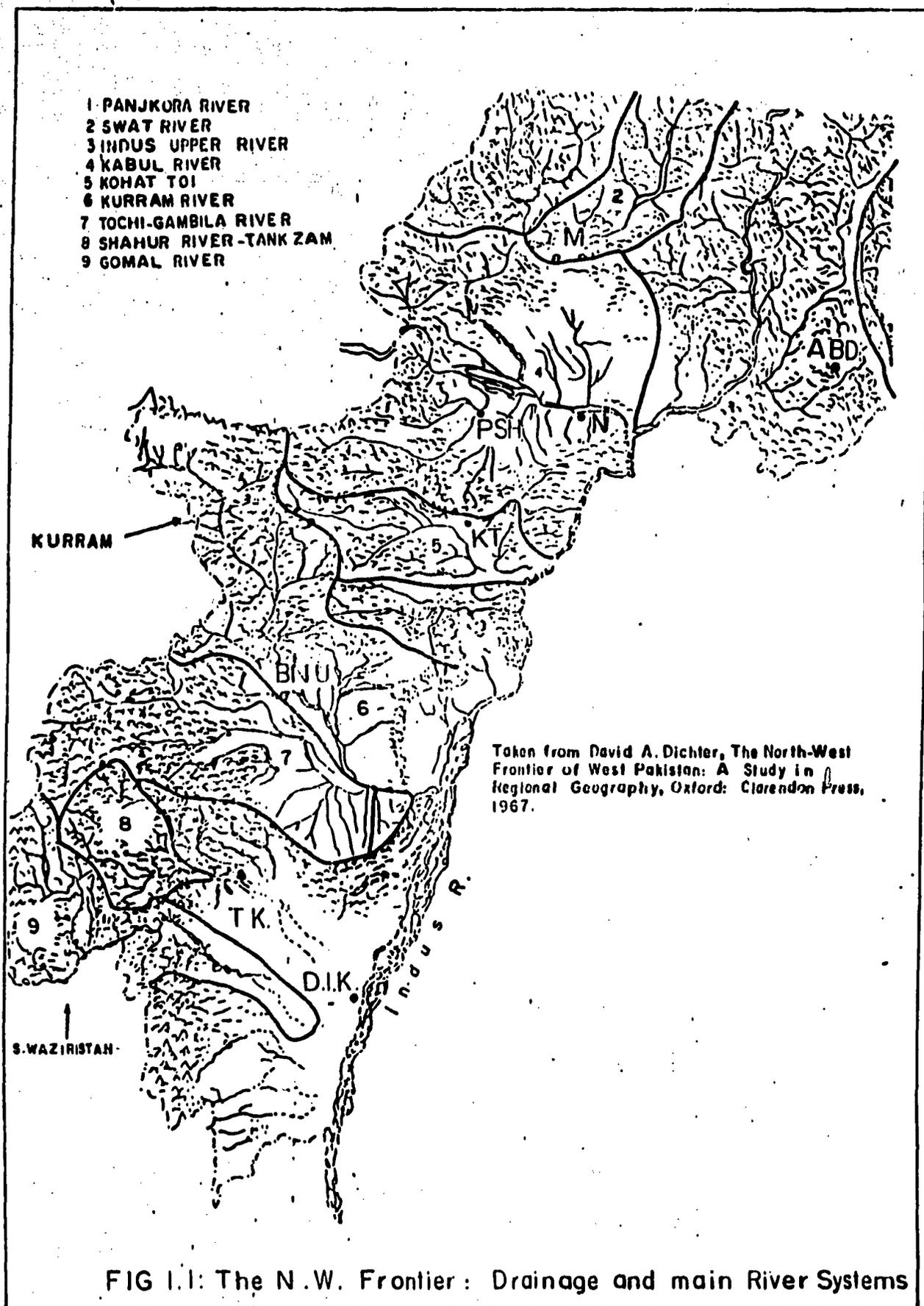
The Durand Line separating Pakistan and Afghanistan generally takes advantage of the natural boundary provided by mountain tops in its eastern reaches. To the west of the Agency, running south of Peiwar Kotal, the Mandher mountains rise gradually (9000 - 10,000 feet) and then descends to the southwest corner of the plateau at Karlachi. The border then adjoins plateau. South of the plateau and below the entry of the river into the Agency, hills again rise, separating the two countries.

The Kurram river, the principal river of the agency, originates in Afghanistan in the western reaches of the Safed Koh (see Figure I.1). It is not navigable. It breaks through the Mandher mountain range and enters the western part of the agency near the village of Karlachi, where two tributaries, Sitiya and Peiwar join the river. From Karlachi, the river becomes known as the Kurram river. For the first ten miles it flows east through the Parachinar basin, at the base of the southern flanking Charmagh and Inzar Thar mountain ranges. It apparently once flowed through the central part of the basin but shifted its course owing to debris deposited by mountain torrents running down the southern slope of the Safed Koh. For the first forty-five miles, the river valley is narrow and hedged in by low hills on either side. Twelve miles downstream it is joined by the Kirman river, which originates in FR Kurram in the Marmora Mountains. Near the village of Ahmadzai, the Kurram river turns south, and it is this bend that creates the division between Upper and Lower Kurram tehsils. The river valley narrows to four or five miles wide and runs southeast toward the village of Sadda. From Sadda, where the Kurram picks up the drainage of the Khurmana river, which rises near the border with Afghanistan in FR Kurram, the river leaves the Parachinar basin and runs south to the Banru basin. Both the Khurmana and the Kirman rivers, which may be the two major tributaries of the Kurram, are prone to violent flooding. Fig. I.2 shows Agency rivers.

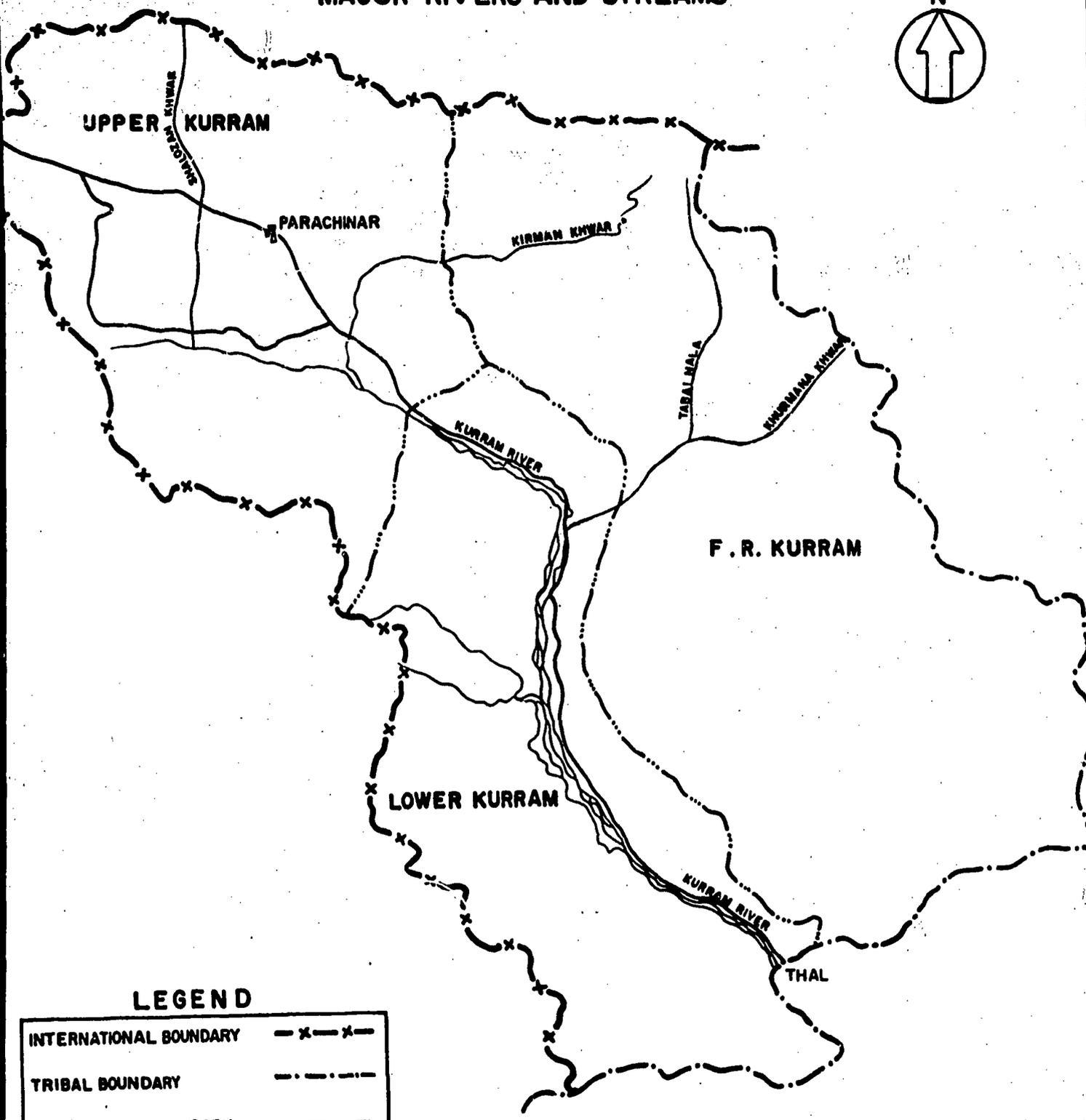
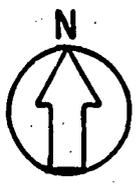
The elevation of the river valley between Sultan and Bissatu drops to less than 900 meters and again rises to above 900 meters on its way south. From Uchat Killi, near the boundary of the Agency, the valley's elevation drops again to less than 900 meters.

The Kurram river bed is very wide, owing to erosion due to flood waters. Below Sadda the river is fed by rainfall and snow melt drainage that flows from the hills through numerous ravines in the east from the Zaimukht mountains and in the west from the Charmagh range and other hills separating Khost and Kurram. There are also springs on both sides of the river. In late June 1989, there was relatively little water in the river. Much of the river bed was dry with small rivulets. In some areas south of Sadda, farmers have planted rice in the river bed. The quantity of water in the river became greater as one came close to the Agency boundary with FR Kohat, while driving south east on the Thall-Parachinar road.

To the west, the river valley is hemmed in by hills that are low and somewhat undulating but then rise to form the Khwaja Kurram range which borders Paktya. There is little fertile ground on this bank at the river. Bedrock is close to the surface. To the east, where there may be more good agricultural land, the ground rises rapidly to a series of hills which are a southwestern extension of Tirah.



KURRAM AGENCY MAJOR RIVERS AND STREAMS



LEGEND

INTERNATIONAL BOUNDARY	- x - x -
TRIBAL BOUNDARY	- . - . -
SUB-DIVISION BOUNDARY	- . . . -
RIVERS/STREAMS	
ROADS	

Owing both to the river and hill torrents, alluvial-dilluvial action is constant. In the 1940s, British officials estimated that three out of every four villages in Upper and Lower Kurram were subject to damage and change from one or the other, and that the river was actually more damaging than the hill torrents.

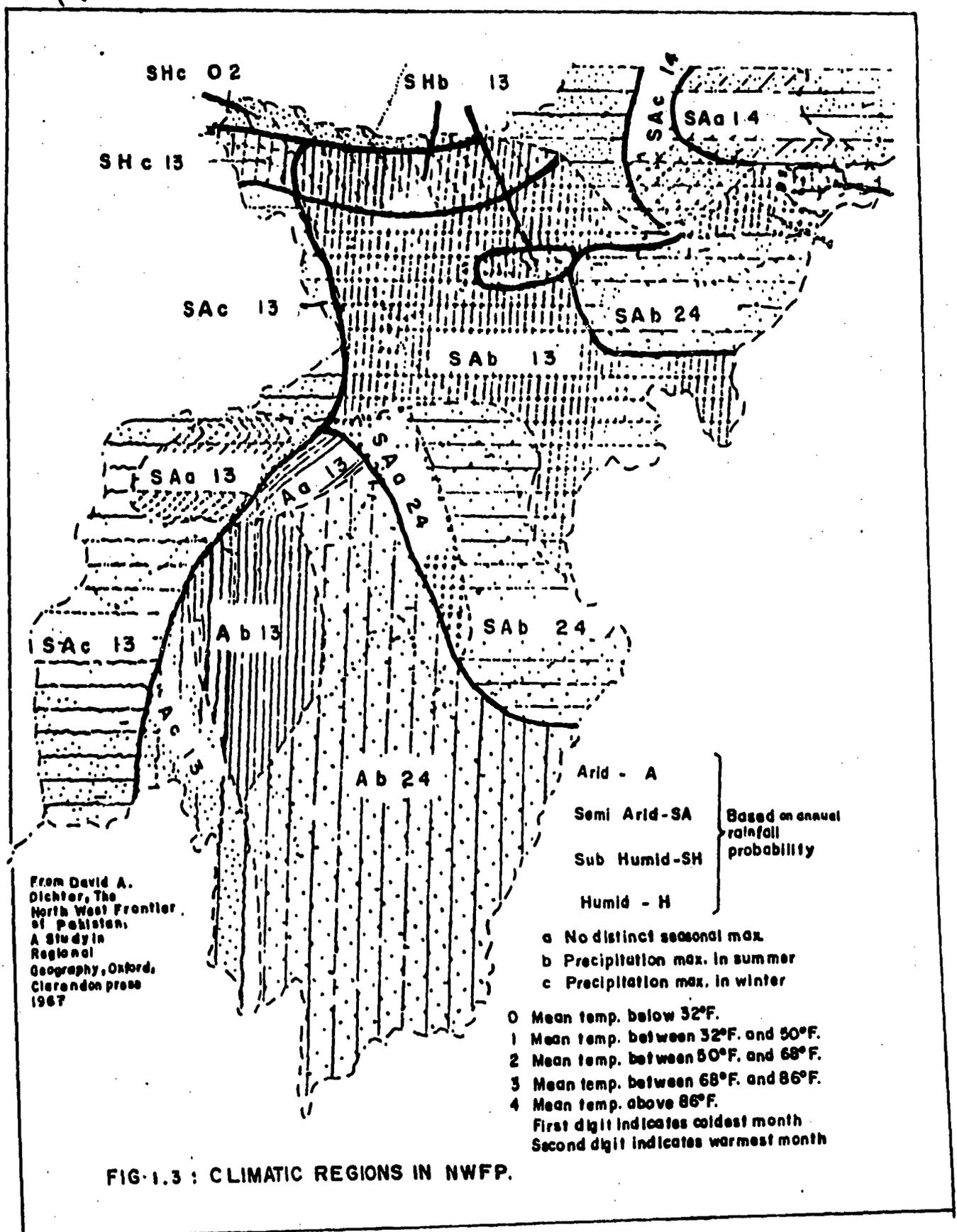
FR Kurram has not been described by geographers to the same extent as Upper and Lower Kurram. It is more mountainous. At its northern border, the altitude of the Safed Koh range is 4,473 meters. In the north near Pakha, the highest peak appears to be 3016 meters. In the southern portion, the higher elevations are somewhat lower, by about 500 meters. Most or all of the settlements are situated along nullah beds to take advantage of scarce agricultural land and seasonal floods.

B. Minerals

Soapstone, which is processed into talc, is the only commercially exploitable mineral in the Agency. The largest deposit estimated at 2.23 million tons is at Gandao, near Daradar, northeast of Parachinar. Because this deposit rests at an altitude of 9000 to 11000 feet, it is not exploitable. At Daradar, a second large deposit of about 1.59 million tons exists. Much smaller deposits of 2000-2500 tons exist at Peiwar and Zaran (four miles north of Zeran village) on the plain. Since the GOP was importing soapstone from Afghanistan, it became interested in mining the deposit at Daradar. In 1984, FATA-DC formed a joint venture with a private sector group. A plant for processing the soapstone was built at Parachinar. The first requirement was then to build a road from Bughaki, which is eight miles from Parachinar, up the Daradar valley, a distance of eight or nine miles so that the stone could be brought to Parachinar for processing. Political problems developed with tribal group along the road and eventually defeated the project. The cost of the road escalated as political problems increased and, in the end, it was decided that the scheme was not going to be cost effective.

C. Climate

The Agency can be divided roughly into five zones, based on temperature and precipitation, as shown in Figure I.3. No where does the Agency get much precipitation. Much of the northern part of the Agency has a temperate climate - cold and snowy in winter and warm in summer. As one moves south and southeast, the altitude drops and there is less rain. While it is cold in winter in Lower Kurram, the summers are hot. In the eastern part of the agency, the climate is similar to that of Khyber and Mohmand agencies - dry and hot in summer and dry and cold in winter.



From David A. Dichter, The North West Frontier of Pakistan, A Study in Regional Geography, Oxford, Clarendon press 1967

- Arid - A
 - Semi Arid - SA
 - Sub Humid - SH
 - Humid - H
- Based on annual rainfall probability
- a No distinct seasonal max.
 - b Precipitation max. in summer
 - c Precipitation max. in winter
- 0 Mean temp. below 32°F.
 - 1 Mean temp. between 32°F. and 50°F.
 - 2 Mean temp. between 50°F. and 68°F.
 - 3 Mean temp. between 68°F. and 86°F.
 - 4 Mean temp. above 86°F.
- First digit indicates coldest month
Second digit indicates warmest month

FIG-1.3 : CLIMATIC REGIONS IN NWFP.

1. Rainfall

Rainfall has been measured at Parachinar since at least 1906. British Raj officials also measured it at Alizai from 1906 until 1948 and at Sadda from 1937-8 until the founding of Pakistan. Figure I.4 illustrates mean annual rainfall based on these data. For the last several years, rainfall has been recorded only at Parachinar. The Meteorological Department has a gauge while the Agriculture Department has instruments to measure rainfall on its farm at Parachinar. The Meteorological Department provided one set of data going back to 1978, while the Bureau of statistics in its publication FATA Statistics relies on somewhat different data for the same period from FATA Agriculture. The difference in placement of the two gauges could account for some but not all of the difference in the figures. Table I.5 shows the range of findings for annual rainfall.

TABLE I.5
ANNUAL RAINFALL, 1982-1988, AT PARACHINAR
IN INCHES AND MILLIMETERS

YEAR	BUREAU OF STATISTICS		METEOROLOGICAL DEPT.	
1982	2.6 "	66.8 mm	37.3 "	946.8 mm
1983	13.7 "	347.9 mm	25.2 "	640.2 mm
1984	34.8 "	882.9 mm	29.2 "	741.6 mm
1985	38.5 "	977 mm	21 "	531.4 mm
1986	46.5 "	1180 mm	32.9 "	834.6 mm
1987	20 "	506 mm	25 "	632.5 mm
1988	-----		29.6 "	751.1 mm

The thirty-seven year average (1906-1943) recorded by Raj officials at Parachinar was 29.87 inches. It can be misleading to consider a briefer span of years, because rainfall varies greatly from one year to the next. However, using Bureau of Statistics data, average annual rainfall for 1982-7 is 19.72 ", while the Meteorological Department average for the same period is 28.6 ". Given that the latter figure is closer to the thirty-seven year average and because Meteorological Department data shows more consistency from one month to the next, it is recommended that readers rely on this Department's data.

Monsoon rains (July-August-September) and February through April rains are both important since much of the land is double cropped. At Parachinar, the winter-spring rain is heavier. The 1906-1943 average for the summer rain is 8.3 ", while for the winter-spring rain it is 11.2 ". Between each June and September during this period, Parachinar averaged 25 rainy days, while between each October and May, the town averaged 40 rainy days. At the end of December, it begins to snow on the Parachinar plain. Heavy rains in March and April help dislodge snow on the mountains, and the melting snow plus the rainfall is what permits parts of the Agency

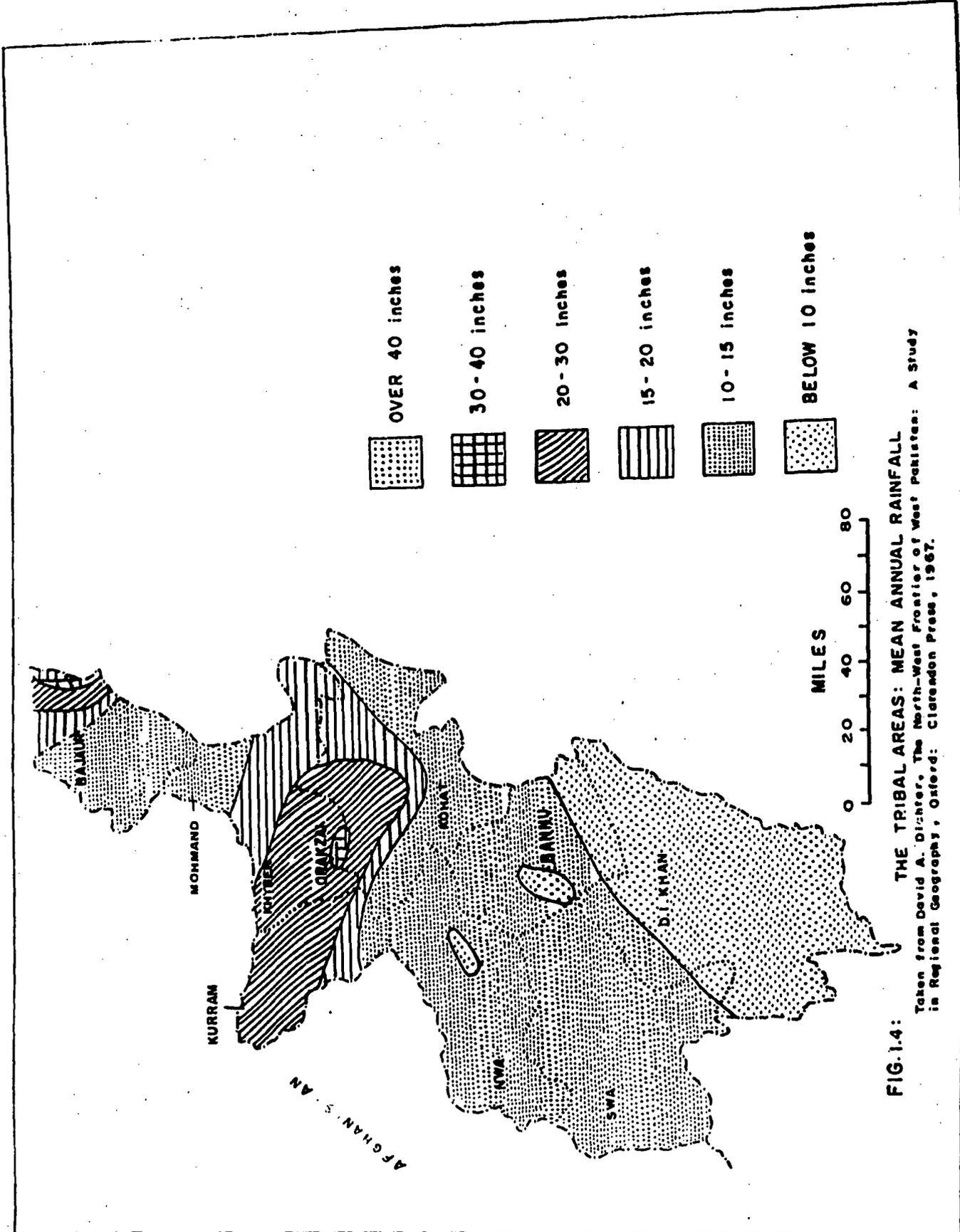


FIG 1.4: THE TRIBAL AREAS: MEAN ANNUAL RAINFALL
 Taken from David A. Dichter, *The North-West Frontier of West Pakistan: A Study in Regional Geography*, Oxford: Clarendon Press, 1967.

to sow rice.

The 1982-1988 monthly rainfall averages are given below.

TABLE I.6
AVERAGE MONTHLY RAINFALL AT PARACHINAR, 1982-88
IN INCHES AND MILLIMETERS, METEOROLOGICAL DEPARTMENT

January	1.1 "	26.5 mm
February	2.1 "	52.5 mm
March	6.1 "	153.3 mm
April	2.8 "	71.4 mm
May	2.9 "	74.1 mm
June	1.6 "	41.2 mm
July	2.4 "	61 mm
August	4.8 "	120.3 mm
September	1.4 "	36 mm
October	1 "	24.4 mm
November	1 "	23.8 mm
December	1.6 "	40.6 mm

For Alizai and Sadda, we can only turn to older data from the first half of the century. The thirty-seven year average (1906-1943) was 18.7 " of rain per year at Alizai. More rain falls in summer than in winter. For Sadda, there is only a six year average (1937-43) available: 21.5 " per annum. Since we do not know if these were average years at Sadda, we cannot be certain that the average is reliable, given the short period of recording. Like Parachinar, Sadda receives somewhat more rain in winter than in summer. What is clear from these averages, old and new, is that the rainfall is less as one moves east and south from Parachinar.

No statistical information is available about rainfall in F.R. Kurram.

2. Temperature

Once again, there is considerable variation in mean maximum and minimum temperatures as recorded by the Meteorological Department and as published by the Bureau of Statistics drawing on FATA Agriculture Department data. Rather than presenting both sets of figures, only the Meteorological Department's data are presented in Table I.7.

TABLE I.7
AVERAGE MEAN MINIMUM AND MAXIMUM MONTHLY TEMPERATURES
AT PARACHINAR, 1984-88

MONTH		CENTIGRADE	FAHRENHEIT
January	Minimum	-1.18	29.88
	Maximum	10.88	51.58
February	Minimum	-0.2	31.64
	Maximum	11.82	53.27
March	Minimum	5	41
	Maximum	15.9	60.62
April	Minimum	10.12	50.21
	Maximum	21.78	71.20
May	Minimum	14.48	58.06
	Maximum	27.18	80.02
June	Minimum	18.64	65.55
	Maximum	31.2	88.16
July	Minimum	19.48	67.06
	Maximum	29.8	85.64
August	Minimum	18.62	65.51
	Maximum	28.64	83.55
September	Minimum	15.8	60.44
	Maximum	26.7	80.06
October	Minimum	10.16	50.28
	Maximum	23.52	74.33
November	Minimum	5.44	41.79
	Maximum	18.72	65.69
December	Minimum	1.28	34.30
	Maximum	13.22	55.79

No specific data are available on temperatures at sites other than Parachinar.

II. GOVERNMENT AND ECONOMY

A. Administration

Kurram Agency is divided into three tehsils: Upper Kurram, Lower Kurram and FR Kurram (also known as FR Sadda). Tehsil boundaries are shown on the map at the beginning of this report. The first two tehsils have long been referred to as Administered Areas, while the latter was completely closed until 1974 and was called Frontier Regions. Most of the agricultural wealth and all the government staff working in the Agency are based in the first two tehsils. FR Kurram is still considered inaccessible, although there is increasing popular interest there in development projects and there are now access roads, including the Sadda-Marghan road built by the Tribal Areas Development Project. FR Kurram may only have been added to the Agency in recent times. Part of its territory forms part of Tirah, and from old maps (mid-1960s and earlier), it appears that the area at least nominally belonged to Khyber Agency.

Among the tribal agencies, Kurram is one of two (the other is the Tochi Valley) exceptions in that the two tehsils of Upper and Lower Kurram pay land revenue on cultivated land. The explanation for this appears to be that, at the time that the Durand Line separating Afghanistan and Pakistan was being drawn, the then predominantly Shia population believed that their position would be more secure under British protection than under Afghan rule. The British, who saw little reason to relinquish territory unnecessarily, agreed to this and extracted an agreement from the population to pay the land revenue in return. The first assessment of cultivated land was carried out in 1894 for a period of ten years. Reassessments were conducted in 1904 and in 1942-3. There has not been a new survey since and the per acre rates have not changed. Those rates varied from 3 annas for the poorest category of farm land to 2 Rs 14 annas for the best, and were, at least according to the British, considered light by the farm population of the time. As a result of the 1942-3 assessment, the government earned approximately Rs. 74,143 per annum. In 1986-7, the government earned Rs. 73,311 in land revenue, or far less than the cost of administering the revenue department. However, at this time, the right to levy a land tax on the population is more important than the total earned.

Land revenue is only one aspect in which Upper and Lower Kurram resemble a settled area. Both tehsils are relatively peaceful, with the exception of occasionally ugly sectarian tensions. One sees suggestions in the newspaper from time to time that some residents are interested in having the Agency re-classified as a settled area.

There are 164 villages in Upper and Lower Kurram together and over 100 in FR Kurram. Chappri, which is physically located in Kohat, somehow comes under Kurram Agency jurisdiction.

The following government departments are active in the Agency: Agriculture Department (Extension and Agricultural Engineering), Forestry Department, FATA-DC, C&W, PHED, Education Department, Health Department, LG&RDD, and the Commissionerate for Afghan Most of these are based in Parachinar. Officers for Lower Kurram and FR Kurram are based in Sadda in Lower Kurram. The staffing level per department is discussed in the relevant section of this report, but in general, there are few professional staff to undertake sometimes heavy management and supervision functions.

The Thall Scouts have jurisdiction from Thall to the town of Alizai, after which the Kurram Militia takes over.

B. Economy

There are no general indicators that can help us gain a sense of Agency productivity, the contribution of various sectors to productivity, remittances, the economic impact of refugees, or income. Estimates made of agricultural production are partial and understate true production.

Agriculture and remittances are the two most important sources of income for the vast majority of inhabitants. Enlisting in the militia and army has also been a traditional source of employment and it is still important. Short-term unskilled employment on development projects (roads, irrigations systems, etc.) and longer term employment as chowkidars on some schemes has become more important during the last two decades. There is virtually no industry and no mining. The Agency appears to lack both the skilled manpower and the raw materials that would be needed to support the development of successful industrial enterprises. An exception may be fruit processing, but the one government-sponsored venture established at Sadda to process fruit failed. More information on this attempt can be found in the section on agriculture. The one important cottage industry in the Agency currently is the production of mats and baskets from the mazri plant. More information on this follows in the forestry section. Finally, sericulture was at one time an important cottage industry in Kurram but it has been in decline for several years.

No data are available concerning the amount of remittances coming into the Agency annually. As elsewhere in Pakistan, the total amount has declined in recent years owing to decreased job availability in the Arab petroleum-exporting countries. The Ministry of Labour, Manpower and Overseas Pakistanis reports that returning migrants now outnumber those who are emigrating for work. This is particularly true of the unskilled and semi-skilled, as most of Kurram's migrants would be classified. Over the longer term, overseas opportunities are likely to remain stable and improve only for the better educated, such as doctors and engineers. It is possible that those who can no longer emigrate abroad for work choose to go to Karachi or another major city in

Pakistan. However, remittances earned in Pakistan are substantially lower than those earned overseas.

In general, remittance monies have not been invested productively, in part because of the lack of opportunities in the Agency. Perhaps most remittances were and still are spent on marriage; building a Pukka house; buying a truck, van or tractor; opening a shop; and purchasing consumer goods. Those with considerable funds might buy land in a settled area and build a house for rent or a hotel. Investment in agriculture has largely been limited to the purchase of agricultural machinery, although increased use of fertilizer, improved seed and agro-chemicals could have been one result of external employment. Some may have bought farm land in the Agency but good land is almost impossible to buy and is prohibitively expensive. Land prices were investigated in Upper and Lower Kurram. Prices per acre ranged from Rs. 60,000 to five or six lakhs of Rupees, depending on whether the land was Koh-i-Daman (spring-fed) or Rodghara (river-fed), irrigated or barani. In the Parachinar area, land prices ranged from 2 to 20 lakhs.

The commercial sector has expanded greatly during the last ten years to meet the needs of both refugees and local families with remittance money to spend. This has increased the opportunities for farmers to market high value cash crops locally. Sometimes however agricultural products are sent to Thall and beyond where prices might be higher.

One census of shops conducted in Sadda in 1988 indicated a total of 845 Afghan-owned shops and 463 locally-owned shops. Arms shops are or at any rate were until recently the most numerous in Sadda bazaar*, followed by grocery shops, vegetable sellers, fruit sellers, and then auto repair shops. Cloth shops are also numerous. Of course, the refugee density is very high in Lower Kurram, which accounts for the large number of shops and particularly of Afghan-owned shops. The lack of other investment opportunities also makes opening a shop attractive, even in a competitive commercial environment. In addition, starting a shop does not require a large amount of capital. Many of these shops are tiny and keep limited stock. Other important bazaars are at Parachinar and Alizai. Alizai is certainly smaller than Sadda, and Parachinar could also have fewer shops. The latter is likely to

* Following the 1987 Shi'a-Sunni clash, the arms market was moved from Sadda to Dogar, presumably shortly after this census took place.

have fewer refugee-owned shops, and it could have fewer gun shops. Afghans are more likely to own a shop selling food products than locals. They are twice as likely to own an auto repair shop or a cloth shop, while locals are more than two times as likely to own an arms and ammunition store. The increase in the number of shops may have increased the availability of credit, since shopkeepers traditionally are important sources of loans.

At Parachinar and Sadda, there are currently several shops manufacturing items from metal, such as doors. There are also blacksmith shops forging agricultural implements such as sickles. There are two blacksmiths at Alizai, one of whom also does tractor repairs. No shovels or wheelbarrows are made locally - it is less expensive to bring them from elsewhere in Pakistan.

The timber trade is important, and there are major markets at Burki and Kharlachi near the border in Upper Kurram and FR Kurram. The wood is brought from Afghanistan. The P.A. grants licenses for exporting from the Agency, but there is probably considerable smuggling.

The market at Dogar in FR Kurram is an important market for smuggled goods such as tape recorders, cosmetics, tires, arms, and the like. The market is frequented by those in Upper and Lower Kurram wanting to purchase smuggled items.

Refugees have also claimed a considerable part of the transport business. Within Kurram, they are only able to carry individuals and goods to and from the camps but business is brisk. They also ply routes from the Agency to Thall, Kohat and Peshawar. They own many trucks and tractors.

The current situation with respect to labor in the Agency is not very clear. For a time, there was a construction boom, during which locals with remittances invested in shops and built Pukka houses. The boom gave considerable employment to both refugees and locals but it now seems to be over. Now there may be a surplus of unskilled labor, and it is possible that wages have dropped. Some information with respect to this follows in the section on agriculture. There is a permanent shortage of educated personnel - teachers, doctors, etc. - but other than the government, there are not many employers for skilled individuals. Graduates of the Commercial Institute in Parachinar generally leave the Agency to find work. Refugees may have filled some possible shortages in the skilled trades - i.e., automobile mechanics, tailoring, shoe-making and perhaps even blacksmithing. As long as they are present, any attempts to initiate vocational training for Kurramites in these areas could meet with failure due to economic competition. With the return of many migrants and the expansion of the commercial sector, employment in the services is making a larger contribution to overall employment than it would have ten years ago. Agriculture is still the predominant employer in the Agency, but

has for many years been inadequate to support all those requiring support from it. There is certainly not much job creation taking place in the Agency and due to the young age structure of the population, the increase in the labor force is high, as elsewhere in Pakistan. Most of the entrants are illiterate or semi-literate and unskilled.

There are at least four commercial banks that have branches at Parachinar, two at Sadda and one at Alizai.

III. POPULATION

A. Government Census Data

In 1901, the population of Upper and Lower Kurram was estimated at 54,257. Forty years later, it showed only a marginal increase, at 55,373, a figure which included some imported laborers not native to the Agency. Even with high mortality rates, this is a very small increase. Population density in the two tehsils taken together in 1941 was 24 per sq. km.

The most recent census took place in 1980-81. In FATA, it was conducted via two mechanisms: 1) estimates made by maliks, and 2) sample surveys to permit adjustment of malik estimates. Kurram's population was estimated at 294,362, divided as follows:

FR Kurram	122,813
Upper Kurram	118,476
Lower Kurram	53,073

Since FR Kurram is inaccessible, the count must be viewed as less reliable than the counts for the administered areas of Upper and Lower Kurram. Some suspect that the count for FR may be a considerable overestimate.

The average household size in FR Kurram was 6.8 persons, considerably lower than in the other two tehsils, perhaps reflecting higher infant and child mortality due to scantier health services. This conclusion may be supported by the fact that the tehsil had the lowest percentage of the population under ten years old - 34%. Smaller household size could also be the result of a better housing base or higher out-migration due to very limited agricultural opportunities.

Upper Kurram had the largest average household size of the three tehsils, with 8.8 persons per household. The finding that 50% of the population was under ten years old reflects this larger family size. Large family size suggests better access to health services, with the town of Parachinar in easy reach of all parts of Upper Kurram. The population of Upper Kurram was also more literate and better educated than the populations of the other two tehsils, leading to better child survival rates. Based on all these factors, Upper Kurram could have a somewhat higher population growth rate than the other two tehsils - it would be only marginally higher than Lower Kurram but could be substantially greater than that of FR Kurram.

Lower Kurram had an average household size of 8.2 persons, with 35% of its population under ten years old.

Population density overall was 87 persons per square km., and in Upper and Lower Kurram together it was 75 per sq. km. This is not a particularly helpful figure since much of the terrain in Kurram is mountainous or gravel strewn and cannot support agriculture. The population therefore is clustered, and density is much higher than it appears to be from these figures. Density per cultivated acre is a better guide. Since there are no statistics on cultivated area for FR Kurram, that density cannot be derived. For Lower and Upper Kurram taken together, however, the density in 1981 was roughly 4 persons per cultivated acre, or about the same as in Charsadda and the Peshawar valley. Over time, continued population growth will have increased the density, but the major factor in increasing population density in the Agency has been the growing presence of refugees over the course of this decade. There are roughly 350,000 registered refugees, plus perhaps another 30,000 - 50,000 unregistered refugees. This has led to a dramatic increase in density. At an approximate total of 400,000, there are more refugees than Kurramites in the Agency. The vast majority of the registered refugees and virtually all the unregistered ones live in Lower Kurram, which is the smallest tehsil both in area and population. Some live in Upper Kurram and none in FR Kurram. Lower Kurram has become extremely densely populated, with roughly 5 refugees to every local. Figures III.1 and III.2 show population density per sq. km. and per cultivated acre respectively.

The sex ratio in 1981 was 101 males for 100 females. Forty-six percent of the population was under fifteen years of age, leading to a high dependency ratio. Because of the young age structure of the population and improving health services, the dependency ratio is probably higher now.

B. Population Growth

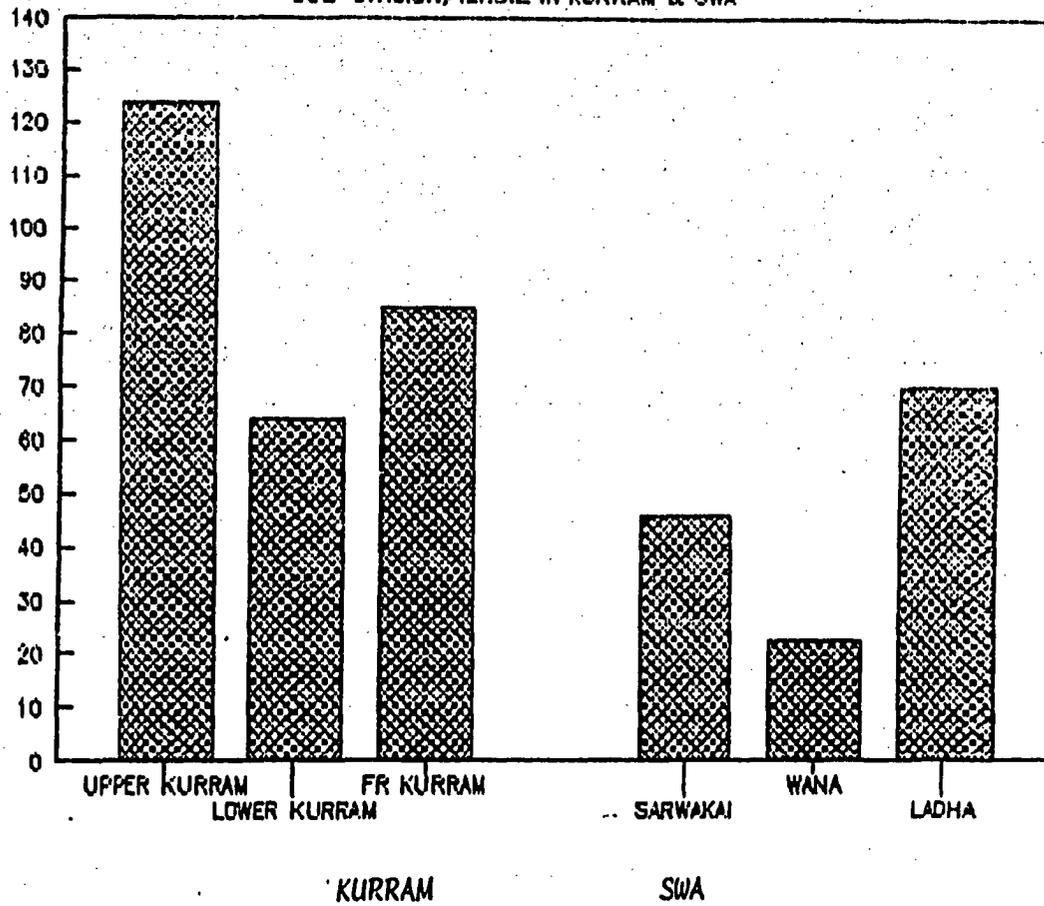
The previous census in 1970 relied on the estimates of maliks, who may have had political reasons for over-estimating those within their jurisdiction or who simply had no experience in counting numbers of people. The average annual growth rate over the intercensal period until the 1980 census was .59 percent, an extraordinarily low figure which could possibly be explained by high out-migration but which can probably be accounted for by the change in census methodology. During the 1950s, the intercensal growth rate was 2.4% p.a., and during the 1960s it was 2.9% p.a. In other words, it appears that the 1970-71 census over-counted Kurram's population, while the 1980-81 sample survey permitted a more realistic assessment of the Agency's population. The earlier over-counting made it appear that the intercensal population increase had been very small. Lacking a correct intercensal growth rate for the 1970s and having no idea of what the per annum growth rate is in the 1980s makes it difficult to extrapolate from the 1980 census and estimate current Agency population. The 1980 census derived a national intercensal growth rate of 3.1% per annum for the previous decade, and this

FIG. III.1

POPULATION DENSITY PER SQ. KM. BY

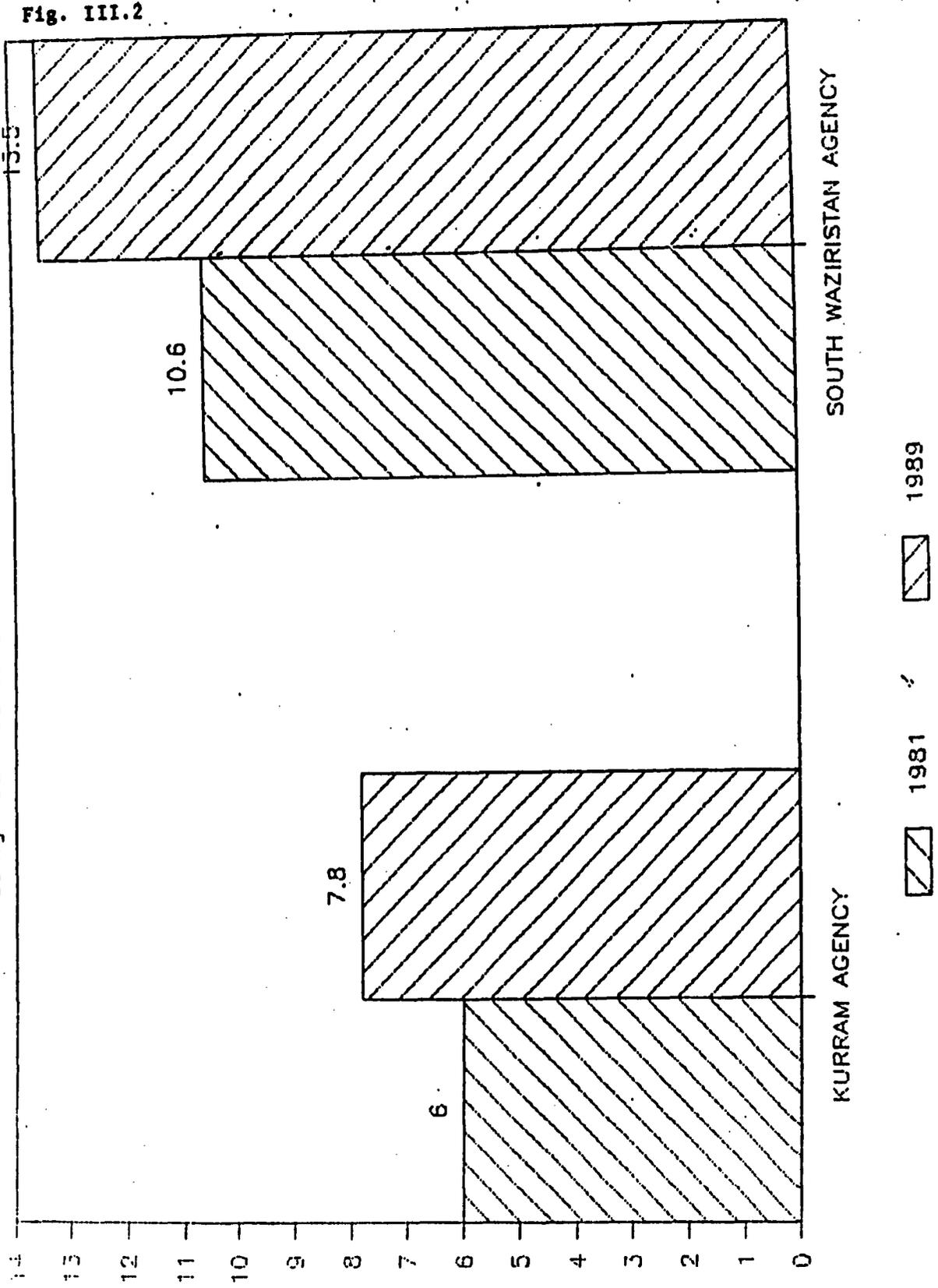
14a.

SUB-DIVISION/TEHSIL IN KURRAM & SWA



POPULATION PER CULTIVATED ACRE

Using 1987-88 Land Use Statistics



Note: 1989 estimate uses 3.1% Annual Growth

rate continues to be used by the Census Bureau to make population projections, even at the provincial level and below. The National Institute for Population Studies in Islamabad tends to use a slightly lower per annum growth rate of 2.85% for the country as a whole.

Lacking better alternatives, we use here an average annual growth rate of 3.1%. This gives us an estimated population in 1988-89 of 373,955, and in 1989-90, of 385,553. The Kurram population is finally catching up to the refugee population.

There are a number of factors that suggest that the Agency would have a high growth rate, and one factor that could drop the rate a bit. There are few statistics that apply directly to Kurram or FATA. Specialized surveys, such as the 1984 Contraceptive Prevalence Survey, often omit FATA owing to the difficulties of house-to-house enumeration. Therefore, it often is necessary to extrapolate from data for NWFP, a dodgy business but the best that can be done until a new census is conducted. The population is very conservative, and predominantly rural. Household size is large in NWFP and has been increasing during this decade. It is possible that this simply means greater crowding due to the housing shortage but it may also mean a higher birthrate. NWFP has the lowest mean age at marriage in the country, or 16.3 years. The percentage of women who have "ever used" contraceptives is lower in NWFP than in Punjab or Sind, and it is certain to be lower still in FATA. The very low education and literacy rates, particularly for women, in FATA support very low contraceptive prevalence and early marriage. A serious effort to improve health services in the Agency during this decade should have led to lower infant and child mortality, contributing to a higher growth rate. The one mitigating factor may be that it is known that NWFP/FATA has had a higher level of out-migration than any other province, and that 39% of all inter-provincial migrants are from this region. While some of the FATA migrants are families moving to a settled area, most are men who leave in search of work, while their families remain at home. While the inter-provincial migrants can visit home much more frequently than the international ones, those who go fairly far from home, to Lahore or Karachi, probably visit seldom enough for there to be some impact on fertility. On the other hand, international opportunities for migration have lessened in this decade, with the economic slowdown in the Gulf, so that many migrants have returned home.

C. Literacy

Overall in the Agency in 1980, the literacy rate was 6.25 %: 11.04% for men and 0.85% for females. Upper Kurram had the highest literacy rate at 10.1% overall and 18% for males. Lower Kurram followed with a literacy rate of 8.23% overall and 15% for males. FR Kurram, not surprisingly, lagged considerably. Its

overall literacy rate was 1.66 %, with a rate of 2.5% for men and 0.71% for females. There were not many schools in FR Kurram prior to this decade. Percentage of the population completing primary school was highest in Upper Kurram, with 2.5% graduating. Next came Lower Kurram with 2.2% of the population having completed primary school, and finally only 0.3% of Lower Kurram's population had completed the primary level in 1980. These statistics indicate a human resource base that is ill equipped to move beyond agriculture and unskilled labor.

D. Religious and Tribal Groups

1. Religious Groups

The Agency is almost entirely Muslim. There is a very small Christian population (.4 % of the population in 1980), most of whom live in Upper Kurram. There are a few Hindus, Sikhs and Ahmadis as well.

The main cleavage in the Agency is not tribal but religious. Other than Orakzai Agency, Kurram is the only Agency to have a substantial population of Shi'a. Using statistics provided by the PA's office, which count the total population at 288,835, or slightly lower than the 1980 census recorded, the total population of Shi'a in the Agency was 130,224, while there were 158,611 Sunnis. The Shi'a are in a strong majority in Upper Kurram - 104,286 Shi'a vs. 13,397 Sunnis. They constitute 46% of the population in Lower Kurram, where there were 24,635 Shi'a and 28,394 Sunni. In FR Kurram, where population data are less accurate, the population is predominantly Sunni, with 116,820 Sunnis to 1,303 Shi'a. There appears to be some sentiment among the Shia that FR Kurram should be attached to Orakzai Agency rather than Kurram. This is partly on tribal grounds but also probably because the large number of Sunnis in FR Kurram reduce the Shi'a to a minority in the Agency. Prior to the attachment of FR Kurram to the Agency, the Shi'a were in the majority.

The Shi'a own the best land in Upper Kurram, and they also own good land in Lower Kurram. In Upper Kurram, the Sunni population are often tenants to the Shi'a landlords and they tend to live on the periphery of Shi'a villages. The settlement pattern is more mixed in Lower Kurram. According to one informant, the Sunnis control the timber trade, but there are also many Afghans involved.

Fifteen years ago, relations between the two communities were, for the most part, sufficiently amiable that there was some inter-marriage. Now that has changed. There are tensions between the two groups that occasionally break into open conflict. The last major clash occurred in 1987, but there are smaller ones from time to time. All those knowledgeable about the Agency believe that tensions have increased substantially in this decade, due to the

presence of large numbers of Sunni refugees. As Aristotle pointed out many years ago, there are few things as destabilizing to a political unit as the presence of a substantial foreign body living within its boundaries. The refugees belong to the same tribes as much of the Sunni population - they are Muqbils, Jajis and Mangals, so ties between Kurram's Sunni inhabitants and the refugees can be strong. The Shi'a, besides having become an even smaller minority in what they see as their own land, believe that the refugees support the Sunni population against the Shi'a by providing encouragement, arms and perhaps even direct support in clashes. Certainly arms are available in larger numbers and greater sophistication than they were fifteen years ago. While their easy availability may have increased the possibility of clashes, they have also served to increase the numbers of dead and injured, which in turn increases hostility.

As one informed observer has pointed out, the refugees have little reason to be fond of the Shi'a. Considerable prejudice against the Shi'a exists in Afghanistan. In addition, the Shi'a population in Upper Kurram has refused in large measure to let the refugees settle in the tehsil. Only three out of thirty-three camps are in Upper Kurram. Refugees are sometimes robbed on the road while travelling in Upper Kurram from the border to Lower Kurram.

2. Tribal Groups

The Bangash and Turi tribes are the two major ones in Upper and Lower Kurram. The Bangash used to dominate, while the Turis were nomads who travelled through the area. Eventually the Turis settled there and over time became stronger and more numerous. In 1901 there were 12000 Turis to 6000 Bangash. Much of the good agricultural land came into Turi possession. The Mangals (Muqbils, Kharootis, Zadran, and Jajis) are also an important Sunni tribe in both Lower and Upper Kurram. Some migrated to Kurram in the 1940s and 1950s. Moving in a north to south direction, FR is inhabited by the Parachamkani, Massozai, Alisherzai and Zaimusht tribes. The Parachamkanni are related to the Chamkanni tribe in Afghanistan, on the Paktya-Kurram border opposite Kharlachi. The last three are subdivisions of the Orakzai tribe.

Because of the saliency of the Shi'a-Sunni cleavage, tribal cleavages seem less significant, particularly in Upper and Lower Kurram. One reason may be overlapping tribal affiliations. There are both Shi'a and Sunni Bangash and Turis. The Shi'a mostly belong to the Turi tribe while the Bangash are mostly Sunni. The important Shi'a Turi lineages are Alizai, Doperzai, Gundikhel, Hamzakhel and Mastukhel. There is intermarriage between the tribes, but mainly among those of the same religious group. For example, a Shi'a Turi might marry a Shi'a Bangash. In this

environment, it is the religious solidarity that is important, not the tribal tie.

IV. REFUGEES

There are 33 refugee tented villages (RTVs) in the Agency, three in Upper Kurram in the vicinity of Ghoz Garhi and the balance in Lower Kurram. The locations are shown in Fig. IV.1. The unregistered refugees, who are mostly from Ningrahar, live scattered among these camps and in the towns but many also live together in their own camp, called New Durrani. The GOP offered these refugees registration if they would move to Mianwali but they declined to go. While the refugees at New Durrani cannot be given rations, a limited amount of NGO assistance to the camp is now forthcoming.

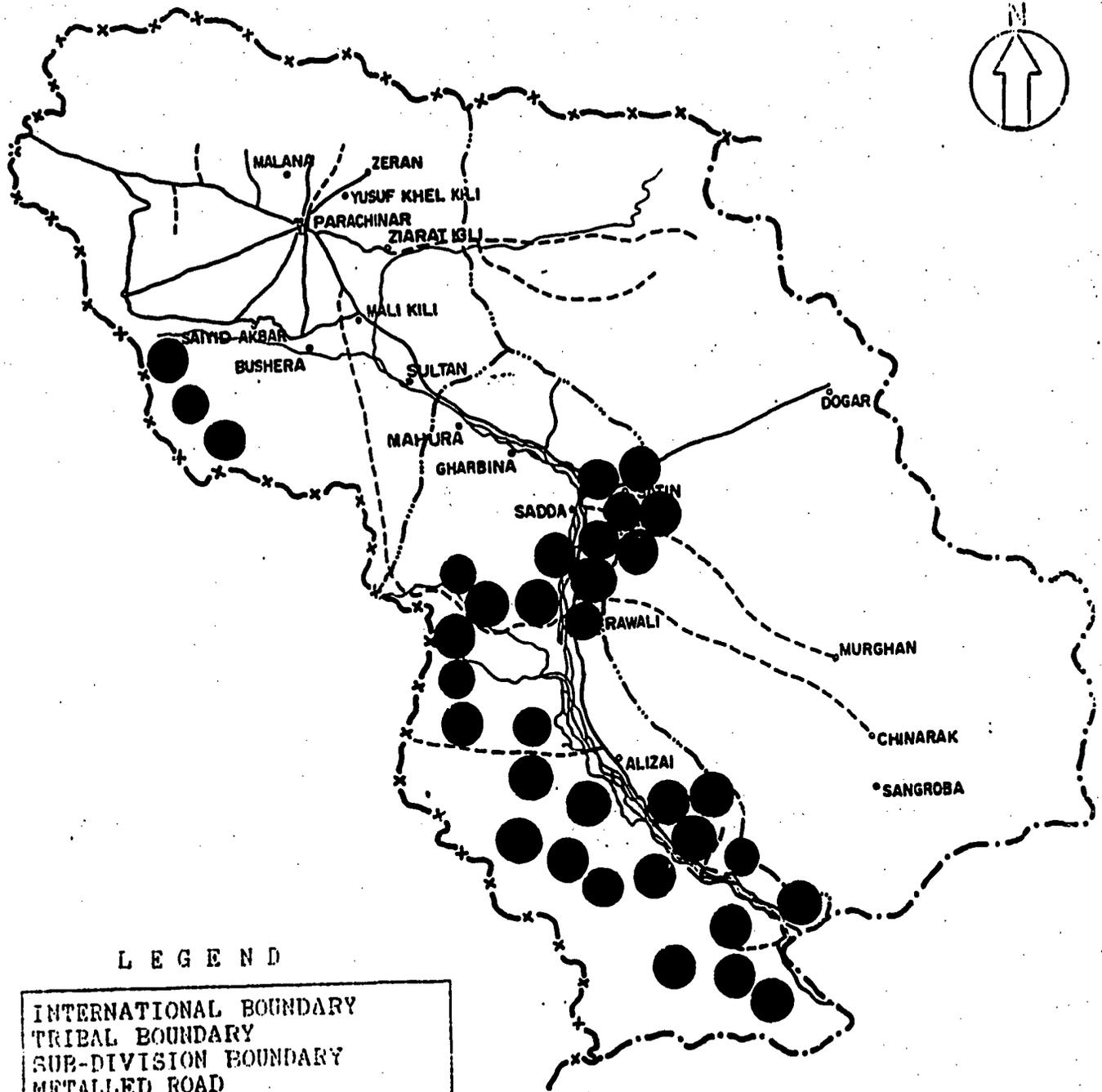
Refugee camps have been located on barren, rocky wasteland, generally in areas away from the river and sometimes with very little water. As Table IV.2 indicates, the camps are relatively small, and they are physically spread out so that they give the appearance of being clusters of villages rather than high-density camps such as one sees outside Peshawar. The camp at Ahmadi Shama, for example, stretches for ten miles. Arawali, as another example, is the smallest RTV in population but it has three widely separated clusters of houses. The tents have disappeared over time and been replaced with mud and stone-walled structures. The scattered nature of the villages has minimized sanitation problems. Many families have built traditional latrines, and both the Pakistani Red Crescent and UNICEF have been involved in improving latrines in the camps in Kurram.

Official statistics suggest that 43% of the refugee population is under 14, while 29% are male and 28% female adults. Most of the refugees are rural in background and were small farmers or unskilled laborers. The vast majority of them have come from Paktia, but considerable numbers have also come from Ningrahar, Logar, Wardak and Ghazni. Some are from Dari-speaking areas and are Tajiks. There are also a few hundred Hazara Shi'a. Tribal affiliation is important and has been preserved in their various party or tanzeem affiliations. The main Pushtoon tribes to which the refugees belong are as follows:

Ghilzai	20 % of the refugee population
Mangal	18 % of the population
Jaji	14 % of the population
Sabri	11 % of the population
Khogiani	9 % of the population
Khostwal	14 % of the population

There is some evidence circa autumn 1989 that the level of economic activity in Paktia province has increased substantially, suggesting that a number of refugees have returned. According to NGO reports, women and children are more in evidence in the province now than they were in late 1988. It seems clear that some family members have returned home, at minimum to sow the wheat crop, but they have probably also left family members behind in Pakistan to continue to

KURRAM AGENCY REFUGEE CAMPS



LEGEND

INTERNATIONAL BOUNDARY	
TRIBAL BOUNDARY	
SUB-DIVISION BOUNDARY	
METALLED ROAD	
SHINGLED ROAD	
REFUGEES CAMPS:	
5,000 - 9,000	●
9,001 - 18,000	●

TABLE IV.2

LOCATION AND NUMBER OF REFUGEES
IN KURRAM AGENCY
AS OF JUNE 1989

	CAMP	NO. OF FAMILIES	POPULATION
1.	Ahmadi Shama	1,749	11,317
2.	Arawali	765	5,858
3.	Asgharo. 1.	940	7,393
4.	: 2.	1,293	9,340
5.	: 3.	1,354	10,158
6.	: 4.	745	6,413
7.	Bushera	1,679	12,872
8.	Bassu	1,343	7,333
9.	Chappri	1,340	10,042
10.	Durrani	1,105	7,593
11.	Gerzandi	1,295	10,884
12.	Gawaki	1,641	11,313
13.	Ghuz Gari	772	6,039
14.	Muzaffar Kot	1,046	8,185
15.	Matasangar	1,809	14,456
16.	New Bagzai 1.	2,411	17,383
17.	: 2.	2,128	13,633
18.	: 3.	1,467	9,608
19.	Old Bagzai	2,199	15,524
20.	Parachinar 1.	1,188	8,548
21.	: 2.	1,798	12,544
22.	Saraghura	1,471	11,299
23.	Shashu	1,963	13,876
24.	Shabak	1,258	8,824
25.	Satin 1.	1,496	11,304
26.	Satin 2.	781	5,660
27.	Tindo 1.	1,469	10,333
28.	Tindo 2.	989	7,048
29.	Khapyanga 1.	1,627	10,028
30.	Khapyanga 2.	1,664	10,067
31.	Khapyanga 3.	2,643	17,230
32.	Khapyanga 4.	1,512	9,078
33.*	Zamo	2,358	15,166
34.	Bechalors		1,500
35.	New Durrani-Unregisterd		
TOTAL		50,798	347,849

*Number 34 is not a camp but a group of mujahideen living near the border. There are 33 camps of registered refugees and one of unregistered refugees.

collect rations. Particularly since communications and travel between Paktia and Pakistani border areas are so easy now, refugees may be very reluctant to relinquish the safety net that rations represent.

There are 24 UNHCR-funded Basic Health Units and 4 Sub-Units. One Sub-unit is housed in a tent, six of the BHUs are concrete structures and the rest are katcha buildings. The six concrete BHUs are located as follows: Khapyanga (2 units), Bushera, Sraghurga, Tindo and Chappri. There is also a Kuwait-supported concrete BHU at Parachinar camp no. 1. There is a small concrete hospital at Sakhi Ahmad Shah, near Sadda. The following camps lack a health unit: Gowaki, Ghoz Ghari, and Garsandi. Sometimes a BHU serves more than one village - for example, there are two BHUs to serve Ashgaro 1-4 camps. The BHUs are staffed with a physician, a Lady Health Visitor, a dispenser, an EPI attendant and vaccinator, and a malaria supervisor. Some refugees still seek treatment at GOP facilities in the Agency.

There are two completed piped water supply schemes, one at Tindo and one at Satin. The NGO DACAAR has improved 908 shallow wells serving the camps. Some refugees have dug their own wells and some have even installed hand pumps. There are also a few water tankers to deliver water to RTVs.

There are 35 boys' primary schools and four girls' schools. There are also eighteen middle schools. One primary school and six middle schools are in concrete buildings; the rest are either in katcha buildings or tents.

One report estimated that the average refugee household owns two animals. The lack of grazing land is a serious constraint in expanding the number of livestock. There is one mobile veterinary unit stationed at Bagzai, making regular visits to all camps to treat refugee-owned animals. This is staffed by a veterinary officer and two assistants. There is also a stationary vet dispensary and insemination center at Bagzai 1 camp.

It is usually possible for at least one male member in a family to find some sort of casual employment. As noted, many refugees have entered the transport business and many have become small merchants. In addition, six income generating projects are being funded, including shawl-weaving, poultry, well improvement, building maintenance and construction (2), and the establishment of mazri plantations. In addition, in 1986, 100,000 seedlings were planted in and around the camps, by refugees, to improve appearance, give shade, etc.

There is considerable cross-border movement now, and taxi services are running. Men in some families have probably gone back to sow and tend the wheat crop but many are from areas close to the border so they can come and go relatively easily. Whole families do not

seem to be returning - at least there is no admission of this - because they cling to the ration cards for security and as a means of support while they try to resume economic life inside.

V. LAND USE

At least two dissimilar sets of statistics have been published or used to describe land use in the Agency in recent years:

1) One set (with minor variations) was given to the researcher by individuals in Kurram and in the Peshawar FATA Agriculture Directorate. In this, the cultivated area varied from 42,207 to 42,281 acres. The researcher eventually determined that these data use the 1942-43 land settlement survey of Upper and Lower Kurram tehsils as a base. The data are accurate for what they describe, but they only describe two tehsils. While only partial, these statistics are presented in Table V.1 because they are the most accurate that exist. Data from 1942-3 are recorded alongside these current data.

TABLE V.1

LAND USE IN KURRAM AGENCY (Lower and Upper Kurram tehsils only)	1987-8 (Directorate of FATA Agriculture)	1942-3 (cad. survey)
Total Area	835,326 acres	60,611*
Cultivated Area	42,207 acres	39,516
Net Sown	38,795 acres	
Current Fallow	3,412 acres	
Cropped Area (cultiv. area x # crops p.a.)	61,244 acres	
Area Sown More Than Once	22,449 acres	
Uncultivated Area	793,119 acres	
Culturable Waste	3,445 acres	7,788
Forest	1,841 acres	
Unavailable for Cultivation	787,834 acres	13,307

*This is the area that the survey measured and does not represent an attempt to measure the whole of what was then the Agency.

The above statistics do not appear to include the tehsil of F.R. Kurram, except in the 1987-8 data as part of the Uncultivated Area and Total Area. This is because the 1942-43 settlement only measured cultivated land and waste land amidst cultivated land in the Kurram river valley and Parachinar plain. As such, it does not even include all parts of the tehsils of Upper and Lower Kurram.

2) FATA Development Statistics and Important Agency-Wise Socio-Economic Indicators, repeating data published in Agricultural Statistics, report the Agency's cultivated area as 67,097 - 67,211 acres. The researcher was unable to trace the origin of these

data. It is possible that this higher estimate, which the FATA Agriculture Directorate reports that it was instructed to use beginning around 1982, represents an attempt to include FR Kurram as well as Upper and Lower Kurram.

If the larger figure of 67,097 acres of cultivated land represents an attempt to include FR Kurram, we can subtract the relatively certain data for Lower and Upper Kurram given in Table V.1 from the total recorded by FATA Development Statistics and put together a profile for FR Kurram:

<u>FATA DEV. STAT.</u>	<u>TOTAL LAND USE</u>	<u>FR KURRAM LAND USE</u>
Cultiv. Area	69,097	24,890 acres
Area Sown	42,408	3,513 acres
Area Fallow	24,789	21,377 acres
Cropped Area	68,718	7,474 acres

The above profile for FR Kurram is scarcely conceivable. It is true that the agricultural resource base in FR Kurram is not a rich one but the proportion of fallow land to sown is unlikely. Families could not earn a livelihood from land so poor that 86% of it had to be left fallow in any one year. Therefore, we do not feel comfortable using the data in the left hand column and think that it is best to use data drawn from the land records for Upper and Lower Kurram, keeping in mind that these data are partial.

Accordingly, these data for Upper and Lower Kurram given in Table V.1 understate the amounts of cultivated land, cropped area, culturable waste and perhaps forest while they overstate uncultivated area and land unavailable for cultivation. The extent to which the data over- or under-state current land use is unknown. Only a new "settlement" (cadastral survey), aerial photography, or landsat analysis could provide accurate figures.

A. Agricultural Land

Revenue officers visit assessed farm land seasonally to make new estimates of acreage. In comparing their estimates, there has not been a major increase in the amount of recorded land farmed in this century, perhaps reflecting the extremely limited land base. The 1903-4 assessment recorded 37,498 acres; the 1942-43 assessment 39,516 acres; and the 1986-7 estimate 42,207 acres. This is an increase of 12.5 % since 1903. The current figure for cultivated area is derived as follows: 1) farm land measured in 1942-3 and still in production; 2) farmland measured in 1942-3 and lost to erosion; and 3) new land brought into production in the measured area via government-provided irrigation since 1942-3. The latter is included if the government has made an agreement with the village that the villagers will pay land revenue in return for assistance with irrigation. This factor explains the small

increase in cultivated area from 1942-3 to 1987-8. Some land now being farmed in Upper and Lower Kurram is omitted from the statistics but it is not clear how much. This is farm land that has come into production in Upper and Lower Kurram since the 1942-3 settlement, but does not fall into category 3) mentioned above. For example, land at the foothills of the Safed Koh mountains, in the northern part of the Parachinar plain, appears to have come into production in the last decade or so. This new farm land is probably not included in the revenue system. As one result, farms lower down on the plain now have less water than they had previously.

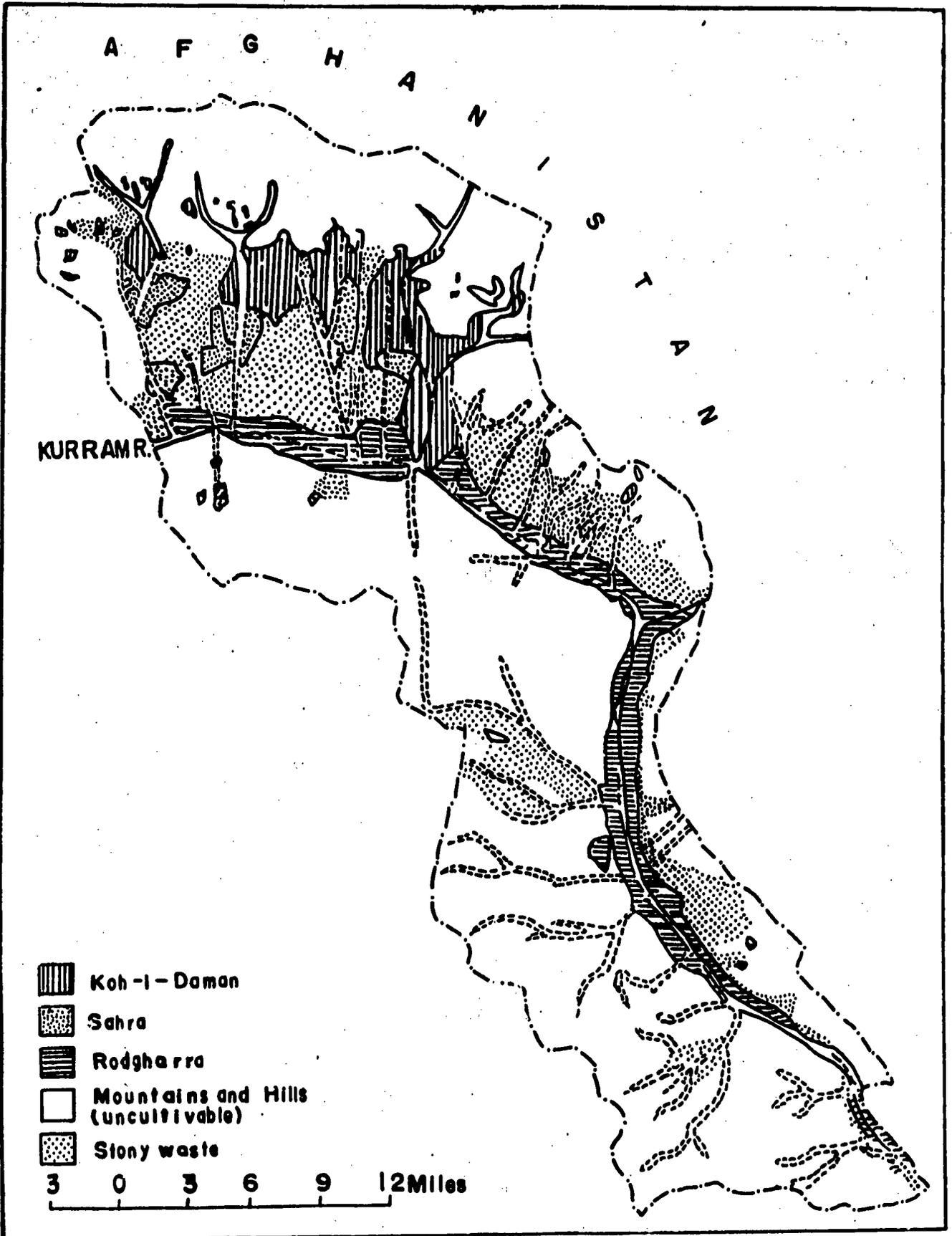
The amount of agricultural land in FR Kurram is unknown but a close look at the Survey of Pakistan's 1:50,000 scale maps of the area will show that it is very limited. It is more mountainous and less advantaged with respect to water than Upper and Lower Kurram but agriculture is still the primary means of support for many people in the tehsil. The larger pockets of agricultural land are located as follows: Talai, Tabai, Dunga-Daya, Taghuna, Gaodarra, Tindo, Tatang, Manatu, Patay, Khazina, Gwaza, Had Mela, and Dhol Ragha south to the boundary with Kohat. Fig. V.2 shows these areas.

Land records for Upper and Lower Kurram do not divide area by tehsil so it is not possible to derive data with respect to farm land on a tehsil basis without an enormous amount of work.

Land is divided into three categories: Koh-i-Daman, Sahra and Rodgharra. The definitions and amounts, as recorded in 1942-3, are as follows:

1) Koh-i-Daman - This is cultivated land found north of the Kurram river and mostly at the foot of the Safed Koh mountains. It is watered by snow-melt and springs. It is interspersed with waste land. Its lighter soil is associated with hill torrents. Because these torrents carry no silt, this land requires more fertilizer than riverain tracts. In 1943-4, 17,370 acres were classified as Koh-i-Daman land, and were almost equally divided between single cropped and double cropped land. Wheat and maize yields may be twice as high as they are on Sahra land, but are also likely to be lower than on Rodghara land.

2) Sahra - This category of cultivated land is found north of the river and south of the Koh-i-Daman lands. It consists of hard, stony soil that is not particularly fertile. It relies on the somewhat unreliable surplus run-off from the Koh-i-Daman lands to the north. In 1944, 27 % of this category was rain fed. Sahra land seldom permits more than one crop per annum. The percentage of barani land in this category may have increased over the years since, as already noted, more land at the foothill of the Safed Koh appears to have been brought into production, taking surplus run-off that once watered Sahra farms. In 1943-4, 4,498 acres were classed as Sahra land.



Kurram Agency: Assessment Circles (Natural Features) (based on Second Regular Settlement Report 1942-4) (Taken from David A. Dichter, *The North West Frontier of West Pakistan. A Study in Regional Geography*, Oxford: Clarendon Press, 1967)

FIG-V-2

3) Rodghara - This category includes the riverain lands from Karlachi to Thall in a sixty mile long strip. The soil is good loam with an excellent top dressing of silt given by the Kurram river. Almost all Rodghara land is irrigated, and most of it is double cropped. Between the 1904 and 1943 settlements, 669 acres of Rodghara land appear to have been lost, perhaps due to erosion.

Figure V.3 presents the findings of the 1942-3 cadastral survey and is still the best guide to land use in Upper and Lower Kurram. It also marks the paths taken by hill torrents and streams. Within each of the three categories, as Table V.4 illustrates, land was further classified according to whether it was spring or run-off irrigated (chashma), river irrigated, single cropped, double cropped or barani.

TABLE V.3
AGRICULTURAL LAND IN 1943-4 BY CATEGORY
IN ACRES

	CHASHMA		RIVER		BARANI
	2 crops	1 crop	2 crops	1 crop	
Koh-i-Daman	8,547	7,505	30	--	1,288
Sahra	186	3,111	--	--	1,201
Rodghara	3,099	939	11,454	1,703	443

Only 8% of currently recorded farm land is left fallow at a given time. This is not a surprise given that most of the farm land is irrigated. The amount of fallow land may vary from Kharif to Rabi farm seasons. If FR Kurram, which is primarily barani land could have been included, the percentage of fallow land would have been higher. Two crops per annum are grown on 53% of the farm land according to these statistics.

Figures offered in Table V.1 for culturable waste (and forest) probably only record the amount found near or amidst recorded farm land. There probably is a larger amount of waste land that could be brought into production were water available and/or flooding not a problem. Some of that waste land could have a high component of gravel making it expensive to clean.

B. Forests

Contrary to the table V.1, the Forestry Department estimated a few years ago that there were 87,721 acres of natural forest in the

Agency. Much of this is at higher altitudes and therefore harder to cut for sale.

C. Pastures

The Forestry Department estimates a few years ago that the Agency had approximately 30,000 acres of grazing land.

VI. AGRICULTURE

A. Landholdings

The most recent data on farm size and ownership date back to the 1980 agricultural census. These can be compared with data from the 1942-3 settlement. The Census was not a complete census but rather was a sample census which reviewed a total of 9369 holdings, with a cultivated area of 28,955 acres. By comparison, the 1942-43 land settlement, which did not cover FR Kurram at all, reported a total of 37,358 holdings (with 32% of the total Agency population) farming 39,516 cultivated acres. It is unlikely that the 1980 Agricultural Census covered any part of FR Kurram, given the lack of roads in FR Kurram at that time. In comparing the settlement and the Census, then, and assuming that they covered much the same area, it seems probable that they defined holdings in a somewhat different fashion. The settlement may have reported smaller units, or - if the Census relied on farmers to report the size of their holdings rather than objective measurement, as it seems to have done - then the farmers may have over-reported acreage. If anything, the number of individual farms would tend to increase over time, owing to Islamic inheritance laws.

Even if the numbers of holdings reported by the Census and the settlement seem difficult to compare, it should still be possible to compare the percentages of owner-operated and tenant-operated farms since these are internal calculations. This comparison allows us to draw some conclusions about changes in land ownership over time. In 1942-43, 72 % of farm holdings were cultivated by the owner; while in 1980, 84 % of the farms sampled were owner-operated. This could indicate an increase in farm ownership, particularly since another 5.6 % of the farms were operated in 1980 by farmers who both owned and rented land. In addition, in 1942-43, 28 % of the farms were farmed by tenants; while in 1980, 10.6 % of the farms in the sample were tenant-operated. These changes in percentages could also mean that tenants were thrown off the land as population pressure increased. This may have happened to some tenants but many held protected status in their right to farm a particular piece of land. Tenants may, however, have had greater incentive to look for jobs elsewhere.

Tenancy arrangements vary. Some tenants are categorized as "occupancy tenants" and have great security. Others, who do not hold this status, do not have security. In 1942-43 more than half the tenant families were classified as occupancy tenants. Tenancy arrangements at that time varied. Some paid the land revenue for the owner, some paid cash rent, and some paid in kind. For the latter, their rent consisted of anywhere from one-quarter to one-half the crop, with the majority owing one-half their crop. Most tenants today would still owe half the crop with the owner providing seed, water and fertilizer. The tenant provides all labor, including tractor or bullocks.

Farm size in the Agency is small. In 1980, 61 % of the farms sampled were less than 2.5 acres in size, while a further 29 % were between 2.5 and less than 5 acres. Only 9.8 % of the farms sampled contained 7.5 acres or more, and only .9 % were larger than 25 acres. A total of 75 % of the tenant-worked farms were under 5 acres, while 82 % of the owner-operated farms fell into the same size range, indicating a slight tendency for tenant-operated farms to be larger. Table VI.1 compares farm size, percentage of farms and percentage of area held.

TABLE VI.1

Farm Size Related to Number of Private Holdings and Cultivated Area, 1980 Agriculture Census

Farm size	# of Farms	% of Total Farms	% of Cultiv. Area
< 1 acre	2,316	25 %	3 %
1 to < 2.5 acres	3,479	37 %	14 %
2.5 to < 5 acres	1,690	18 %	15 %
5 to < 7.5 acres	895	10 %	14 %
7.5 to < 12.5 acres	472	5 %	11 %
12.5 and > acres	517	5.5 %	42 %

Of the farms listed above, 940 or ten percent had owners who farmed no land themselves, suggesting that they were absentee landlords. While these data may reflect some degree of inequality in land ownership, with 5.5 % of the farms containing 42 % of all cultivated land, it also reflects the damaging process of fragmentation. With farm land being divided equally among brothers at the death of the father, there is a constant downward process in the size of holdings. The numbers owning smaller and smaller pieces of land grow while the size of their holdings does not. One advantage of these inheritance law, which are rigorously respected as far as male heirs are concerned, is that they help preserve the considerable equality to be found in Pushto society.

Overall for FATA, 83.2 % of the farm holdings are less than 7.5 acres and they hold 33 % of the total cultivated area. In Kurram, 90 % of the holdings are smaller than 7.5 acres and

contain 46 % of the cultivated area. This suggests that there are more holdings of a larger size elsewhere in FATA, but then Kurram has some of the best watered and most productive farmland in FATA, so it is not surprising to find that holdings are in general smaller.

Fragmentation is certainly a problem, with much land being taken to create boundaries between very small parcels. One component of fragmentation of land is that the number of farms grow while farm size decreases. Another component is that owners and tenants end up farming very small parcels scattered in different places, requiring them to travel from one field to another to another, and reducing the time and cost efficiencies to be gained in using agricultural machinery. There is almost nothing that can be done about these problems, since they are the consequence of Islamic inheritance laws. Increasing fragmentation over time, along with population growth which contributes to fragmentation, means that pressure on farm land grows. Families cannot support themselves with what they can grow, creating a powerful incentive for out-migration from the Agency. In 1980 the average farm household in Kurram consisted of 10.2 persons so approximately 59,100 persons or 20 % of the Agency's population were trying to support themselves on less than 2.5 acres of land. Another 6 % of the population were trying to support themselves by farming 2.5 to less than 5 acres.

Of the 9255 farms reported on as part of the 1980 census, only 1407 were in one piece and of those 1407, 92 % were less than 2.5 acres in size. A total of 3,394 farms, or 37 % of all farms, were broken into two or three fragments, with 90 % of this total consisting of farms of less than 5 acres in size. An additional 1998 farms, or 22 % of all farms, were divided into four or five pieces, with 78 % of those being smaller than 5 acres. Finally, 2456 farms, or 26 % of the total, report division into 6 or more fragments. The following two tables VI.2 and VI.3 illustrate fragmentation. Eighty-five percent of all owner-operated farms were fragmented while 71 % of the tenant-run farms were in pieces. Not surprisingly, all those who owned and rented land farmed two or more separate pieces.

FARM FRAGMENTATION BY NUMBER OF FARMS

1980 Agriculture Census

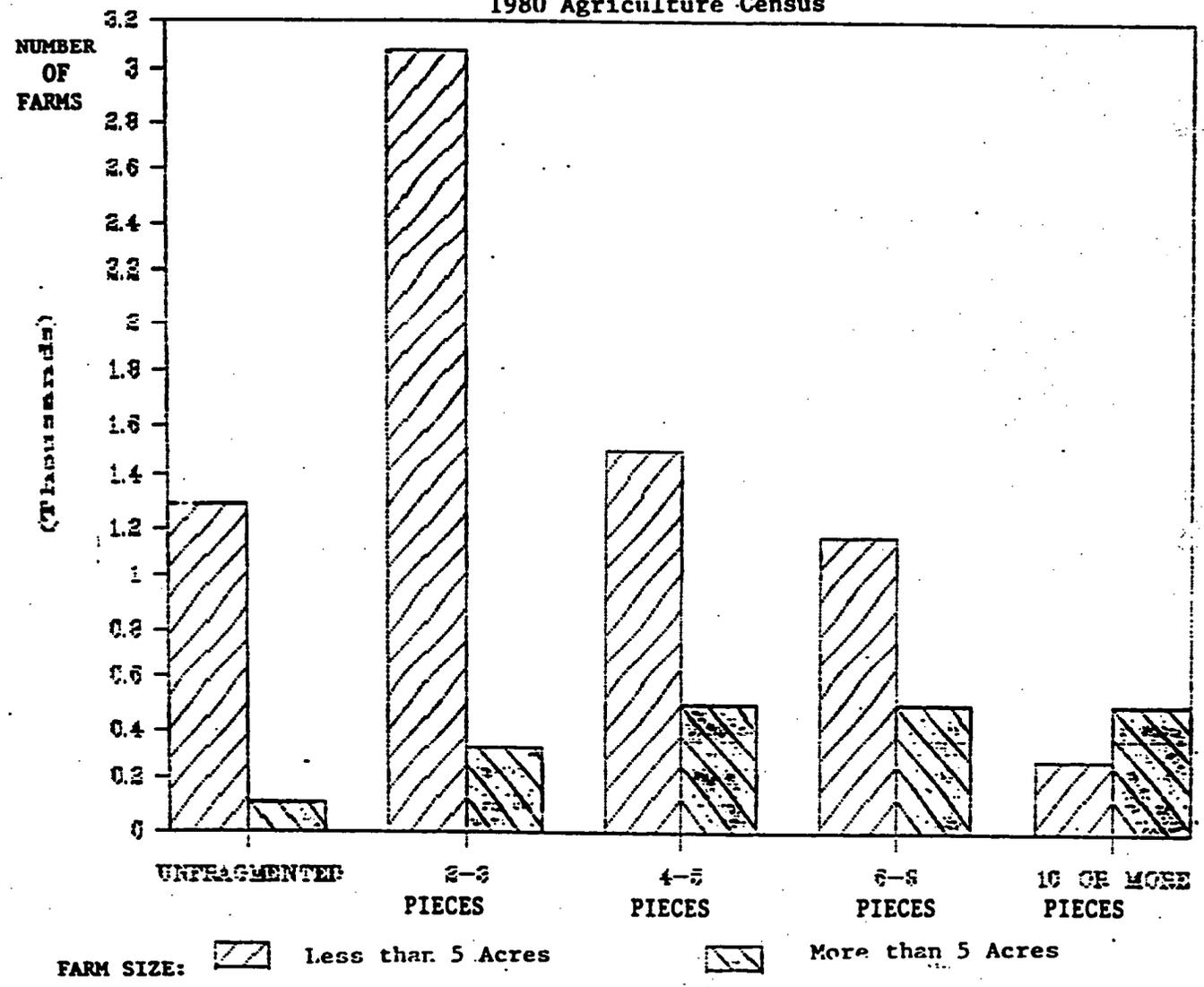


TABLE VI.2

FARM FRAGMENTATION BY AREA (ACRES)

1980 Agriculture Census

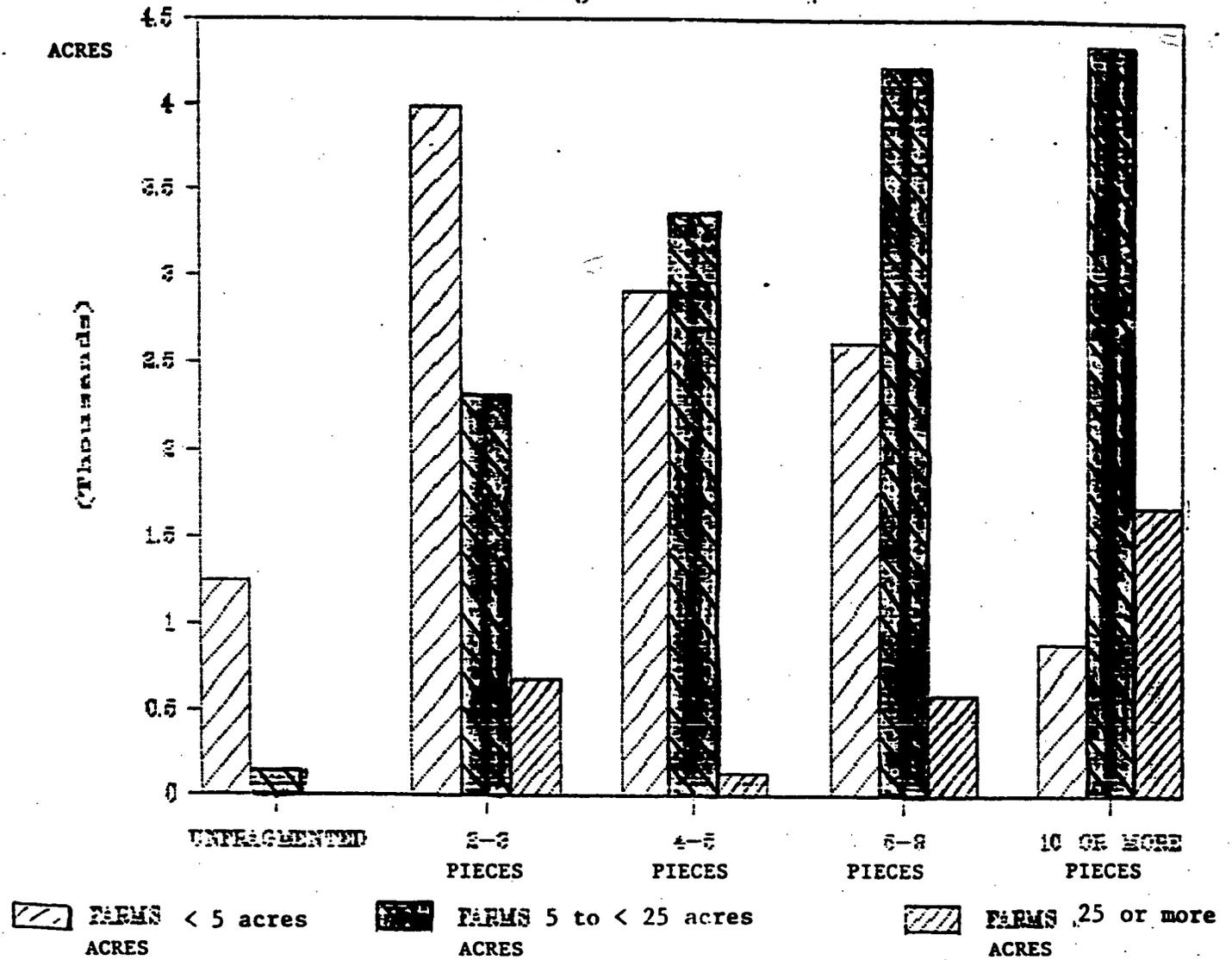


TABLE VI.3

B. Crops*

1. Introduction

While crop acreage estimates are made by the Land Revenue Department, estimating production seems primarily to be the responsibility of the Agriculture Department. Both acreage and yield estimates are made with respect to those lands measured in the 1942-3 settlement. As such, the estimates underestimate acreage and production for most, if not all, crops, and they tell us nothing about agriculture in FR Kurram. These statistics are, however, used because there are no others. When other information that helps confirm or contradict these data is available, it is presented. Readers should keep in mind during the following discussion that unless specified, all data refer to Upper and Lower Kurram.

In 1942-3, Upper and Lower Kurram were mostly self-sufficient in foods. Sometimes, they needed to "import" some food items to the Agency, but then Afghans also purchased food in Kurram and exported it to Afghanistan. Chief exports of the Agency in the 1940s were pulses, potatoes, fruit and tomatoes. The last three items are still important cash crops. The Agency seems still to be self-sufficient in these 4 crops and exports them.

Maize, pulses and potato are the major crops of FR Kurram, although some wheat is also grown. The agricultural potential of FR Kurram is less than that of the other two tehsils, both because of hilly terrain and limited water. The senior agriculture officer in the Agency estimates that 75% of the cultivated area of FR Kurram is rain fed.

Yields generally are low, even by standards elsewhere in Pakistan. This is because of continued heavy use of local seed varieties for some crops (such varieties are more susceptible to diseases and pests), inadequate and/or untimely fertilizer and agro-chemical

 *Sources used for this section include the Gazetteer for NWFP (1905); the 1942-3 land assessment or "settlement"; the 1980 Agriculture Census (about which many have doubts); FATA Development Statistics; Agricultural Statistics for 1987-88; and Agency-Wise Socio-Economic Indicators for FATA. Recent data were provided by FATA Agriculture staff in Kurram and Peshawar and two USAID consultants, Dr. Zidan Abel-Al and Mr. Farooqi. In addition, information from a survey of 50 Kurram farmers, conducted as part of the economic feasibility study for the Thall-Parachinar road, was sometimes used. This survey was biased in favor of wealthier farmers - 85% of the respondents owned more than 5 acres of land, whereas the 1980 Agriculture Census found that 80% of Kurram's farmers owned LESS THAN 5 acres. The results of this survey must be used with caution.

application, poor farming practices (i.e., no weeding inadequate plowing) and, in places, poor soil and little water availability.

There are two important crops: the Kharif or summer crop which is sown in late spring and harvested between September and December, and the Rabi or winter crop which is planted in autumn and reaped in May-June. Table VI.4 shows times for sowing and reaping important crops. Kharif crops include rice, maize, vegetables, fruit, pulses and fodder; while Rabi crops include wheat, barley, fruit, vegetables and fodder. Wheat is the major Rabi crop. Land planted in wheat totalled 86% of the area cropped during the Rabi season and 41% of the total cropped area (Rabi and Kharif) in 1980. Among the Kharif crops, rice and maize probably hold roughly equal importance. At the time of the 1904 settlement, rice was the more significant of the two, but it had lost some ground to maize by the time of the second settlement in 1942-3. Vegetable and fruit production has become increasingly important, and many if not most farmers grow some fodder to feed the few animals they keep.

On double cropped land, the most common sequences are as follows:

- o wheat (early maturing variety) - Maize (early maturing variety)
- o wheat - rice
- o wheat - pulses
- o rice - wheat - rice or rice - wheat - corn
- o rice - fodder - rice

On unirrigated land, typically only one crop per year can be raised, unless the rainfall is exceptionally good. Wheat or corn will be grown.

Young orchards are often intercropped with a variety of crops. Farmers raising potato or groundnut only get one crop of year on this land because of maturation time and/or other factors. Wheat, maize and more rarely soybeans are the predominant crops planted on rain fed land.

The cropped area is currently reported as around 61,244 acres. Double cropping is possible on 22,449 acres. Approximately 3,412 acres are left fallow in any given year, or about 8% of the cultivated area.* The remaining 16,346 acres can support only

 *In the 1980 agricultural census, of 9252 farms reporting on fallow land, only 437 farms indicated that they had kept some land fallow, the total acreage of which came to 1% of the cultivated area. This percentage seems very low, but the Census may only have covered irrigated lands.

one crop. Sahra is the land type most likely to be left fallow, as is indicated by the statistics on cropping intensity given below. If FR Kurram were to be added to the statistics, the proportion of land kept fallow would probably be higher.

Kharif crops form 52% of the total cropped area, orchards about 1% and Rabi crops make up 47%. Cropping intensity in 1987-8 (cropped area as a percentage of cultivated area) was 145. The Agricultural Census reported a cropping intensity of 171, but since the census used a very odd and very low figure for cultivated area, 171 cannot be accepted as accurate. In 1942-3, the assessment found that the cropping intensity on Koh-i-Daman land was 119, on Sahra land 79 and on Rodghara land 152, with the weighted average being 131.

Agriculture Department staff think that as a general rule, 5-25% of any given crop is lost due to disease, pests, and/or adverse weather.

2. Wheat

Most farmers (except for those in the hillier parts of FR Kurram) grow wheat for home consumption. The straw is a major source of livestock feed. The 1980 Agricultural Census reported that 91% of its surveyed farms grew some wheat. A survey of 50 wealthier farmers conducted in 1988 found that 48 out of 50 grew wheat.

Almost all farmers save their own seed from one year to the next. Little is known about the number of acres currently planted in improved varieties and the number sown in local varieties. Farmers in the river valley were quick to adopt MexiPak in the mid-1960s. The 1980 Agricultural Census found that 52% of the acreage sown in wheat was sown with improved varieties. This may overstate the true percentage since the census would not have obtained reliable data from inaccessible (and more backward) areas. The percentage using improved seed has probably increased in the last nine years, as farmers have become more aware of the better results to be had from improved seed in conjunction with fertilizer. Varieties in use include Mexi-Pak and Pak-81 (PakiKasi). One farmer visited in Shalozan has been planting MexiPak for the last twelve years and is still getting good results. Another progressive farmer with 30 acres in Luqman Khel is planting both MexiPak and Pak-81. Some farmers still do not recognize the value of improved seed while others may be interested but discouraged by price or lack of easy availability.

TABLE VI.4

TIMING OF
IMPORTANT CROPS IN KURRAM AGENCY

SEASON: KHARIF

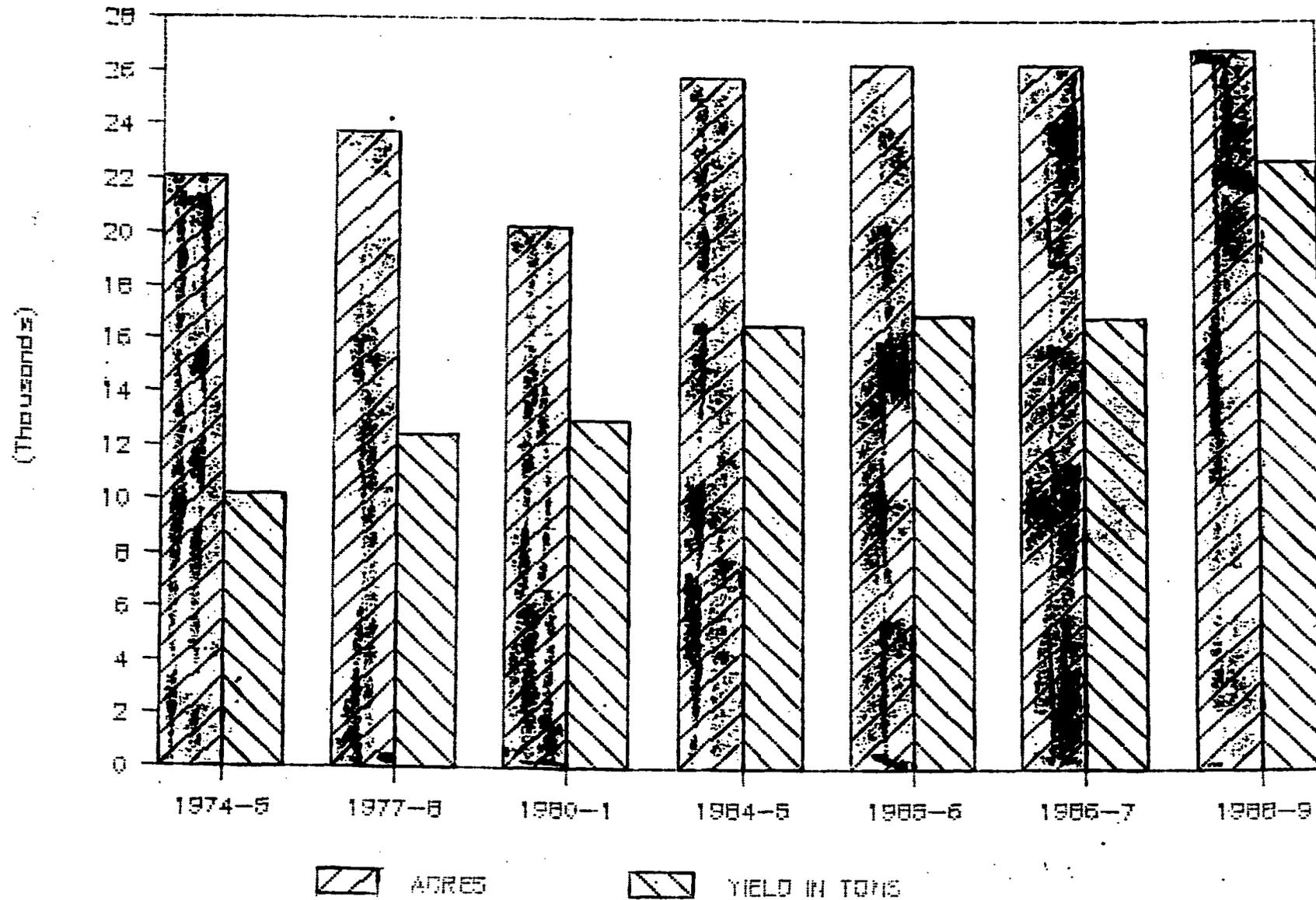
Crop	Sown	Harvest
Rice	May-June	Aug. (Lower Kurram) Sept. (Upper Kurram)
Maize	May(hills) June(plains)	Sept. (hills) Oct. (plains)
Pulses	May-June	Sept.
Vegetables	May-June	Sept.-Oct.
Oilseeds	May-June	Sept.
Fodder*	May-June	Sept.
Potato	April	Aug.-Sept.

SEASON: RABI

Crop	Sown	Harvest
Wheat	Oct.-Nov.	May-June
Barley	Nov.	April-May
Fodder*	Oct.	March-April
Pulses	Oct.	March-April

*Fodder is cut during the growing season to feed animals. Maize and pulses are also pulled for fodder, thereby reducing harvest yields.

WHEAT ACREAGE AND PRODUCTION



BEST AVAILABLE DOCUMENT

186 kg., while the average wheat consumption in NWFP in 1982 was 112 kg. per capita. Kurramites make up some of the shortfall with maize, rice, barley and other foods they grow, but they are far from being self-sufficient in wheat or other grains. Most farmers are not interested in trying to produce a surplus of wheat, since there are other crops which permit them more of a return. Any surplus is likely to be marketed at Parachinar, Sadda, Alizai, Arawali or Thall.

The wheat crop can be affected by aphids and rust.

Table VI.5 reviews wheat acreage and production in recent years.

3. Maize

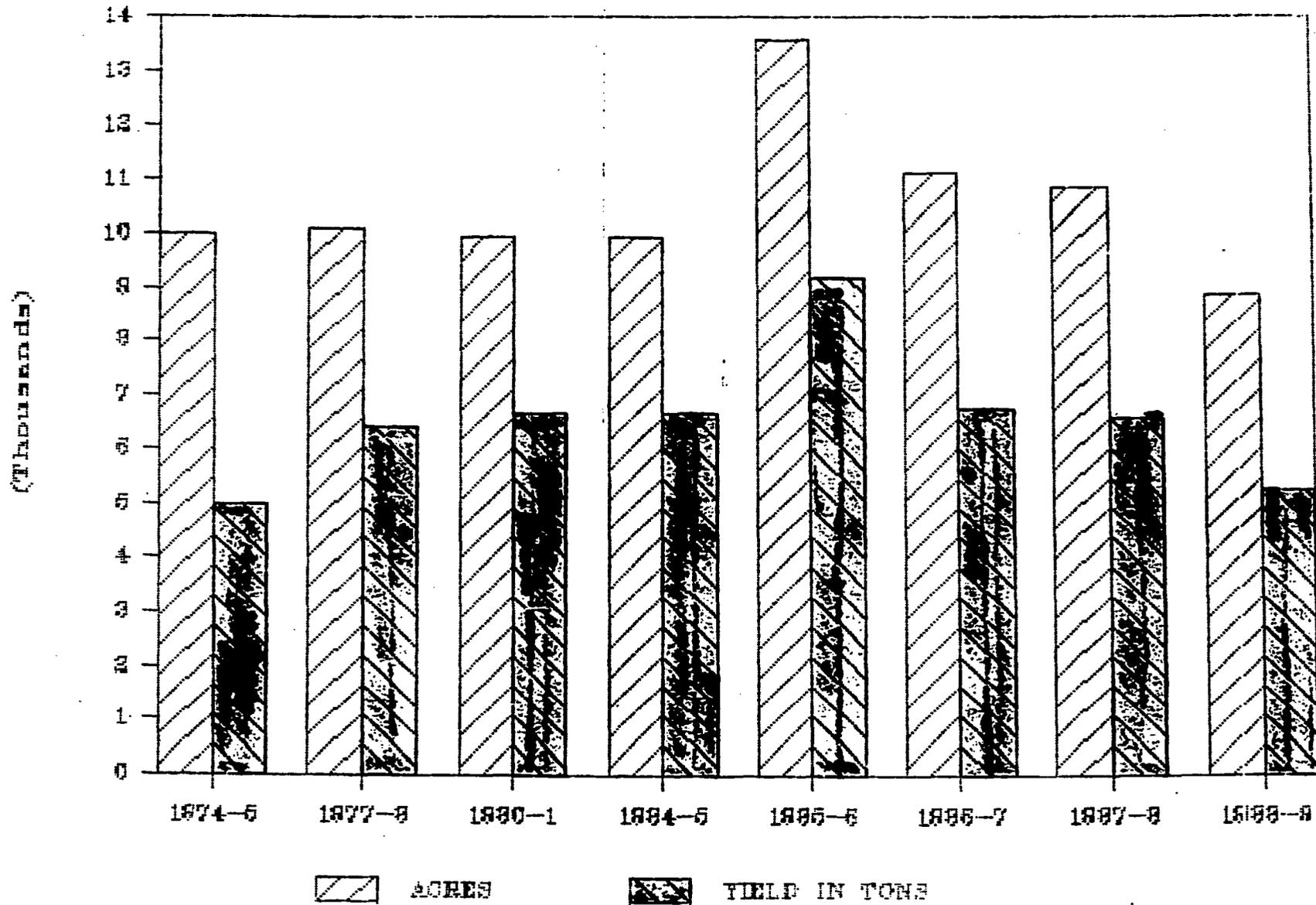
Maize is also primarily for home consumption. During the growing season, maize is thinned and the plants removed are used as fodder. The post-harvest stalks are also important as animal feed. Any surplus grain is likely to be marketed locally. The price paid at local bazaars varied between 35 and 50 Rs. per 40 kg. maund in 1988.

In 1980, 6,791 out of 9,257 farms raised some maize. In that year, 82% of the maize crop was irrigated. Most of the rain fed maize was planted on farms smaller than five acres in size. In the 1988 survey of 50 better off farmers in Upper and Lower Kurram, 44 grew maize. Maize is still primarily an irrigated crop, except perhaps in FR Kurram. Only local seed varieties seem to be used, perhaps primarily because the seed from HYVs cannot be saved from one year to the next.

Acreage has gone up and down a bit in recent years, although the general trend over time has been toward increasing acreage. In 1942-3, a total of 7,641 acres were sown with maize. A high of 11,120 acres was reached in 1986-87. Acreage seems to have dropped since then, in favor of vegetables. Between 1974-75 and 1986-87, a span of 12 years, acreage increased 11%. In the last two years, acreage fell by 19% and is now back to about what it was in 1984-85.

Yields are again very low, generally between .6 and .68 MT per acre, whereas a good hybrid seed can yield two or more MT per acre. One problem is that plants are sown too close together - while this produces fodder for animals, it reduces grain yield. The Kurram maize yield per acre seems lower than that of other FATAs with the exception of Orakzai. Yields have been relatively stable over the years, so increases in production have been primarily due to increases in acreage. For example, in 1942-3, the maize crop produced .65 MT per acre. Those farmers queried in the above-mentioned survey of fifty farmers gained yields that ranged from .8 to 1.5 MT per acre, or considerably higher than the recorded average for the Agency. Wealthier farmers are more likely, of course, to use more and better inputs, and may use better crop management practices. Table VI.6 reviews maize acreage and production in recent years.

MAIZE ACREAGE AND PRODUCTION



4. Rice

Rice is a completely irrigated crop, and it is one that requires a great deal more water than any other crop grown in the Agency. The rice variety planted is a coarse, short grain, and it is meant for home consumption and not export. It is not of export quality. By Pakistan standards, it is said to be high yielding and is also reported to be relatively resistant to the monsoon hail storms that plague the Agency. Any surplus is marketed locally, with the price in 1988 ranging from Rs.150-180 per 40 kg. maund. The Agency must still import rice.

Curiously, rice acreage has declined in the first half of the century, century, perhaps because, as the British speculated, this crop requires a great deal of water. In 1942-43, rice was planted on 7,641 acres, and the assessment report noted that this represented a decline in acreage from that recorded at the 1901 settlement. In the past fifteen years, acreage has ranged from 10,378 to 13,590 acres. The latter high was recorded in 1982-83, and acreage has since declined. Current estimates for last summer's crop range from 11,540 to 12,459 acres.

In 1980 the agriculture census found 51% of the Agency farms surveyed raising some rice. Had FR Kurram been included, the percentage would have dropped.

For varieties that are said to be high yielding, the Agency's yields are low. In 1942-3, the per acre yield was at most 1 ton per acre of paddy (husk plus grain), which is also the national average yield per acre. If this yield is divided by two to subtract the weight of the husks, a rough yield of .5 MT per acre of grain can be derived. Yields per acre currently range from .52 to .56 MT for the grain alone. This would not seem to show much progress. However, two estimates made by Kurram Agriculture Department staff for last summer's crop suggest a yield of .7 MT per acre. The survey of fifty better off farmers discovered that those farmers raising rice gained roughly 1.2 MT per acre, a yield that is significantly higher than the average. While no doubt these farmers had better access of modern inputs and were perhaps better educated than smaller farmers, the difference between their yields and the average may suggest that pride persuaded them to over-estimate their yields.

Rice blast and stem bore are the main problems.

Table VI.7 reviews rice acreage and production in recent years.

TABLE VI.7

RICE ACREAGE AND PRODUCTION

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1974-75	11100	5954	0.54
1977-78	12239	6505	0.53
1980-81	11735	6904	0.59
1984-85	13581	7174	0.53
1985-86	10378	5425	0.52
1986-87	11120	5822	0.52
1987-88	11614	6500	0.56
1988-89*	12459	6990	0.56

Data from 1974-75 through 1987-88 from FATA DEVELOPMENT STATISTICS.

*This estimate was provided by the FATA Agriculture Department in Peshwar. Staff in Kurram, however, had made two different estimates at different times: 11,540 acres with a yield of 16,184 tons of paddy (grain plus husk - it weighs about twice the weight of the grain alone, which is what is reported in the table above), and 12212 acres with a paddy yield of 17,124 tons of paddy. These three estimates are for last summer's crop.

5. Barley

Barley has not traditionally been a very important crop in Kurram, although surprisingly acreage has doubled in the last five years. It is used to feed both animals and humans. The senior agriculture officer in the agency thinks that acreage has increased because of the demand of the refugees for fodder for their animals. Prices have gone up with increasing demand, making the crop a more attractive one for farmers. In 1942-3, 1448 acres were sown with barley; in 1984-5, 1,221 acres were planted; while in 1988-89, 2,471 acres were sown. In the 1988 survey of 50 better off farmers in Upper and Lower Kurram, none claimed to be growing barley. Yields, which should be about what they are for wheat, are even lower, ranging around .45 - .5 MT per acre.

Table VI.8 reviews barley acreage and production in recent years.

6. Pulses

The reporting on pulses is not consistent, making it difficult to distinguish relatively accurate estimates from inaccurate ones and to determine what has happened to acreage and production over time. The reason for this problem may be that there are several different kinds of pulses - mung, mash, arhar and others - and that for some years the statistics may only report on one of the main varieties but without saying so. In 1984-85, which is one recent year for which a breakdown by variety is available, pulses were planted on 10,003 acres. Three years later, acreage devoted to pulses was recorded as 7,981 acres. The estimate for 1988-89, given by the Agriculture Department, is 6,810 acres, but this appears to be more in line with acreage reported in earlier years for mung alone. Mung is currently the predominant variety, planted on 71 % of acres sown in pulses in 1984-5. In 1942-3, 5189 acres were planted in mung, while 2402 acres were sown with mash. Since then, mung acreage has increased while mash acreage has declined. In 1987-88, mash acreage was estimated at 494 acres. During the fourteen year span of 1974-75 to 1988-89, mung acreage increased by 29 %. Pulses are often inter cropped.

There is increasing interest in growing red beans, which can earn the same return as groundnuts (in 1989, Rs. 400-500 per maund according to one consultant). Apparently some farmers are replacing some paddy and maize with pulses and groundnuts.

Mung and rice are typically mixed together and eaten for the evening meal, and thus are likely to remain important crops for the Agency.

Plants are taken from the field before harvest to feed animals. This may help account for what are once again very low yields. For mung, the per acre yield has been .22 MT for practically every year

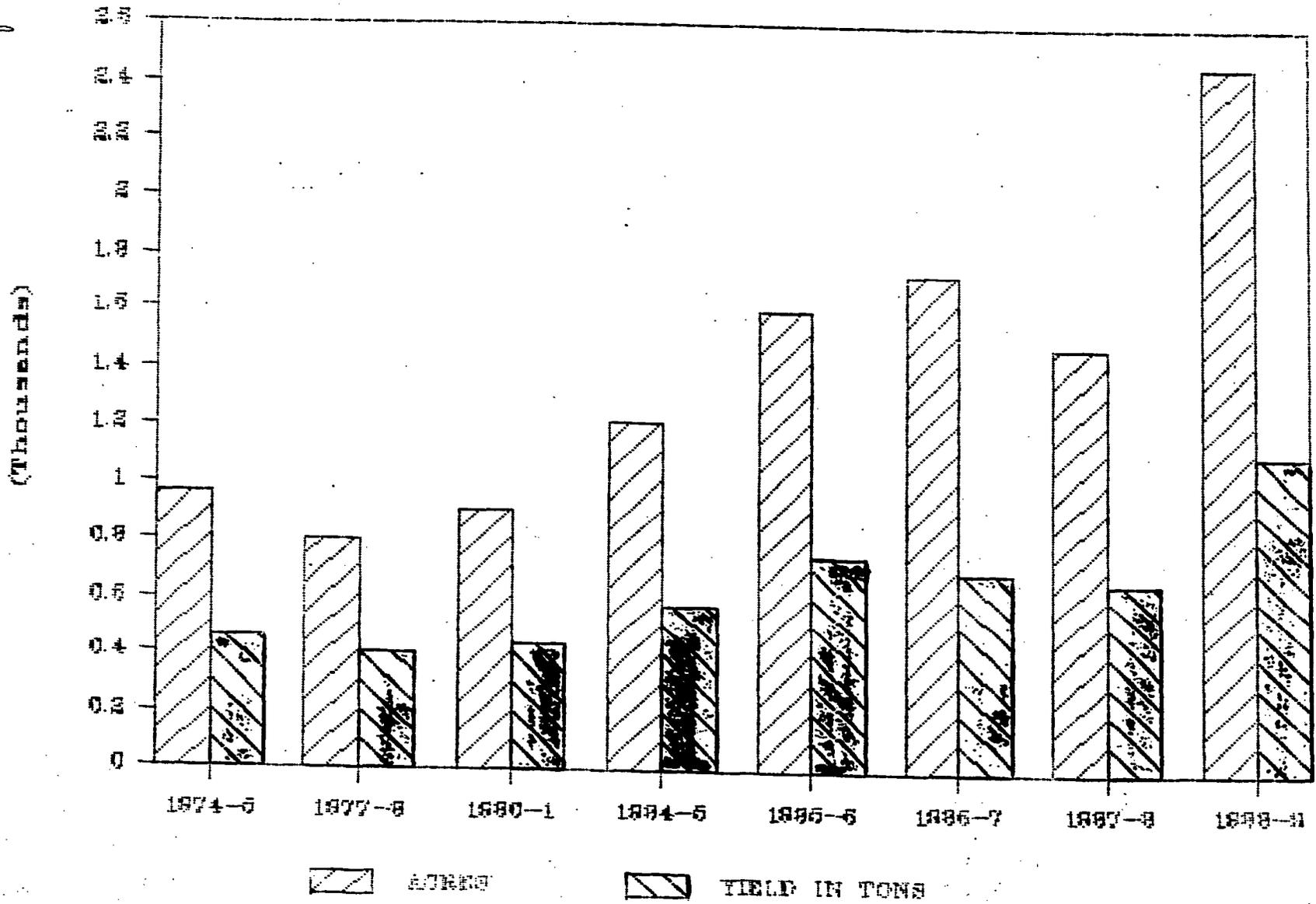
TABLE VI.8

BARLEY ACREAGE AND PRODUCTION

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1974-5	961	463	0.48
1977-78	806	404	0.50
1980-81	914	437	0.48
1984-85	1221	578	0.47
1985-86	1606	750	0.47
1986-87	1730	700	0.40
1987-88	1483	665	0.45
1988-89	2471	1107	0.45

Data are from FATA DEVELOPMENT STATISTICS, except for the 1988-89 estimate which was provided by the FATA Agriculture Dept. in Peshawar. This latter estimate suggests a big increase in acreage.

EARLEY ACREAGE AND PRODUCTION



acre. Table VI.9 reports only on mong acreage and production.

A new pulse crop that is becoming more popular is kidney beans. These are planted around July and harvested in October.

7. Vegetables

The growing of fruits and vegetables was traditionally a low status occupation and not one in which Pushtoon tribesmen wanted to involve themselves. For them, it was appropriate to raise grain crops. In the 1940s, less than 200 acres were planted in vegetable crops in Upper and Lower Kurram. This disdain appears to have changed markedly because there is now great interest in Kurram, as well as in other agencies, in raising high value vegetable crops.

Reporting on vegetables appears to suffer from the same problem that reporting on pulses does. Not only are there different varieties but there are also Rabi and Kharif vegetable crops. Reporting on acreage and production for any given year may include the vegetables of only one season or may leave out a major vegetable such as potato for which separate reporting was intended but then not published. Reporting sometimes fails to capture interest in new crops, such as "winter vegetables" which can be harvested in some parts of FATA when they are out-of-season in the down districts. The statistics, which are quoted here as reported in hectares are as follows:

1980	860 ha. (2124 acres), including 264 ha. in potato, planted by the <u>sample</u> of farms surveyed by the Agriculture Census
1986-87	677 ha., including 60 ha. of potato and 120 ha in onion - <u>FATA Development Statistics OR</u>
	606 ha. plus 111 ha. of potato - estimated by Kurram Agriculture staff
1987-88	420 ha. - <u>Important Agency-wise Socio-Economic Indicators of FATA</u> (draft manuscript)
	1195 ha., including 75 in potato and 200 in onion - FATA Agriculture Department
1988-89	720 ha., including 260 ha. in potato and 100 ha. in onion - FATA Agric. Dept. in Peshawar OR
	959 ha. - Kurram Agriculture staff

TABLE VI.9

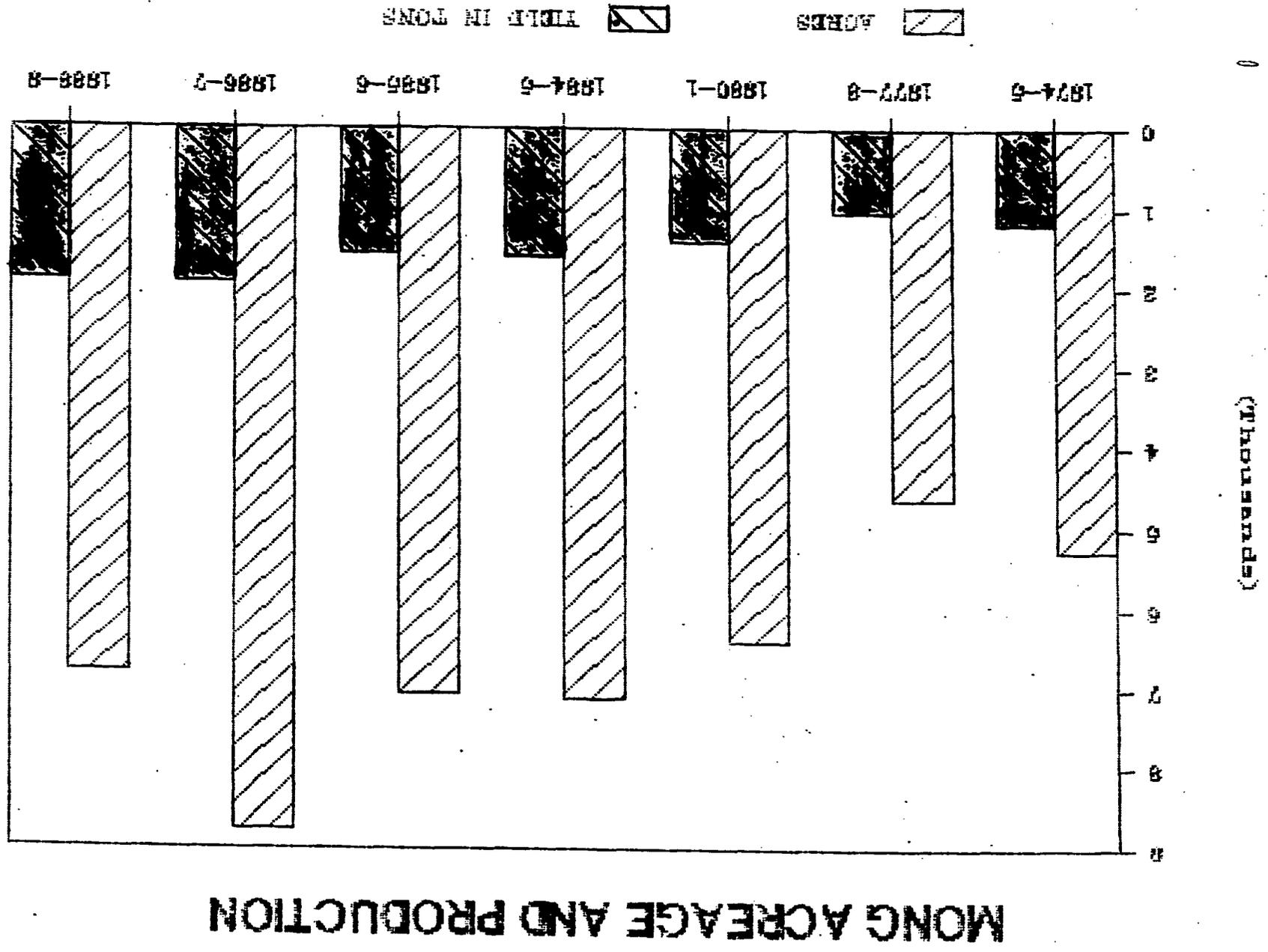
MONG ACREAGE AND PRODUCTION

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1974-75	5276	1182	0.22
1977-78	4631	1037	0.22
1980-81	6425	1430	0.22
1984-85	7119	1586	0.22
1985-86	7067	1574	0.22
1986-87	8772	1927	0.22
1988-89*	6810	1900	0.28

*Estimate here is said to be for all pulses, not just mong.

Data except for 1988-89 from FATA DEVELOPMENT STATISTICS, IMPORTANT AGENCY-WISE SOCIO-ECONOMIC INDICATORS OF FATA, and AGRICULTURAL STATISTICS FOR 1987-88.

TABLE VI. 9



MONG ACREAGE AND PRODUCTION

(Thousands)

ACRES TILE IN TONS

1874-5 1877-8 1880-1 1884-5 1885-6 1886-7 1886-8

It is impossible to make much sense of this. In 1980, 1,854 out of the 9,257 farms counted by the census grew potato, while 3,544 farms grew some other vegetable. That same year, vegetables made up 7 % of the Kharif cropped area and 1 % of the Rabi cropped area. Vegetable acreage has certainly increased since then. Rice and maize acreage have decreased in the past few years, and while oilseeds and orchards may have been planted on some of that land, vegetables are the most likely substitute. Among the 50 better off farmers surveyed in 1988, 20 grew potato, while 40 grew tomato. Vegetables are planted almost entirely on irrigated land in Upper and Lower Kurram.

According to government data, potatoes and tomatoes are the most important vegetable crops in the agency, with onions following. Table VI.10 shows recorded acreage, production and yield for these three crops, but the statistics raise some questions about the accuracy of the presentation. The current estimate for last summer's (1988-89) potato acreage was reported at 200 hectares or 494 acres or less than it was reported to be in 1980. The Extra Assistant Director of Agriculture in Kurram thinks that 494 acres (200 ha.) could well be an underestimate. Potato has become a very popular crop. It is grown more in hilly areas - a considerable amount of this crop was seen in Upper Kurram in late June. Potato tubers for planting are obtained from the local vegetable market, and are then cut into under-sized pieces for planting. certified virus-free tubers are not available.

A recent USAID consultant examining horticulture in the agency, suggested the placement of a checker to count trucks of potato, tomato and onion leaving the Agency via Chappri for ten days in August and ten days in September. Extrapolating from these findings, the production and acreage calculations for potato are serious under-estimates. Production of potato in 1989-90 might reach more than two times estimated production for the previous year. A more realistic range for potato production this year might be 4000 to 5500 MT. The consultant, Mr. Farooqi, also felt that yields were being underestimated. He suggested that this year's yield ranged from 6-8 MT per acre. Using this yield, along with the new production estimate, we can guess that acreage under potato ranges from 570 to 785 acres.

The acreage recorded for tomato for the last five years seems very odd, first a steady drop over a four year period and then a sudden sharp increase in the fifth year. Tomato would appear to be more grown in Lower Kurram where it is warmer than in Upper Kurram. The results of the count at Chappri again suggest that tomato production and acreage are underestimated. Based on this count, production this year probably was in the range of 22,000 to 27,000 MT. Yields may also have been underestimated. Mr. Farooki believes that yields this year ranged from 8 - 10 MT per acre. Using this yield and the new production estimate, we can guess that acreage ranged from 2200 - 2700 acres, or much more than

TABLE VI. 10

VEGETABLE ACREAGE AND PRODUCTION

POTATO

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1980	653		
1984-85	173	890	5.14
1985-86	173	890	5.14
1986-87	148	765	5.17
1987-88	185	956	5.67
1988-89	494	2000	4.05

TOMATO

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1984-85	1001	2835	2.80
1985-86	988	2800	2.83
1986-87	828	2598	3.14
1987-88	920	2600	2.82
1988-89	1483	6000	4.05

ONION

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1984-85	104	558	5.37
1985-86	297	1600	5.39
1986-87	297	1600	5.39
1987-88	494	2666	5.40
1988-89	247	1333	5.39

statistics suggest. Mixed varieties from France and Denmark predominate.

Onion acreage and production appears to have almost tripled in the last five years but is still quite small at around 297 acres. Again, this acreage figure appears to be wrong. The count at Chapprri suggest that production this year ranged from 4000 to 5000 MT. Using recorded yield from the previous year, which Mr. Farooqi believes is accurate, the new production range suggests that 745 to 930 acres are planted in onion, making onion the second most important vegetable crop after tomato.

Other vegetables grown, as reported in 1986-87, included okra, squash, eggplant and pumpkin during the Kharif season, all on less than 50 ha. or 124 acres; and spinach during the Rabi season. Chilis are also grown, but are being adversely affected by something which is causing the crop to wilt. Nematodes are suspected. According to agriculture staff, turnips and other winter vegetables grown in summer (carrots, radishes) are becoming a more popular Kharif crop. They fetch good money in the "down" districts. Mr. Farooqi believes that turnips have become an important crop. However, FATA Development Statistics report either no acreage or only minimal acreage for these crops. Turnips are planted in flats in July and harvested in September.

Some farmers use manure and/or chemical fertilizers on vegetable crops. Pesticides are used by some, but to a much more limited extent due to higher cost and lack of knowledge.

The consultant Mr. Farooqi estimates that perhaps ten percent of the vegetable crop is consumed locally with the rest marketed outside the Agency. Potatoes are sometimes marketed directly by the farmer as far away as Karachi and Lahore. Among 20 farmers growing the crop in 1988, 9 marketed it at Parachinar, 6 at Sadda, 3 at Peshawar and 3 at Lahore. Curiously, the price range paid to these farmers at Parachinar and Sadda was higher, as illustrated below:

Town	Price per 40 kg. maund
Parachinar	110 - 125 Rs.
Sadda	110 - 120 Rs.
Peshawar	80 - 120 Rs.
Lahore	75 - 120 Rs.

There is no indication in this farmer survey of the time of year the crop was sold or the quality of the crop, both of which would affect price. Apparently wholesalers do hold some back for marketing out-of-season. However, since storage facilities are lacking in the Agency, the bulk of the crop is disposed of at

harvest time. It is not therefore clear why farmers would choose to market their crop in distant cities given higher transport costs and similar prices.

Poorer quality potatoes are imported to the Agency from the Punjab and are still sold at cheaper prices than local potatoes. Conversely, Kurram potatoes fetch higher prices in Punjab markets.

Of the 40 farmers in this same survey growing tomatoes, 23 sold them in Peshawar, while the others sold them to local middlemen. The price range paid at Peshawar does seem to have been higher --45 - 75 Rs. per 40 kg. maund vs. 35 - 60 Rs. paid at Sadda.

It could be useful to mount some trials to investigate the utility of planting other vegetable crops generally grown in winter in the down districts during the summer in cooler Kurram. Carrots, cauliflower, cabbage and the like could be grown in Kurram and profitably marketed in Kohat and Peshawar, where they would be out of season. Since turnip has become popular, it might be useful for staff to focus some attention on helping farmers improve their yields of this crop.

8. Orchards

At that time of the 1942-43 settlement, 631 acres were planted in fruit and nut trees. There has certainly been an increase in fruit production since then, and most of the increase has probably occurred in this decade. Since 1984-85, acreage in fruit has been variously reported, anywhere between 1347 acres and 1465 acres. This presumably includes only fruit-bearing trees. The most recent estimate of Agriculture staff at Parachinar is that 880 ha. or 2174 acres are planted in orchards. This includes non-bearing trees.

Young orchards and those of dwarf varieties are generally intercropped with fodder or sometimes wheat. Most of the orchard acreage is irrigated, most of it is on the Parachinar plain and, not surprisingly, in 1980 most of it (89%) was planted on farms larger than 5 acres in size. The main orchard growing areas are Shalozan and Luqman Khel, followed in approximate order by Zeran, Kirman, Peiwar, Malana, Alam Sher, Abu Shera and Kharlachi.

Farmers do not generally use either fertilizer/manure or pesticides on tree crops, and their irrigation practices are often poor.

Apple is the predominant fruit crop, with red and golden delicious predominating. One report suggests that a little less than half the apple acreage is planted in red and golden delicious varieties. Another 1988 report suggests that 85% of the apple orchards were planted in Golden Delicious and the other 15% planted in poor quality varieties. Total annual production in 1987-88 was 3,750 tons, or 7.6 MT per acre. This is not a particularly good yield.

Walnuts are the second fruit crop in importance. Apricots and plums follow. Plum production appears to have increased considerably since the beginning of the decade, although Agricultural Statistics for 1987-88 records a substantial and probably mistaken drop in acreage. Pomegranates were once more popular than they are now. Other fruit crops include pear, peach, almond, persimmon, citrus and fig. Mulberry trees are planted, primarily for silk production (see the section on sericulture). The Department of Agriculture is trying to encourage cherry production. There is a cherry nursery at Kirman and some farmers have planted trees. Tables VI.11 and VI.12 show numbers of trees and acreage respectively.

The apple crop (and golden delicious variety in particular) is subject to damage from the August-September monsoon hail storms. One prosperous farmer growing several varieties of apple in Lugman Khel in Upper Kurram noted that annually 20 to 100 % of his crop might be damaged by hail. Apples also are affected by codling moth (particularly red and golden delicious, according to one consultant, Dr. Zaidan Abd Al-Al) and scale. Department of Agriculture staff suggested that in a bad year 50-75% of the apple crop was lost owing to one or more of these factors. Most farmers with orchards are using agrochemicals, at least to some extent. Almond trees are affected by the late spring frost, peaches by scale and aphids, apricots by aphids, and plums by scale. Hail can also be a problem in April, knocking buds off fruit trees. If damage to the crop is not too great, fruit can be the most profitable crop.

One farmer said that local fruit prices had improved in recent years - he thought that the increase was due to the presence of the refugees. In the past, he said that he was obliged to ship his crop to Lahore or even Karachi for sale, and but now he sells much of it locally. Agriculture staff confirmed that the refugee presence had increased local demand and added that refugee expertise had also been useful in improving Agency fruit production. Marketing of tree crops is a subject that should be more closely examined prior to the encouragement of new and/or additional plantings. If the refugees return, the local market will decline.

Since fruit is a cash crop, the sort of count that the consultant Mr. Farooqi arranged at Chappri for vegetables could be very useful to conduct at harvest time for the important fruit crops. This could give a much more accurate picture of production and perhaps of acreage, provided that a good sense of yields could be obtained.

TABLE VI.11

FRUIT TREES IN 1980*

TYPE	NUMBER OF FARMS GROWING	NUMBER OF TREES	NUMBER OF BEARING TREES
Apple	733	34880	21839
Walnut	2396	9135	6844
Pomegranate	527	6869	4782
Apricot	1839	6357	5313
Mulberry	518	5172	3229
Plum	493	3104	2413
Pear	215	2390	2251
Almond	124	2043	1491

*Data from the 1980 Agricultural Census.

9. Groundnuts and Soybeans

Oil seeds are a relatively new crop in the Agency. The Agriculture Department has been trying in recent years to encourage production of these two oilseeds, given that Pakistan is oilseed deficient. In 1980, 1286 acres or 3% of the total cropped area were planted in oil seeds. A total of 1,170 farms out of 9257 were planting this crop. Ninety four percent of the acreage was irrigated, and most of that acreage was planted during the Kharif season. In the 1988 survey of fifty better off farmers, 12 were growing groundnuts or 24%. In 1988-89, 1,666 acres were planted in oil seeds: 1164 acres in groundnuts and 502 acres in soybeans. The Department has been more successful with groundnut than soybeans.

Groundnut acreage has increased by 40% since 1984-85, while production has shot up 43%. Groundnut yields have been stable at .7 MT per acre. Soybean acreage has been declining since 1984-5, as has production. This last year, however, the per acre yield increased dramatically, even though acreage had again dropped. Interestingly, the Agriculture Department attributed the drop in acreage to unfavorable weather conditions at the time of sowing.

In Kurram and Orakzai Agencies, the Agriculture Department has established 120 demonstration plots. In addition, they have started a program to give for free to interested farmers 50 maunds of soybean seed (enough to plant 160 acres) and 25 maunds of groundnut seed (enough for 80 acres). The Department plans to help those farmers who accept this seed to market their harvest with the Ghee Corporation, negotiating the price and arranging transport to Peshawar if necessary.

Currently, production is sufficiently small that groundnuts are either eaten or sold for baking confectioneries. There has been a small increase in production in the last five years. The 1988 survey of 50 farmers found that those growing groundnuts marketed them locally. It is difficult for farmers to market their oil seeds, and this has limited the attractiveness particularly of soybeans. Farmers must come to Peshawar and negotiate with the Ghee Corporation. As small producers, they do not get a price that begins to compare with what they can earn raising other crops. For example, in 1989, soybeans fetched roughly one-third the price per maund that groundnuts earned. This is the main reason that soybean production has declined in recent years. Groundnut production remains more attractive because it has a market other than the Ghee Corporation. Until the Ghee Corporation pays higher prices for soybeans, efforts of staff spent on the distribution of seed and the establishment of demonstration plots would be better spent on a crop that can earn farmers a reasonable return. Table VI.13 presents oilseeds acreage and yield.

TABLE VI.13

GROUNDNUT AND SOYBEAN ACREAGE AND PRODUCTION

GROUNDNUTS

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1984-85	828	589	0.71
1985-86	741	522	0.71
1986-87	766	540	0.71
1988-89	1164	840	0.72

SOYBEANS

YEAR	ACRES	PROD. IN TONS	TONS PER ACRE YIELD
1984-85	1129	207	0.18
1985-86	1112	200	0.18
1986-87	618	112	0.18
1988-89*	502	235	0.47

*The yield figure is very high compared to earlier years.

GROUNDNUT ACREAGE AND PRODUCTION

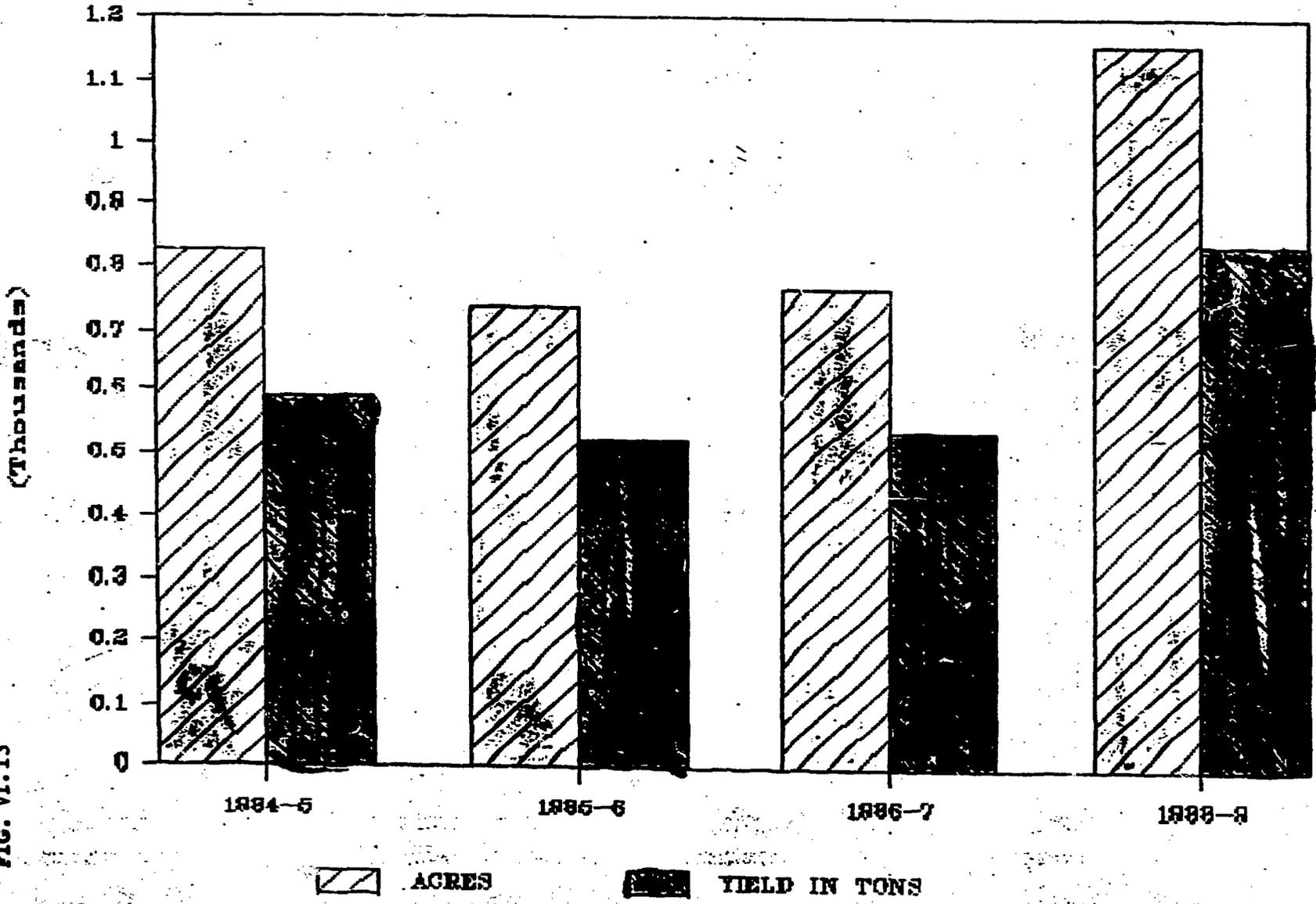
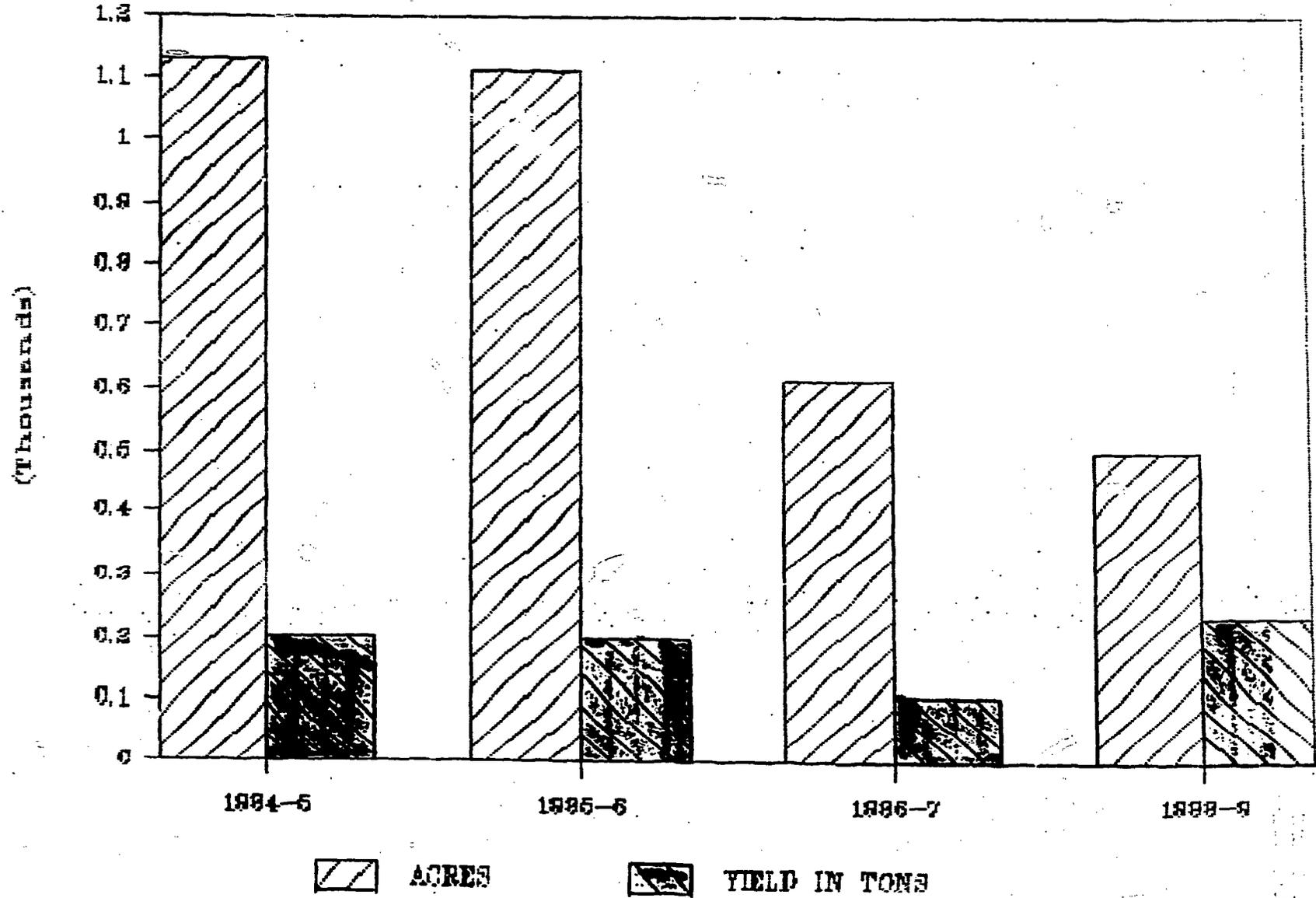
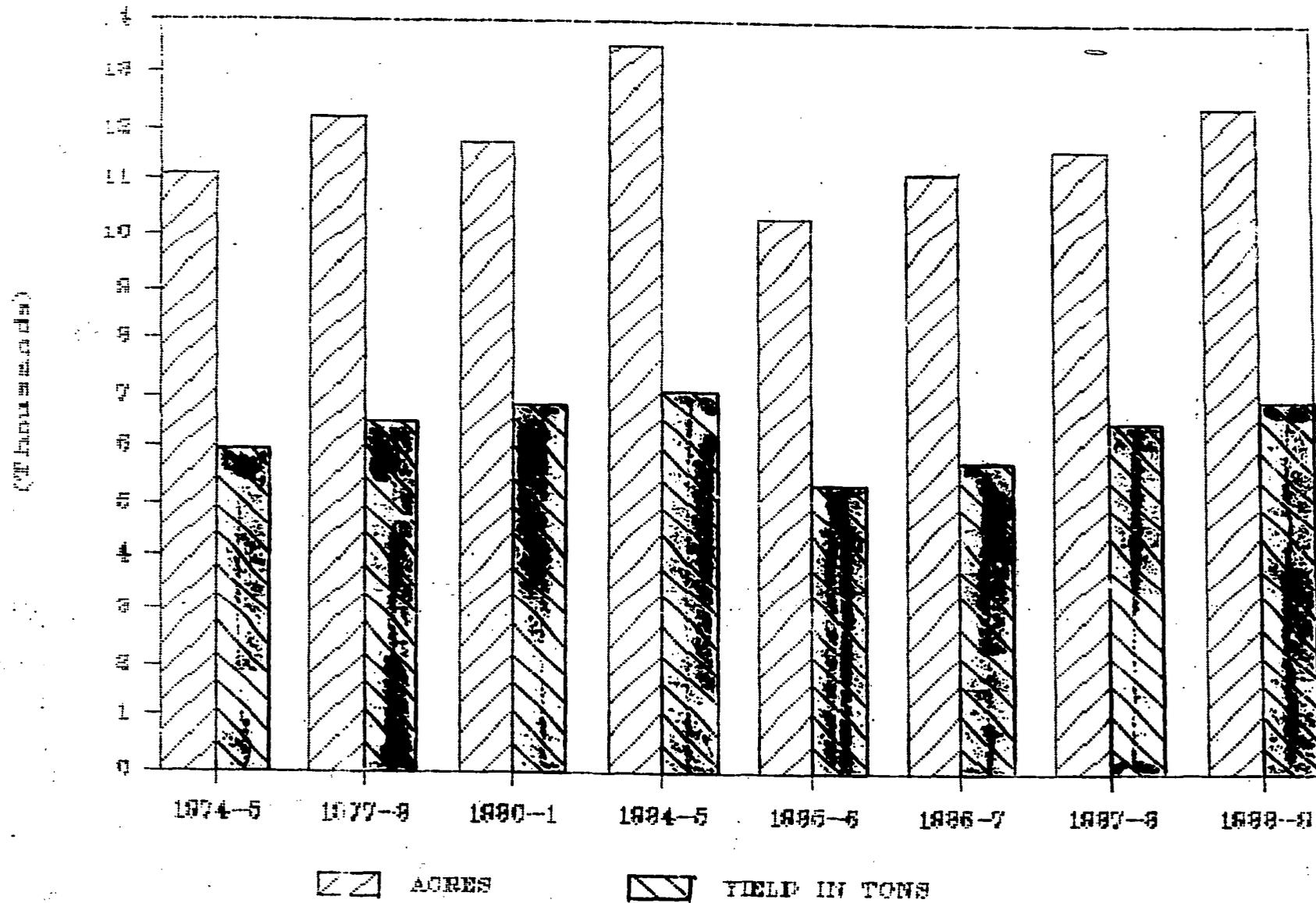


FIG. VI.13

SOYBEANS ACREAGE AND PRODUCTION



RICE ACREAGE AND PRODUCTION



10. Fodder

Three main fodder crops are grown: shaftal (clover), maize and barley. In 1987-88, an estimated 2,471 acres were planted in shaftal, a Rabi crop; 371 acres in barley for fodder; and, in the kharif season, 791 acres were sown with maize for fodder.

C. Farm Power

In 1980 the Agriculture Census found that 34 % of the farms in the Agency relied on animal power, 8 % on tractors, and 58% on both animals and tractors. Larger farms were more likely to use a combination of animal and tractor power. Interestingly, the only farms using only tractors were of less than 12.5 acres in size. In 1980 there were 10,606 bullocks owned by 5,925 farm households, more sen.... so 64 % of the farm households in the Agency owned a pair of oxen. There were also only 175 male buffalo which could theoretically have been used for plowing but buffalo are not normally used for plowing in this part of the world. No more recent figures are available. According to Agriculture Dept. staff in the Agency, few oxen are in use at present, but this could not be confirmed. It is true that during a five day field trip to Upper and Lower Kurram, only two pair of oxen were seen plowing, although in many areas wheat had been harvested and preparation for the next crop was under way. Many farmers now hire tractors or have purchased their own. For plowing, farmers are more likely to use a tine tiller rather than a disc harrow. They do not seem to do the occasional deep plowing that would help cut down on weeds and lead to better yields.

Tractors appeared to be more frequently used for threshing the wheat than threshers. Several times the research team saw tractors with a locally-made flat, spiked implement either in transit on a road or driving round and round on the wheat to break it up. Tractors are also used with trailers for transporting goods. In 1987 the average daily traffic of tractors on the Thall-Parachinar road was estimated at 25, while the average daily traffic of tractors with trailers was estimated at 116.

Government statistics suggest that in 1986-87, there were 384 tractors, of which four were government-owned. By contrast, in 1974-5, there were 198 tractors, all privately-owned. In twelve years then, the tractor population almost doubled. Given the difficulties of terrain in FR Kurram, it is likely that most of these tractors are at work in Upper and Lower Kurram tehsils. Based on the amount of cultivated area in the two latter tehsils, there was in 1986-87 a maximum of 110 acres per tractor, and probably considerably less, because it is possible and even likely that tractors are under-counted. Numbers of tractors are taken from the vehicle registration bureau so only those tractors

that are registered are included in the reporting. Given the nature of the tribal areas, there are probably tractors that are unregistered.

While the above-mentioned statistics on numbers of tractors in the Agency may include some Afghan refugee-owned tractors, they do not include all. The UNHCR Territorial Officer for Kurram Agency estimates that refugees in Kurram own more than 300 tractors, the bulk of which would be based in Lower Kurram. A good number of these tractors were brought from Afghanistan and are not registered. The Territorial Officer feels that most of the refugee-owned tractors are used for transporting goods and not for agricultural work.

Tractors can be bought from a tractor Agency in Parachinar or from larger towns in nearby settled areas. There are numerous tractor repair workshops at Sadda and Parachinar, and one at Alizai.

The cost for custom tractor work in the fields is 90 Rs. per hour.

Threshers do not seem nearly as popular as tractors. Tractors of course have more varied use but with implements they cost about 10 times as much as threshers. Despite the fact that the team visiting Kurram at the end of June saw a considerable amount of wheat being threshed, particularly in Upper Kurram (the wheat appeared to have been harvested a bit earlier in Lower Kurram), only one thresher was seen in use and that was on the government farm at Parachinar. One other thresher was seen being transported along the road, in the Shalozan area, and a third was sitting by the side of the road. The Department of Agriculture reported a total of 25 threshers in the agency in 1987-88. As noted above, the use of tractors along with a locally made implement seemed more popular for threshing. Thresher custom service is available, at the same hourly cost as a tractor. A number of farmers and their wives were seen winnowing by hand.

Rice hullers are not in use in the Agency. The department reports that there are 120 rice harvesting machines. No maize shellers are reported.

D. Farm Labor

Most of the farm work is done by the farm family, whether they own or rent the land they farm. Women's labor makes an important contribution to agricultural productivity. While younger women may not be seen very much in the fields owing to concerns about family honor and the responsibility they have for small children, middle aged and older women are involved in many of the day-to-day tasks of farming. Among those tasks with which women help are threshing, winnowing, transplanting rice to the fields, weeding and collecting fodder.

There is a tradition of working collectively (called "pagara") - to bring in the harvest, for example, or to build and maintain diversions and irrigation channels. Staff of the Agriculture Department think that this custom, except with respect to irrigation, is falling into disuse.

Traditionally, there has not been much of a concept of hired farm labor in Kurram. The 1980 census found that only 300 out of 9,255 farm households hired labor. Those 300 households tended to own five or more acres of land and they hired a total of 461 laborers, or 1.5 laborers per household. While the statistics do not specify, it is likely that few if any of these hired laborers were permanent. They were probably casual labor hired at peak seasons, such as harvest.

The need to hire casual labor may have increased since 1980 given continued out-migration and remittance monies that might have made paying wages feasible. The economic feasibility study of the Thall-Parachinar road suggested that a labor shortage was responsible for the casual labor wage rates increasing to the point that they were comparable to wage rates in the settled areas. In one recent and admittedly very small survey of 95 households in FATA (twenty of the households were in Kurram), one out of four employed casual labor at peak seasons.

The Extra Assistant Director for Agriculture in Kurram Agency noted that he is currently paying 20 Rs. per day to laborers working on government farms, and he hopes to get approval to pay Rs. 25. This is certainly below the daily wage paid to farm labor in Peshawar district. He said that he has no difficulty recruiting laborers - there is in fact a surplus, given the lack of job opportunities generally in the Agency. The above-mentioned study of fifty farmers also looked at daily wage rates. These are presented in Table VI.14. It is difficult to reconcile these rates with the lower daily wage being paid by the Agriculture Department, but the span of one year separates the survey and the Department's current daily wage. It appeared from this survey that farmers were often able to employ Afghan labor about 5 Rs. per day less than they paid local labor, so the Afghans may have had a slight depressing effect on day wages in the area. No information is available on farm labor in FR Kurram.

TABLE VI.14

DAY WAGES PAID TO FARM LABOR

Village (Tehsil)	Off Season Wage	Peak Season Wage
Manduri (LK)	25 Rs.	40 Rs.
Malana (LK)	30 Rs.	45 Rs.
Arawali (LK)	30 Rs.	45 Rs.
Alizai (LK)	30-40 Rs.	40-45 Rs.
Sadda (LK)	30-40 Rs.	35-45 Rs.
Topaki (UK)	30 Rs.	45 Rs.
Sultan (UK)	30-35 Rs.	40-45 Rs.
Zeran (UK)	25-35 Rs.	40-45 Rs.
Parachinar (UK)	20-40 Rs.	35-50 Rs.
Shalozan (UK)	20-35 Rs.	40-50 Rs.

E. Agricultural Inputs and Services

1. Improved Seed

For farmers interested in and not yet using improved wheat seed or wanting to upgrade their MexiPak, price can be an inhibiting factor. In the settled areas, an 80 kg. bag of improved seed costs 240 Rs. This price includes a government subsidy of 20 Rs.. The subsidy pertains only to farmers in the settled areas and not in FATA. Therefore, a FATA farmer coming to Kohat or Peshawar to buy seed must pay 260 Rs. per bag and then transport it home. If he buys the seed at home, he must pay about 320 Rs. per bag because the Agriculture Department is obliged to increase the price to cover transport and handling costs. A similar problem appears to exist with respect to maize seed.

The Agriculture Department does sell a limited amount of wheat seed each year at their cost of purchase, but they have neither the financial nor staff resources to handle much seed. This year they are providing 50 maunds (2000 kg.) of maize seed to Kurram. The Department is paying Rs. 120.80 per maund and so will charge farmers this price. This is enough seed to cover approximately 125 acres. They plan to sell 500 - 1000 maunds (up to 40,000 kg) of wheat seed at purchase price in Kurram. This is enough to plant 500 - 1000 acres. It will cost them about 25 Rs. to transport 1 bag weighing 2 maunds or 80 kg., and to they will have to absorb transportation costs of Rs. 12,500 if they sell 1000 maunds. It can also be difficult for the Agriculture Department to buy as much seed as it wants since there is a shortage of certified seed in the country.

The Department does not have formal outlets for seed in Kurram but rather sells the seed through field assistants. These staff notify farmers of the availability of seed and then take orders. The department then transports the seed to the assistant for dispersal. The Department has no storage facilities to handle significant quantities of seed.

The Department has not done anything recently to promote improved varieties of rice, perhaps because there is little interest in the Agency. Several years ago, staff said that they tried to promote the Irri variety from the Philippines, but they found that the maturation period is too long. Farmers in Kurram believe that the local rice is more resistant to summer hail storms.

More than half of those farmer growing potatoes save seed from their October harvest and sow it in the spring. The rest use seed from elsewhere in Pakistan, but again must store it over the winter. Most of this seed has been coming from Kalam, and it can no longer be certified as virus-free. There is a problem with appropriate storage for potato seed over the winter. Commercial seed outlets in the Agency do not appear to exist. There is certain amount of informal sharing of good seed among neighbors. A farmer with a successful demonstration plot might provide a limited amount of seed taken from the plot to friends.

2. Fertilizer

Many farmers are convinced of the utility of fertilizer and the vast majority use at least some. The problems in improving usage are price and knowledge about timing and amounts. The 1980 Agriculture Census found that 83% of its sample of farms used fertilizer and manure. This seems very high, and suggests that the sample may have been biased or that farmers were exaggerating their farming practices. About 13% of these farms reported using only manure, while 2% used only fertilizer.

While fertilizer usage is reported upon more recently in FATA Development Statistics, that compilation appears to be using an erroneous figure for cultivated area so the reporting on kg. of fertilizer per hectare is also mistaken. There are also some possible internal anomalies: as examples, 1) MT of nitrogen sold increased from 203 MT in 1983-84 to 458 MT in 1984-5, a huge increase in one year; 2) the 1984-85 tonnage of phosphatic is much too low at 8 tons; and 3) the 1986-87 tonnage of DAP seems very high relative to other years. Based on the currently recorded cultivated area of 42207 acres or 17081 ha. and the amounts of fertilizer sold, we can derive the following:

1984-85	nitrogen: 468 MT or 11 kg. per acre DAP: 8 MT or .2 kg. per acre
1985-86	nitrogen: 442 MT or 10.5 kg. per acre DAP: 86 MT or 2 kg. per acre
1986-87	nitrogen: 484 MT or 11.5 kg. per acre DAP: 190 MT or 4.5 kg. per acre

There is no information about how much is applied per crop and when custom dictates that it be applied. Fertilizer is easy to buy on the commercial market in Kurram. The price for a 50 kg. bag of DAP is 190 Rs., while for urea it ranges from Rs. 131-135 per bag. The price for the latter in Peshawar is 130 kg/bag. The FATA Agriculture Department is now in its first year of a program to provide subsidies on fertilizer purchase. The Department hopes to sell 900 - 1000 bags of urea in Kurram at 127 Rs. per bag. They will also sell some DAP at the price of 190 Rs. per bag.

The USAID consulting horticulturalist, Mr. Farooki, reported that farmers are more likely to use both fertilizer and agrochemicals on vegetable crops than on fruit orchards. Farmers complained repeatedly to Mr. Farooki that they could not procure fertilizer and agrochemicals at the right time and at the right price.

There is a soil and water testing laboratory at Parachinar that began doing fertilizer trials in 1988-89. It laid out 10 such trials that year.

3. Agrochemicals

According to one consultant recently reviewing horticulture crops in the agency, pests and crop diseases are less of a problem in FR Kurram than in the other two tehsils. Agrochemicals are less likely to be used than fertilizer, except perhaps on fruit crops. The 1980 agriculture census recorded that 68% of its sample used some agrochemicals. This seems very high, particularly for 1980.

Agrochemicals are considered to be a more expensive input than fertilizer. There are no statistics on sales or use in the Agency.

Currently, there are three pesticide dealers at Parachinar, at least one of whom also supplies labour and hand sprayers at an additional charge of Rs. 20 per day.. About 10 acres can be sprayed in one day. The price of a liter of pesticide ranges from Rs. 140 to Rs. 620.

The Department has subsidized the cost of a limited number of hand sprayers by 50%, and has sold pesticides for vegetable crops at

cost and offered a 50 % reduction for pesticides to be used on fruit. From 1980-81 through 1988-89, a total of 393 hand sprayers were sold at the subsidized rate. This year staff hope to purchase another 20 power sprayers for rental, and to spray 600 ha. of orchards at the 50% subsidized rate. This program is small owing to lack of staff and resources and is a bit like throwing a shoe to distract a charging rhinoceros - its impact is slight.

4. Agriculture Department

A number of the activities of the Agriculture Department in Kurram are detailed above. The Extension Department is thinly staffed because of the difficulty of recruiting personnel. The number of positions allocated for the department may be adequate but they are not all filled. The positions are described below:

Position	Number Approved	Number in Place
Extra Asst. Director	1	1
Agric. Officers	8	1 - Sadda 2 - Parachinar 1 - Alizai
Field Assistants	26	15 - Upper K. 5 - Lower K. 1 - FR K.
Budders	4	

The Department is also short on vehicles with only one truck and a few motorcycles.

There are six department-managed farms and nurseries. The essential details for the older farms can be found in Table VI.15. The main farm at Parachinar includes a fruit nursery; apricot, apple and peach orchards; wheat for multiplication of improved seed. Most of the area is under orchards with alfalfa intercropped. Because of water problems, the wheat is now rain fed entirely, and the orchards are suffering. Little if any fruit was seen on the trees in late June. Some had been hit by late spring frost and others in blossom had lost buds in spring hail storms. The Department has been trying to drill a deep well (700') for some period of time, but has not been able to get a large enough rig. It has a promise of assistance in setting up a drip-irrigation system from the USAID-funded TADP project once there is a well.

TABLE VI.15

TOTAL LAND OWN BY THE DEPTT: ITS LOCATION AND UTILIZATION

Particulars	Parachinar Farm.	Robert Bagh. Shalozai	Mir Jamal Farm.	Fruit Nursery Alizai	Total
Year of Estt:	1949	1929	1962	1940	
Total Areas.	10 Hect:	9.6 Hect:	1.2 Hect:	2.4 Hect	23.2 Hect:
Areas under roads, buildings, channels etc.	1.7 "	1.0 "	0.2 "	0.4 "	3.3 "
Area for seasonal crops.	1.8 "	-	-	-	1.8 "
Area under Fruit Nursery.	0.8 "	-	-	1.5 "	2.3 "
Area under Fruit Orchards.	5.7 "	8.6 "	1.0 "	0.5 "	15.8 "

The farm at Shalozan is also having some water problems but they are not as severe. There is an old orchard there that the Department is in the process of replacing. It is currently intercropped with groundnuts. The first planting of groundnuts in the Agency was on this farm. They continue to raise groundnuts partly for seed multiplication and partly to keep the land in production. There are young fruit trees, mostly apple and pear. Improved wheat (Pirsabak '85) is also planted. Department staff have made plans to improve the farm by levelling the uneven plots and improving the water channels. The channels currently are wide, shallow and unlined and much water must be lost through evaporation and percolation. The Department hopes to drill a tubewell after it has acquired one for the Parachinar farm. Staff also hope to improve the road through the farm and have just acquired a new tractor for the farm.

There is a new cherry nursery at Kirman, near Parachinar. It has distributed about 2000 seedlings to farmers to date. There is also a new fruit nursery at Sajda. The nurseries at Sadda and Alizai were visited and appeared well cared for. The Alizai nursery also produces walnut seedlings for Orakzai Agency. Department-raised seedlings supply 40-50% of the local demand. Farmers also buy from the Tarnab farm and commercial nurseries in Peshawar. A small number of budded plants, perhaps around 2000, are produced annually by private farmers in the Agency.

Table VI.16 gives the number of fruit trees planted the main government farms, and the number of fruit seedlings distributed.

Fig. VI.17 shows the locations of staff and nurseries/farms.

As noted, the Extension Service has organized demonstration plots for different crops. It does not conduct formal trials. From 1980-81 to 1987-88, staff laid out 30 to 35 demonstration plots per annum. In 1988-89, 129 demonstration plots were laid out. Mostly, the plots are of wheat, maize, and oilseeds. In 1988-89, staff planted 12 demonstration plots in potato. Staffing of course is limited but more demonstration plots in high-value vegetable crops might be a useful service to growers. Most of the demonstration plots are in Upper and Lower Kurram for easier access, but a few are in FR Kurram.

There is a small agriculture engineering section. This section is engaged in land levelling, on an hourly hire basis, for private farmers. The rate charged is a subsidized one. The bulldozers are based at Parachinar and so operate primarily in nearby areas. There is a Class II workshop at Parachinar. Between 1970-71 and 1988-89, a total of 5,496 hectares of land have been levelled in Kurram, Orakzai and FR Kohat. In addition, 115 km. of road have been constructed and some embankments built. There is a particular need for land levelling in FR Kurram, but access by bulldozers is problematic.

TABLE VI.16

FARM WISE BREAKUP OF FRUIT TREES.

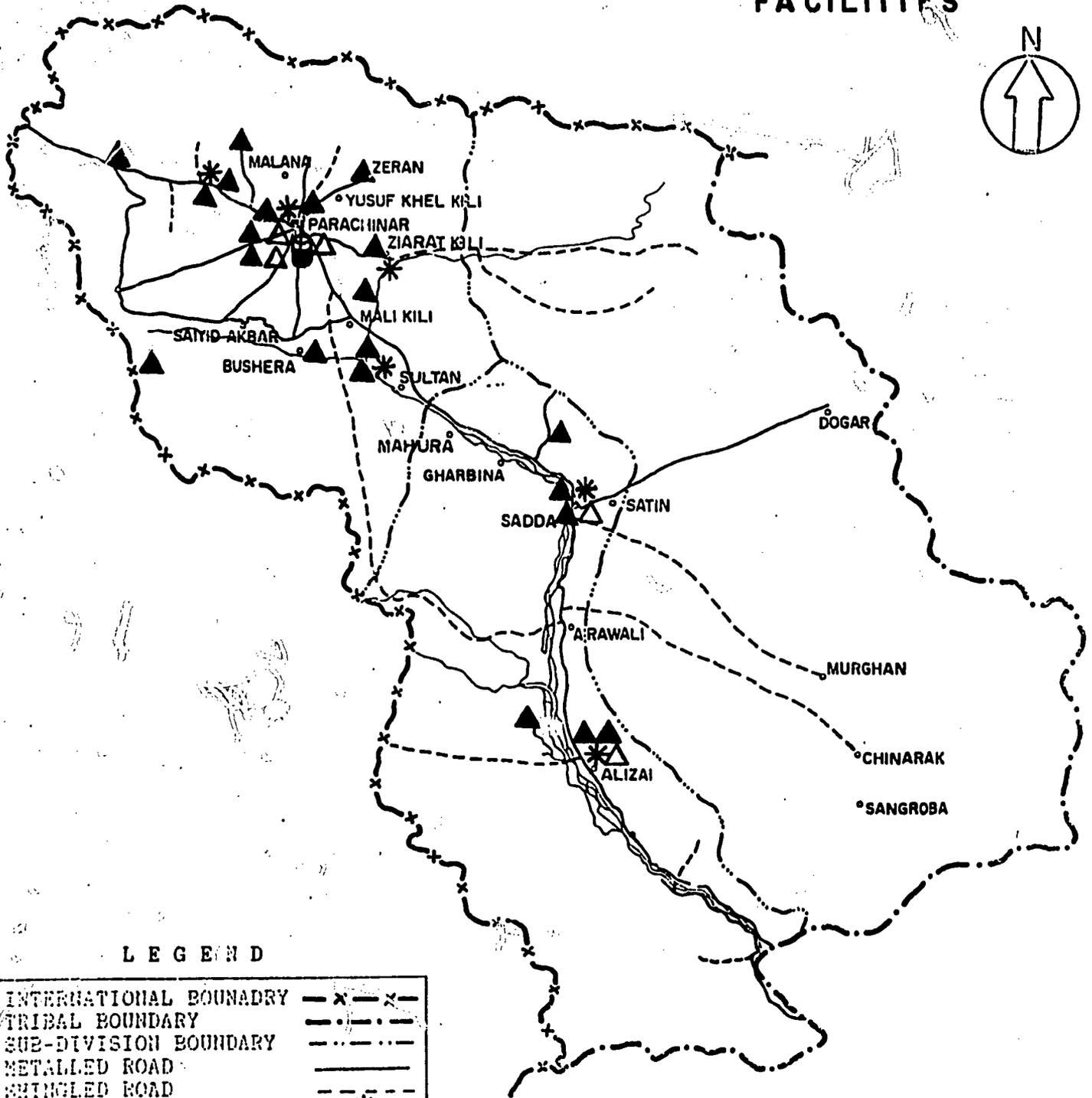
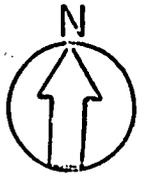
Kind of Fruit Trees.	Parachinar Farm.	Robert Bagh.	Mir Jamal Farm.	Nursery Farm Alizai.	Total
Apple, Dwarf Varieties.	1537	-	-	-	1537
Apple, other Varieties.	1974	1221	180	-	3378
Peach.	250	6	-	-	256
Apricot.	60	2	-	14	76
Almond.	23	60	-	-	83
Plum.	8	2	-	-	10
Persimmon.	13	24	-	12	49
Cherry.	15	3	-	-	18
Walnut.	297	9	-	-	306
Pears.	65	217	-	-	302
Pomegranate.	-	10	-	-	10
Grape Vine.	-	-	100	-	100
Malta.	-	-	-	72	72
Olive.	-	-	-	70	70
Total:	8262	1557	280	168	6267

FRUIT PLANTS RAISED/DISTRIBUTED FROM FRUIT NURSERY FARMS AT ALIZAI AND PARACHINAR.

Year	No. of Plants raised distributed.
Spring 1983	12,273
Spring 1984	23,720
Spring 1985	19,568
Spring 1986	24,907
Spring 1987	16,350
Spring 1988	15,504
Spring 1989	20,892 (including 2000 Cherry)

KURRAM AGENCY

AGRICULTURE FACILITIES



LEGEND

INTERNATIONAL BOUNDARY	- x - x -
TRIBAL BOUNDARY
SUB-DIVISION BOUNDARY	-----
METALLED ROAD	—————
SHINGLED ROAD	- - - - -
FARMS & NURSERIES*
AGRICULTURE OFFICERS, EADA..△
FIELD ASSISTANTS▲
SOIL LABS☉

There is a lab for testing soils and water at Parachinar. Its first year of operation was 1988-89. It tested 600 soil samples and 65 water samples for farmers, and laid out 10 fertilizer trial plots.

The department sponsors on average 2 vegetable and honey shows per year.

Finally, the Department is in the process of establishing an Agricultural Training Center at Parachinar. The objective is primarily to train farmers in short, four day courses, but in-service training will also be provided to field assistants. The Department hopes that two agriculture graduates will be posted as teachers this summer. Furniture has been acquired as has space.

5. Credit

The 1980 agricultural census found that 63% of all farmers in Kurram Agency were in debt. All three categories of farmer, owner-operator, owner and tenant, and tenant, had approximately equal debt. For owner-operators, however, the percentage of those in debt declined as the amount of land owned increased. Among households earning their living primarily from livestock as opposed to farming, 61 % were in debt. Almost all farmers and livestock owners (99 %) owed their debt to a non-institutional source (i.e., family). More recent statistics for indebtedness do not exist. Not surprisingly, land owning households were the only ones to borrow money from an institutional source, because they are usually the only ones who qualify. The chief institutional source, if not the only one, providing agricultural and livestock loans, is the Agricultural Development Bank (ADB).

The ADB established a branch in Parachinar in 1968. It opened a second one in Sadda very recently. Historical records are not available to permit a determination of total funds loaned to Kurram farmers since inception, but at the moment, the ADB has made loans totalling Rs. 37 million to 900 farmers. Last year (1988-9 Fiscal year) the bank had 8 million Rupees to dispense and they lent it all. According to the rule, if a branch uses all its funds one year, it receives 20% more the next year, so bank officers are expecting to receive an allocation of around Rs.9.6 million this fiscal year. The bank's mandate is to lend to small owner-operators who must own less than twelve acres to qualify. Both production and development loans are made.

Production loans are short term loans given for six or eighteen months for a maximum amount of Rs. 10,000 to help farmers purchase inputs. The loans carry a 12% p.a. interest rate.

Loans are made for the purchase of agricultural machinery. This past year the ADB lent Rs. 4.8 million for tractors, or 60 % of the

loan funds they had available for the fiscal year. This indicates strong local interest in tractors. Only two farmers applied for loans to purchase threshers during the last fiscal year, and only one, a farmer in Shalozan, qualified. He was lent a total of Rs. 30,000 with a payback period of eight years. For almost all categories of loans the interest rate is 12 %. The one exception is a 3 % charge for small loans made to poorer farmers for the repair of tractors or the purchase of fuel. The bank has not given any such loans because farmers do not apply for them.

The ADB has advanced Rs. 80,000 for the development of orchards, and staff are trying to encourage farmers to apply for loans for orchard establishment. The payback period is five years with a further grace period, if needed, of three years. For the purchase of cows and equipment for dairy farms, loans are made for a five year period. Loans for the establishment of poultry farms can be obtained for construction as well as for the purchase of chickens and equipment for a period of eight years. Currently, the bank has lent Rs. 3 lakh to farmers setting up poultry farms.

ADB staff think that their loan recovery rate is satisfactory. If they have difficulties with a borrower, the Political Agent will help them recover their money. The bank does not lend to farmers in FR Kurram, since there would be no assurance that the loan would be paid back and since it would be hard for them to ascertain that the farmer qualified for the loan by owning the required amount of land. There are no land records for the tehsil.

The Parachinar branch has one manager, an operations officer and three mobile officers whose job it is to visit farmers to explain the program. There are also two assistants. At Sadda, the ADB has stationed a manager, an operations officer, and two mobile officers. Each of the mobile officers has a set territory in Upper and Lower Kurram to cover, so that he has a good opportunity to become familiar with the farmers in his district.

There are commercial banks with branches in Parachinar, Sadda and Alizai but, while these do have loan programs, they do not make agricultural loans in the tribal areas..

F. Agribusiness

In 1977, a government-sponsored enterprise employed 42 men to process fruits into squash, jam and syrup opened at Sadda. It was not a conspicuous success. According to a USAID consultant, who reviewed the plant after it had closed in 1983, the factory lacked proper canning equipment. Its production was so limited that it was not able to meet heavy overhead expenses. According to one farmer in Lugman Khel, the plant was also situated too far from the farmers growing fruit, and the factory paid less for their fruit than farmers could obtain for the fresh product.

Currently, it appears that the Frontier Corps is occupying the fruit-processing factory building for its own purposes. It was suggested that they would be reluctant to move.

The market for apples is primarily a market for fresh apples. The amount grown in Upper Kurram is insufficient to justify the existence of a factory to produce apple jam and apple juice, for which only a small market might exist locally. Transportation costs to the down districts would add greatly to the price that would have to be charged, and any small operation is likely to find it very difficult to compete with major producers such as Shezan, Ahmad and Mitchell, which can afford to advertise and already hold significant market shares.

While a small amount of fruit is dried in the Agency, it cannot compete commercially with dried fruit from Afghanistan. Afghan dried fruit is imported to the Agency via Kabul and Peshawar.

Rather than fruit processing, a cold storage facility for fruits and vegetables could make some sense, saving farmers from having to sell all their harvest at the height of the season.

G. Marketing and Transport

For the area north of the river and on the plain, Parachinar is the main market. Those living south of the river and of Sultan turn to Sadda. Most of those living in FR Kurram come to Sadda, although some in the northern section of FR Kurram would come to Parachinar. Markets for specific cash crops are discussed in the section concerning the relevant crop.

Farmers and wholesalers use both wagons (pick-up trucks) and lorries to carry agricultural products to market. Lorries are preferred but are in short supply. Transportation rates as of December 1989 can be found in Appendix B.

Farmers have considerable difficulty obtaining timely price information from more distant markets.

VII. IRRIGATION, FLOOD PROTECTION AND POTABLE WATER

Section I. and V. on Kurram's geography and land use reviewed the Agency's water resources. More research needs to be done on ground water resources, particularly if the tube well drilling program accelerates. A thorough assessment of the Parachinar plain indicated that 20 per cent of annual rainfall goes for ground water recharge. While the potential for ground water development on the plain is good (although expensive on parts of the plain where the water table is very deep), any large scale tube well development program may reduce exfiltration and surface water used to irrigate lands adjacent to the Kurram river, as a 1988 WAPDA report entitled Hydrogeology and Ground Water Resources of the North-West Frontier of Pakistan points out. Research on small dam possibilities, which would be helpful from the standpoint of flood control and extending irrigation, has begun in the past couple of years. A number of possible sites have been identified. The FATA Development Corporation (FATA-DC), is also measuring stream discharge at Kirman and Kharlachi.

A. Irrigation

As already noted, agriculture in Upper and Lower Kurram is heavily dependant upon irrigation. Even fifty years ago, over 90% of the cultivated land in these two tehsils was irrigated. The 1980 census found that out of 9252 farms, 7796 reported that 100% of their lands were irrigated. Only 805 reported that they farmed only barani land. FR Kurram seems to be largely barani, but there are streams (i.e. the Kirman) and springs that provide some irrigation.

1. Surface Water Irrigation

There are two main sources of irrigation water in the Agency - the Kurram river and streams or springs coming from the mountains. The best land in the Agency is river-irrigated through a system of privately-owned channels. Good land on the Parachinar plain is also channel-irrigated, directing water from streams and springs running from the mountains to the north and northwest. Water loss from the channels must be significant - most are unlined and many are relatively shallow, leading to considerable evaporation and absorption. Bunds or diversions direct water to channels, and these generally are temporary structures that require frequent repair or replacement. Communities have long experience in keeping these irrigation systems functioning but quarrels over water rights do occur.

The frequency with which the land is watered varies. In those areas where the interval is longer (7-10 days) and water is applied in large amounts, valuable nutrients may be leached from the soil. This may be a particular problem in Koh-i-Daman soils which are porous and not rich in organic matter.

FATA-DC has been active in improving irrigation systems in the Agency. Most of its work has been in Upper and Lower Kurram, but in the past couple of years, 14 systems have been or are being improved in FR Kurram, irrigating a total of 6966 acres, 2807 of which represent land not previously irrigated. Various FATA-DC lists seem to indicate that a total of 83 irrigation schemes have either been improved or improvements are underway. Corporation records actually list fewer schemes but some "schemes" combine improvements to more than one irrigation system. We have counted improvements to separate irrigation systems. These lists do not include three projects which USAID is funding: two at Kotkai and Murghan are complete, while the third at Ali Sheri in FR Kurram is about 80% complete as of March 1990. Most of the work has consisted of improvements made to channels and sometimes adding new channels. Sometimes improvement is made to bunds or new bunds are constructed, and sometimes infiltration galleries are constructed to improve the flow of water. Due to local community financial constraints, bunds tend to be impermanent structures which can be washed away in heavy flooding. Villagers make no contribution to work.

On most schemes, FATA-DC improvements have been responsible for bringing new land into production. Improvements have also increased the amount of water to existing irrigated acreage. There is one oddity that cannot be explained. On 54 surface water schemes in Upper and Lower Kurram, new and old acreage irrigated by these schemes totalled 59,049 acres. The land records for Upper and Lower Kurram for 1987-88 indicate that the cultivated area is 42,207 acres and culturable waste is 3,445, for total arable land of 45,652 acres. In other words, FATA-DC has improved irrigation schemes watering more farm land than Agency land records indicate the Agency has in Upper and Lower Kurram. It is possible that the land records underestimate culturable waste or that much new land that cannot be taxed (and was not included in the last settlement) has come into production.

It should be kept in mind that these "improvements" and new construction are major endeavors. For 51 schemes completed in Upper and Lower Kurram through 1987-88, the average per scheme cost was Rs. 1.9 million. This is more than three times the cost of a tube well; however, work on surface irrigations schemes brings more than four times the amount of new land into production in addition to increasing the flow of water on previously irrigated farm land. Work on the average surface scheme brought water to 372 new acres and increased or stabilized the flow to 772 previously irrigated acres. Accordingly, work on surface schemes is more cost-effective than tube well development. However, tube wells generally are drilled in areas where there are no surface irrigation scheme possibilities, so the ground water must be tapped.

The USAID-funded TADP project has funded work on an irrigation scheme at Murghan in FR Kurram and is currently funding a scheme at Kotkai which will bring 116 acres of previously unfarmed land into production. Work on an irrigation scheme at Ali Sheri, with a command area of 216 acres of new farm land, is under construction. Recently, a proposal was made to fund improvements to the Piala and Malana irrigation scheme under the TADP project. Consideration is now being given to this proposal. Table VII.1 shows the location of surface irrigation schemes.

The Local Government & Rural Development Department (LG&RD) also undertakes a limited amount of work on surface irrigation schemes. For example, in 1983-84, the department undertook improvement work on six irrigation schemes. This work included construction of channels, spring improvement, and construction of a reservoir and an aqueduct. In 1985-86, the department worked on five irrigation schemes, and in 1986-87, improvements to three schemes were made.

2. Tube Well Irrigation

FATA-DC has drilled 44 test wells to carry out ground water investigation, primarily on the Parachinar plain but also on the Kacha Kina plain and on lands between Mali Kili and Shingak. On the Parachinar plain, there is a large circular area (including Parachinar town) that receives relatively little run-off and where the water table is very deep - sinking tube wells in this area is perhaps not very cost-effective. However, there are strips on either side of the plain - the Pekar area and the Hajji Khel area, and also to the south, along either side of the river from Kharlachi, where tube well develop may make sense. Tube well development could also benefit the Shublan area, where a water shortage exists.

Of the 44 test wells drilled, ten were abandoned due to lack of water. Another two had less discharge than expected as so will not be scheduled for conversion to a tube well. Another two wells were tilted and so cannot now be converted. The objective of conversion to tube wells is to bring new land into production.

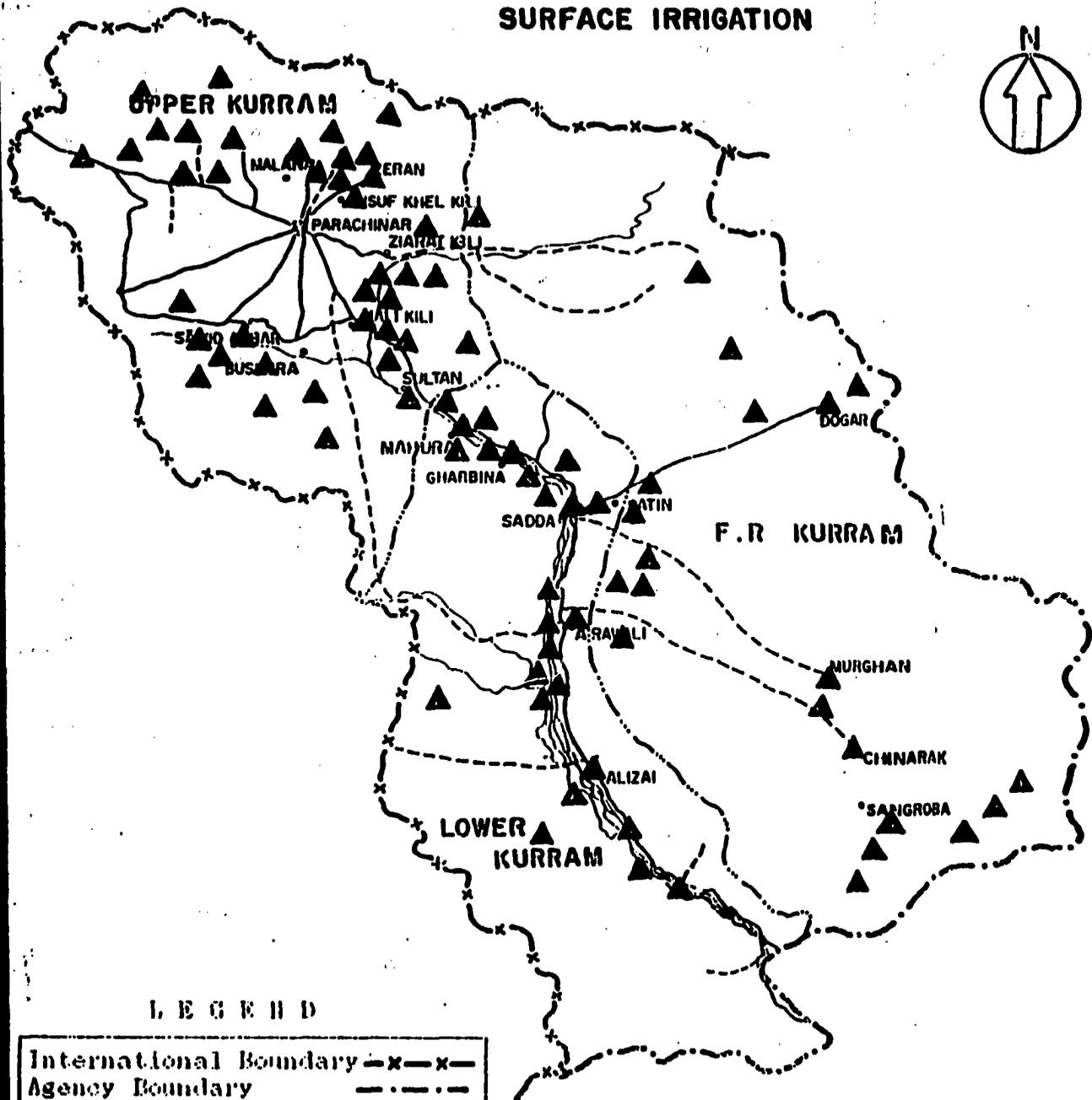
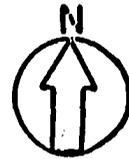
Nine have been converted to tube wells and electrified and are currently working. At three of those, land disputes have arisen because the wells brought new land into production. These 3 wells are, at least currently, reducing the amount of water pumped from these wells.

Two wells in the Sehra area have been handed over to the political authorities and are no longer a concern of FATA-DC. Four are currently waiting for electrification by WAPDA. FATA-DC hopes to convert the remaining 15 tube wells this fiscal year (1989-90). In addition, twelve test wells are in progress. These are considered successful and will be scheduled for conversion.

Figure VII.1

KURRAM AGENCY

SURFACE IRRIGATION



LEGEND

International Boundary	-x-x-
Agency Boundary	-.-.-.-
Subdistrict Boundary
Metalled Road	————
Shingled Road	- - - -
Irrigation Scheme.....	▲

Previously, once ground water availability was determined, tube well sites were selected on the basis of a visual inspection of topography of the area. Staff preferred to select a site on higher ground to increase the amount of land that could be irrigated. Now specific site selection is done on the basis of a contour survey plan of the site.

FATA-DC has spent over Rs. 26 million on its tube well/test well program to date. The average cost of a tube well is Rs. 581,000 and of a test well Rs. 366,000. Monthly O&M costs run Rs. 5000-6000 per month. This has been an expensive program and once some of the tube wells awaiting conversion are electrified, so that the sample of functioning tube wells is larger than it is at present, an evaluation of water use could be helpful in making decisions about future directions.

It appears that the estimates of command area, which are established according to the discharge of the well and the maximum hours of pumping possible per day (22 hours), may not fit current reality, owing to more limited hours of pumping. Good records do not seem to be kept by operators and only rough estimates of hours pumped can be made. FATA-DC did look at pumpage in 1988, and produced a monitoring report which aggregated the hours pumped for all wells monitored in a month. Both the hours pumped per day and the number of days per month will be different from well to well. It therefore might have been helpful in the report to specify pumpage per well. Wells monitored in the agency between January and June 1988 averaged between four and five hours per day, assuming that they pumped every day (the number of days pumped is not given). This significantly reduces the flow of water and consequently changes both the kinds of crops that might be grown and the acreage that can be irrigated. In addition to water rights disputes that might limit pumping, loadshedding and the custom of not working after sunset affect the number of hours that the pump is turned on. An example of the effect that more limited pumping has follows. There are currently twelve test wells awaiting conversion, and these have a maximum potential irrigated acreage of 1050 acres. If, however, the pumps are turned on for five hours instead of 22 hours per day, the total acreage irrigated by the twelve wells would be 239 acres. So the potential discrepancy is fairly serious in this case, particularly given the cost of the wells. It could be very useful to do close monitoring on water use over time from those wells currently functioning. It is entirely possible that this is only a temporary problem. These tube wells often permit the development of new lands, but it takes time to prepare land not previously farmed and to sort out water and land rights so that the system can become fully operative. However, there may also be problems with the more powerful in the community limiting the flow of water.

The USAID-funded TADP project is planning to support, through FATA-DC, the development of six tube wells, in the Kirman toi area of

Upper Kurram and the bordering area of FR Kurram.

3. Small Dams

Three sites have recently been investigated by FATA-DC. One at Jalandar on the Jalandar Shiga was judged technically feasible but economically not viable. The second at Maidani on the Wucha Darga (near Alizai) was judged both technically and economically sound. The third, at Taralai on the Khurmana Nullah, was thought to be viable but there was so much resistance from the tribes in the area that a proper feasibility study could not be conducted. If the feasibility study proved impossible, the odds for constructing a dam must be viewed in a dim light. A fourth site at Kot Ragma in the Mali Khel area is under consideration. Figure VII.2 shows the four proposed dam sites.

The Maidani dam would irrigate about 200 fertile and well drained acres near the dam site and a further 900 acres downstream. This land is rain fed and is mostly barren at present. Thirty-five percent of this land is estimated as Class I Good Arable Land and another 35% as Fairly Good Arable Land. The land would require some levelling. The dam would also minimize erosion problems and provide flood protection. The total life of the dam would be 100 years, but only the first fifty with full irrigation benefits.

The establishment of fisheries in the reservoirs of the dams would be a good possibility.

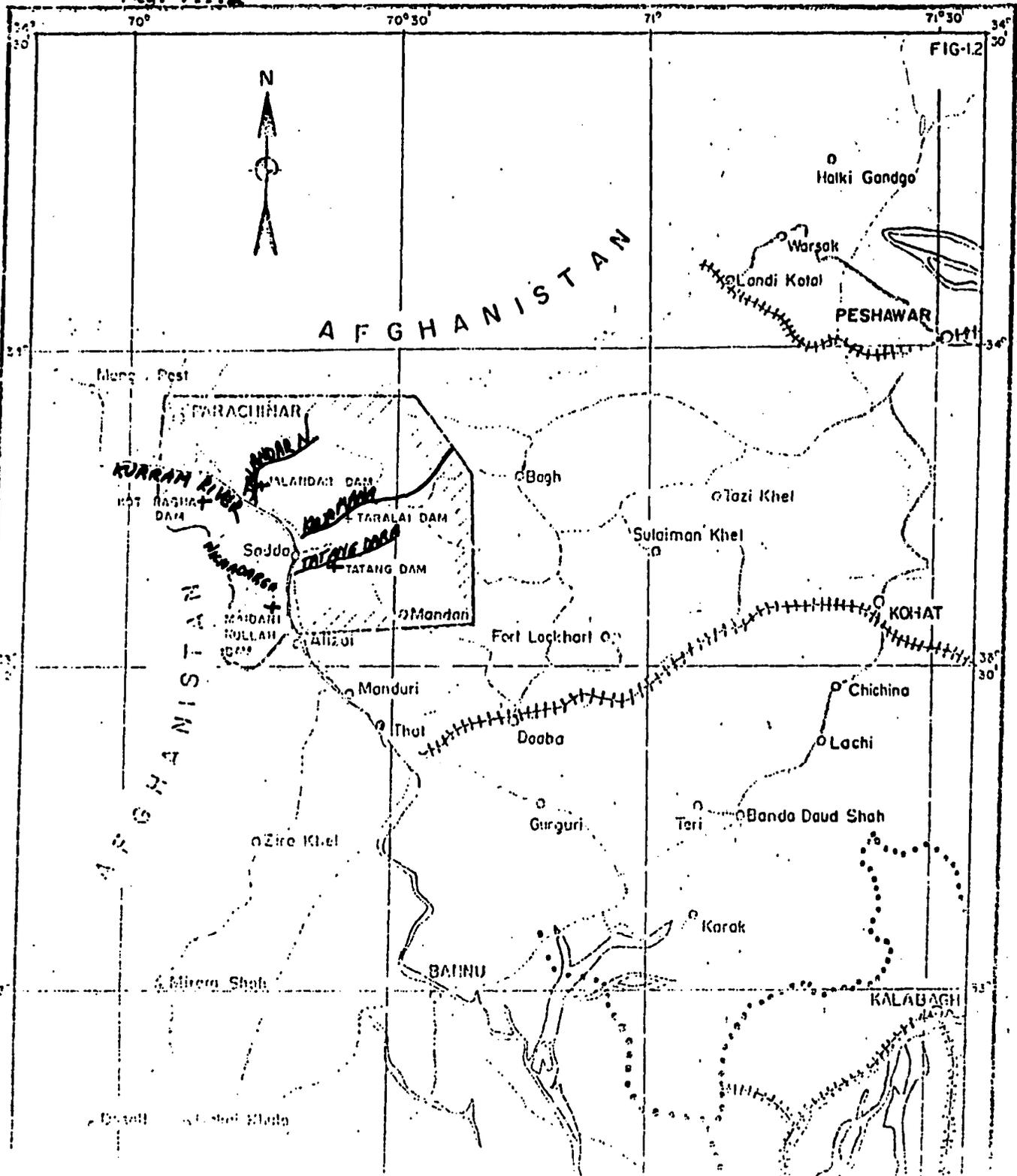
An ideal measure might be to harness the Safed Koh tois, but this is technically difficult. One attempt was made prior to independence to dam the Shian tangai for the purposes of electrification and irrigation but the attempt failed. The steep gradient and narrow valleys through which the tois and tangais run present very limited storage capacity. One possibility might be to look at subsurface flow with an eye toward the construction of infiltration galleries or subsurface weirs.

B. Flood Protection

FATA-DC has completed three schemes in the Agency to protect villages from flood waters. All three were completed in 1987-88. They are located as Agra, Shakardara and Darpa Khel. Combined population of the three villages is 3040.

Most of the efforts in flood protection are implemented by the Local Government and Rural Development Department. This department constructs bunds and retaining walls to protect villages and farm land from seasonal flooding. Flood protection schemes carried out in the Agency in the past few years (at least those years for which

Fig. VII.2 Small Dam Sites



records were made available) were as follows:

1988-89	12 Bunds or retaining walls
1986-87	48 Bunds or retaining walls
1985-86	30 "
1983-84	30 " (fully completed); another report claims 12)

The reporting is such that it is not an easy matter for an outsider to determine achievements; also work on schemes can overlap fiscal years raising questions as to where to include the scheme. Work on the average bund cost Rs. 22,500 in 1983-84.

C. Water Supply

FATA-DC has undertaken two schemes in the Agency. One schemes was completed using the #8 tube well at Sateen as the sources. PHED is now responsible for this tube well. The two tube wells mentioned in part 2. that had less discharge than expected will be converted to water supply systems this year. FATA-DC will manage the systems.

PHED is charged with the responsibility for developing potable water systems in the Agency. Systems are generally constructed to serve two or three villages, and the design life is ten to twenty years. Since the late 1970s, it appears that 44 schemes have been constructed. One of the schemes is in FR Kurram, 26 are in Lower Kurram and 17 are in Upper Kurram. Table VII.3 shows the location of potable water schemes. Two of the Lower Kurram schemes supply refugee camps at Tindo and Sateen. Water sources for these schemes are as follows:

- o 17 tubewells
- o 9 open wells or water collection wells
- o 9 springs
- o 10 infiltration galleries

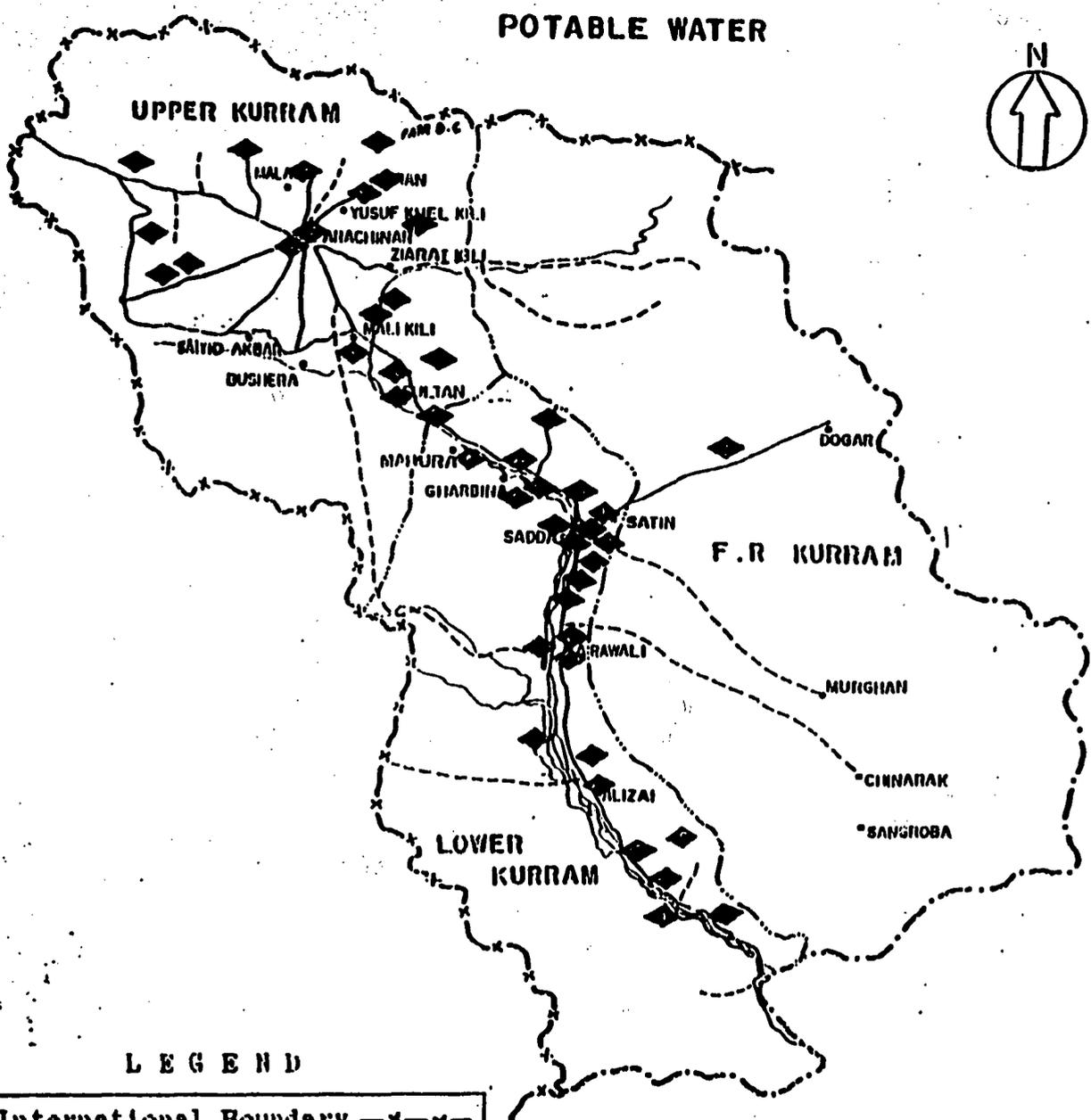
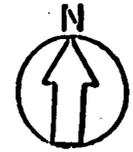
Generally, it has proved easier to construct systems in Lower Kurram. Systems relying on surface water in Upper Kurram are particularly difficult because of limited water availability (particularly in the northern part of the plain) and water rights issues. Those at the head waters are likely to be adamant in protecting their rights and can prevent those lower down in the system from getting any water. This can become a problem with most surface water schemes over time, as those closer to the headwaters use more than the share of water planned by the system designers, leaving little for those at the tail end of the distribution system.

Fig. VII.3

WDA

KURRAM AGENCY

POTABLE WATER



LEGEND

International Boundary	-x-x-
Agency Boundary	-.-.-
Subdistrict Boundary	----
Metalled Road	————
Shingled Road	-----
Potable Water Supply	◆

Three of the tubewells are in Upper Kurram, while the balance are in Lower Kurram. The water table is closer to the surface in those areas of Lower Kurram where PHED has drilled them, so it is cheaper to put tubewells there. In Lower Kurram, the main villages have water systems supplied from tube wells:

- o Arawali
- o Alizai
- o Manduri
- o Bhaggan
- o Chappri
- o Sadda

The open wells are not wells tapping the aquifer but rather are collection wells dug in a nullah bed or by the bank of a river/stream to collect subsurface water. Electrified pumps pump water from tube or open wells either straight to stand posts if the flow is sufficient or to a reservoir if water needs to be pooled to meet peak hour needs.

House connections generally are not permitted but sometimes some elements in the community install these anyway, which could create problems for water flow to the stand posts. Some of the systems for the larger towns and villages, such as Parachinar and Sadda, are designed with house connections in mind.

In general, concrete drains are constructed at each stand post, with pipes or channels leading to nearby fields, to prevent the development of standing waste water. The community contributes land for the project but appears to make no other contribution. If crops are damaged by the installation of the distribution system, farmers are compensated by the department. For each scheme, the department employs two individuals, both of whom earn grade four salaries. One is a chowkidar and the other a lineman. The latter is supposed to report daily to the office at Parachinar, and is supposed to carry out minor maintenance on his own. He receives no training for this but Department officials believe that the linemen learn over time. He reports more complicated problems to the Parachinar PHED office, and the office sends staff and equipment to carry out the repairs.

Staff at Parachinar consist of a Sub-Divisional Officer who is an assistant engineer and three sub-engineers who are engineering technicians and not qualified engineers. The office also has a maintenance crew, including a pipe fitter and pump specialist. This subdivision is managed from Kohat, where the Executive Engineer and Superintendent Engineer sit. There is also an electrician and a mechanic in Kohat and these are sent to the field to carry out repairs as necessary.

Three schemes were inspected - none had a concrete drain. Many of the faucets were broken (a standard problem with water supply

systems in many developing countries) and leaking, but water did not seem to be pooling. One system at Alam Sher, consisted of a tank and communal taps supplied via an infiltration gallery, was not working because the rising river had damaged the main pipe from the gallery. At Ibrahimzai, whose system had been designed for house connections, a number of these had been added. The water source was a spring. The villagers said they took care of their own repairs and maintenance because it took PHED too long to respond to appeals for assistance. At Manduri, the generator which was powering the pump was out of order. This was the second failure in two months. The first time, PHED had repaired the generator promptly. At the time of this visit, the pump had been down for only two days, and the village was waiting for repairmen. There were no private house connections either at Manduri or Alam Sher. Visiting three sites does not permit the drawing of any conclusions about the program. However, findings from these three suggest that an overall evaluation of problems and prospects could be timely. Table VII.4 lists the water supply schemes with type and number of beneficiaries. Schemes can also be located on the 1:100,000 map.

The LG&RD Department also constructs drinking water schemes or improvements. These tend to consist of smaller scale projects, serving fewer beneficiaries, than those undertaken by PHED. In 1983-84, the department worked on 38 potable water schemes. Twenty one of these consisted of the construction of a tank. Some involved digging and/or lining a well. One involve spring improvement and another installation of a pump. Work on the other schemes was not specified. In 1985-86, 30 wells were dug and 36 tanks constructed. In 1986-87, 44 wells were dug, 31 tanks constructed, 4 springs improved and two other (unspecified) drinking water schemes constructed. In 1988-89, 3 drinking water schemes, 28 wells and 24 tanks were constructed. In 1984-84, the average well cost Rs. 12,500 while the average tank cost ran Rs. 22,500.

TABLE VII.4

**PHED POTABLE WATER SUPPLY SCHEMES
IN KURRAM AGENCY**

LOWER KURRAM

1. Name of Scheme : Gidarah
Source : tube well
Beneficiaries : 2429
Date of scheme : 1988/89
2. Name of Scheme : Balich Khel & Khawar
Source : Tube well
Beneficiaries : 1925
Date of Scheme : 1987/88
3. Name of Scheme : Amalkot & Gozar
Source : (a) Amalkot: spring
(b) Guzar : open well
Beneficiaries : 1995
Date of Scheme : 1985
4. Name of Scheme : Mahora Bisatu
Source : Open well
Beneficiaries : 2247
Date of Scheme : 1986/87
5. Name of Scheme : Dorani and Khanana Killi
Source : Tube well
Beneficiaries : 1750
Date of Scheme : 1987/88
6. Name of Scheme : Pir Qayum Area
Source : tube well
Beneficiaries : 3045
Date of Scheme : 1987/88
7. Name of Scheme : Ahmadi Shaman
Source : tube well
Beneficiaries : 385
Date of Scheme : 1987/88
8. Name of Scheme : Kochi Kalli
Source : tube well
Beneficiaries : 1855
Date of Scheme : 1988

9. Name of Scheme : Bulyamin and Bagzai
Source : Infiltration, gallery
Beneficiaries : Bulyamin : 4354
Bagzai : 5215
Date of Scheme : 1986
10. Name of Scheme : Topakai
Source : tube well
Beneficiaries : 1064
Date of Scheme : 1986/87
11. Name of Scheme : Sashu and Jindahri
Source : open well
Beneficiaries : 1995
Date of Scheme : 1986/87
12. Name of Scheme : Gharbina
Source : open well
Beneficiaries : 1435
Date of Scheme : 1984
13. Name of Scheme : Alizai
Source : tube well
Beneficiaries : 5100
Date of Scheme : 1980-81
14. Name of Scheme : Manduri
Source : tube well
Beneficiaries : 2000
Date of Scheme : 1983
15. Name of Scheme : Bhaggan
Source : tube well
Beneficiaries : 2058
Date of Scheme : 1983
16. Name of Scheme : Chappri
Source : tubewell
Beneficiaries : 1050
Date of Scheme : 1983
17. Name of Scheme : Uchat Killi
Source : open well
Beneficiaries : 1600
Date of Scheme : 1981-82
18. Name of Scheme : Ibrahim Zai
Source : spring
Beneficiaries : 1950
Date of Scheme : 1980-81

19. Name of Scheme : Sadda
 Source : tubewell
 Beneficiaries : 160
 Date of Scheme : 1986
20. Name of Scheme : Afghan Refugees Scheme Tindo No. 3 Camp
 Source : tube well
 Beneficiaries : 7000
 Date of Scheme : 1987
21. Name of Scheme : Afghan Refugees Camps No. I and No. II at
 Satin
 Source : tube well
 Beneficiaries : Camp No. I : 8266
 Camp NO. II: 8600
 Date of Scheme : 1987
22. Name of Scheme : Shakhardara
 Source : spring
 Beneficiaries : 1500
 Date of Scheme : 1978-79, 1984 upgraded
23. Name of Scheme : Sadda
 Source : Infiltration Gallery
 Beneficiaries : 7209
 Date of Scheme : 1976-77
24. Name of Scheme : Civil Colony, Sadda
 Source : Infiltration Gallery
 Beneficiaries : 1627
 Date of Scheme : 1980-81
25. Name of Scheme : Sro Ghawarhgai and Shalghazian
 Source : open well
 Beneficiaries : 3000
 Date of Scheme : 1988/89
26. Name of Scheme : Arawali Bela
 Source : tube well
 Beneficiaries : 1950
 Date of Scheme : 1980

UPPER KURRAM

1. Name of Scheme : Mir Jamal
 Source : Tube well
 Beneficiaries : 1141
 Date of Scheme : 1987/88

2. Name of Scheme : Kanda
 Source : Open well
 Beneficiaries : 280
 Date of Scheme : 1987/88
3. Name of Scheme : Pekar
 Source : Gallery
 Beneficiaries : 5810
 Date of Scheme : 1986/87
4. Name of Scheme : a: Karakhala & b: Kechkina
 Source : (a) infiltration gallery (b) tube well,
 Beneficiaries : (a) 1800 (b) 2400
 Date of Scheme : (a) 1980 (b) 1988/89
5. Name of Scheme : Zeran Infiltration Gallery for Zeran &
 Parachinar
 Source : Infiltration gallery
 Beneficiaries : 21,000
 Date of Scheme : 1976-77 but then closed, reopened 1988
6. Name of Scheme : Bada Khel
 Source : Infiltration Gallery
 Beneficiaries : 10,430
 Date of Scheme : 1988/89
7. Name of Scheme : Malana & Sehra
 Source : Infiltration gallery
 Beneficiaries : A: 2919
 : B: 2359
 Date of Scheme : -
8. Name of Scheme : Shublan
 Source : open well
 Beneficiaries : 1358
 Date of Scheme : 1988
9. Name of Scheme : Ahmad Zai
 Source : open well
 Beneficiaries : 1694
 Date of Scheme : 1988
10. Name of Scheme : Alam Sher
 Source : gallery
 Beneficiaries : 1477
 Date of Scheme : 1983/84
11. Name of Scheme : Extension to Parachinar Degree College
 Source : tubewell
 Beneficiaries : 2760
 Date of Scheme : 1986

12. Name of Scheme : Kharpachi
Source : spring
Beneficiaries : 300
Date of Scheme : 1981
13. Name of Scheme : Agra
Source : infiltration, gallery
Beneficiaries : 1370
Date of Scheme : 1983
14. Name of Scheme : Luqman Khel
Source : spring
Beneficiaries : 2905
Date of Scheme : 1984
15. Name of Scheme : Bughdai
Source : spring (new scheme also proposed)
Beneficiaries : 3445
Date of Scheme : 1982
16. Name of Scheme : Govt. Commercial Institute Parachinar
Source : spring
Beneficiaries : 600
Date of Scheme : 1986
17. Name of Scheme : Dand
Source : spring
Beneficiaries : 2000
Date of Scheme : 1989

KURRAM F.R.

1. Name of Scheme : Sultani
Source : gravity scheme
Beneficiaries : 3000-4000
Date of Scheme : 1987

VIII. ANIMAL HUSBANDRY

Animals make an important contribution to the farm family economy and constitute a sort of "savings bank" when time are bad. Milk and eggs improve the diet, and animal manure is critical to crop production. The 1980 Agricultural Census, which was a sample survey, made an attempt to estimate animal numbers. The most recent livestock survey was conducted in 1986 - the surveyors wisely suggest taking Census findings for the tribal areas with a grain of salt. The Animal Husbandry Department was still using the 1980 figures in 1989, but it was not clear whether these were felt to be more reliable than the 1986 statistics. Table VIII.1. shows the 1980 Census estimates, while Table VIII.2 reports the quite different estimates of the 1986 survey.

TABLE VIII.1

NUMBERS OF LIVESTOCK BY TYPE
1980 Agriculture Census (sample survey)

ANIMAL	FARM HOUSEHOLDS OWNING	LIVESTOCK HOUSEHOLDS OWNING	OTHERS OWNING
Cattle	60,043	16,828	
Goats	60,122	17,584	502
Sheep	28,071	11,585	184
Buffalo	1,282	214	
Horses	30	124	
Mules	900	50	0
Donkeys	5,711	1,839	144
Chickens	227,507	94,420	15,029

There were 995 camels in 1980. They are much used for smuggling, carrying goods from Satta, through Dogar in FR Kurram, and ending their journey at Bara bazaar outside Peshawar. There were also a total of 34,516 milk cows and buffalo, of which 23,030 were then in milk, at the time of the census. 8,179 farm households owned milk cows or buffalo, with 54 % of those owning three or more cows. 3,678 non-farm households also owned milk cows. There are more cattle in Lower Kurram than in Upper Kurram, while there are proportionately more sheep in Upper Kurram.

TABLE VIII.2

NUMBERS OF LIVESTOCK BY TYPE
1986 Census of Livestock (sample survey)

ANIMAL	FARM HOUSEHOLDS OWNING	LIVESTOCK HOUSEHOLDS OWNING	OTHERS OWNING
Cattle	30,998	6,401	
Goats	37,856*		
Sheep	18,210*		
Buffalo	5,094*		
Poultry	269,593*		
Camels	169*		

*Combined total for farm households and livestock owning households.

Except with respect to buffalo, number of animals included in Table VIII.2 are reported to have declined seriously between 1980 and 1986. This seems unlikely. Numbers of animals owned by the local population may have remained relatively stable owing to Afghan competition (from refugee-owned animals) on grazing land and the limited area that can be devoted to fodder crops. Interest in establishing poultry and dairy farms has probably increased the numbers of chickens and milk cows. The number of oxen, which is included in the number of cattle, has probably declined as interest in and the availability of tractors has increased. Most water buffalo must live in Lower Kurram. Not a single buffalo was seen in the Agency during a field trip in June 1989.

The 1986 Census probably did not include refugee-owned animals, which boost the animal population (particularly of sheep and goats) of Kurram significantly. Refugees were only starting to cross the border in large numbers in 1980. When asked about the impact of refugees in Kurram, local people often say that they now have more meat in their diet - increases in herds and pressure on grazing land have increased the supply of animals and perhaps brought about a drop in meat prices.

The 1985-86 refugee-owned animal population in the Agency was estimated by Government of Pakistan sources as follows:

Cattle	30,762
Sheep	226,920
Goats	124,553
Camels	11,240
Donkeys	13,472
Horses	537
Dogs	9,423
Chickens	16,904

In the section on refugees, it was noted that recent research by two individuals working with refugees suggested that the average refugee family owned two animals. This conclusion tends to contradict the much higher numbers given above. As the reader will note, according to government statistics, refugees own more than five times as many sheep as locals reported owning in 1980. The refugee-owned goat population is also reported to be much larger than the locally-owned 1980 goat population. The very large number of camels and donkeys are no doubt used to transport war material and supplies inside Afghanistan as well as for smuggling good through FR Kurram. While UNHCR sponsors some veterinary services for refugee-owned animals, these are limited and cannot address the need, making the work of ensuring animal health in the Agency more difficult.

Sheep in Kurram are subject to Anthrax and Enterotoxemia. The cattle are susceptible to Haemorrhagic Septicemia (a bacterial disease) and black water disease, which is infectious. One of the biggest health problems is liver fluke, which affects cattle and small ruminants. The increase in animal density due to the refugee influx may have increased the incidence of certain diseases due to increased possibilities for contagion. Refugee-owned animals may also have brought new diseases with them.

Veterinary services appear to be adequate at least for animals owned by the indigenous population. There are four veterinary hospitals, 11 dispensaries, 3 centers (essentially the same services as a dispensary), and three artificial insemination centers. Because of the locations, most of these centers cannot serve refugee-owned animals. Table VIII.3 shows the locations of these facilities which are also marked on Fig. VIII.4.

TABLE VIII.3

VETERINARY FACILITIES

Hospitals	Dispensaries	Centers	A.I. Centers
Parachinar Sadda	Peiwar Shingak	Maiki Muzzafarkot	Parachinar Sadda
Hospitals	Dispensaries	Centers	A.I. Centers
Alizai Shalozan	Kirman Parachamkanni Dogar Ahmedzai Makhazai Shakardari Manduri Alamsher Mohara	Said Ali Mela	Alizai

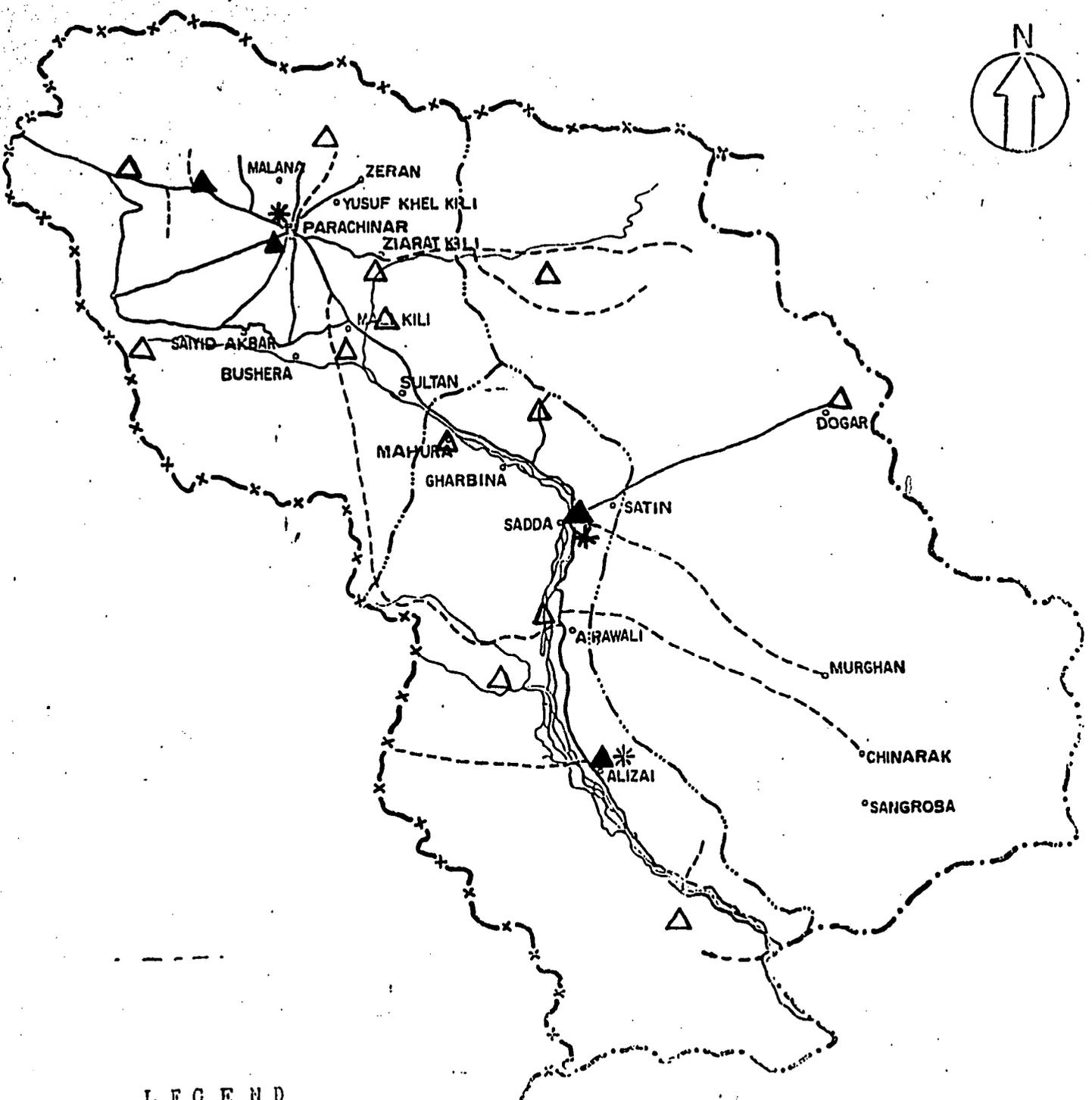
Lower and Upper Kurram are somewhat better served than FR Kurram but two of the dispensaries and one center are located in FR Kurram. The hospitals are staffed by veterinarian and one or two compounders. Compounders receive two years of training after matriculation. The dispensaries and centers are staffed either with compounders or stock assistants. Stock assistants receive the same training as compounders but are a lower grade on the civil service scale. In sum, there are four veterinarians, three inseminators, seven compounders (although they have ten approved positions - three are vacant), and six stock assistants (nine positions approved). The department is short on vehicles with only one jeep and some motorcycles for all these staff. Apparently, sometimes staff rent vehicles to make field visits and do vaccinations.

In 1988-9 these facilities treated 53,162 outpatient cases, most of which were cows. Castrations numbered 7,716 while 4,236 cows and 78 buffalo were artificially inseminated. A total of 32,731 animals and 197,979 poultry were vaccinated.

In 1988-89, the department distributed 90 rams and 60 male goats to try to improve local sheep and goat herds. It held one sheep show and one goat show and distributed prizes for best animals.

Two Kurram residents were sent for the DVM course in 1988-89, and 2 for the stock assistants' course.

KURRAM AGENCY ANIMAL HUSBANDRY



LEGEND

INTERNATIONAL BOUNDARY	--- x ---
TRIBAL BOUNDARY	—————
SUB-DIVISION BOUNDARY
MAIN ROAD	—————
BRANCH ROAD	- - - - -
DISPENSARY	▲
DISPENSARY OR CENTRE	△
ARTIFICIAL INSEMINATION CENTRE	*

IX. FORESTRY

A. Regular Activities

The Department has been active in the Agency since 1975-76. There are or have been several different projects or schemes:

1. As a part of its "strategic reforestation" activities, it had established by June 1989, 1,997 acres of block plantations and 104 miles of roadside plantings. The Department currently has three nurseries at Shalozan, Alizai and Shablan totalling 3.5 acres. In addition to providing seedlings for the block plantations and government building compounds, the nurseries are used to grow seedlings for sale at nominal prices to farmers.

2. UNHCR funded the planting of 121 acres between 1982-84. Some of these acres were contiguous to or in refugee camps.

3. A separate project, funded by the SDP, for reforestation in Upper Kurram was scheduled to start last fiscal year but will now begin this year. The target is to plant 5000 acres in block plantations and establish 10 acres in nurseries. The budget is Rs. 12.4 million.

4. A third project, for planting mazri and balosa (acacia) in FR Kurram, is almost completed. By June 1444 acres out of a targeted 1500 acres had been planted. The balance will be planted this year. This scheme cost Rs. 3.3 million.

5. Mazri plantations - discussed separately below.

The procedure for establishing block plantations is for Forestry Department staff to approach villagers to grant a portion of their common land, which is unfit for cultivation. An agreement is signed, and the Department takes over the land for a four year period. Generally a block plantation consists of around 30 acres. The plantations are surrounded by barbed wire and chowkidars protect them. After four years, when the trees are considered established, the area is turned back over to the village to care for. The main trees planted are Eucalyptus, Chir Pine at higher altitudes, Alynthus and Acacia.

The above projects are separately staffed but all are under the Agency Ranger, who sits in Parachinar. The staff for the first project discussed above consists of an Assistant Ranger, 12 Foresters, 1 Budder and 22 Forest Guards, along with drivers, chowkidars and peons. Staff are located as follows:

Upper Kurram:

Parachinar:	Asst. Ranger 2 Foresters 1 budder
Peiwar:	1 Forester 4 Guards
Nasti Kot:	1 Forester 3 Guards
Kirman:	1 Forester 2 Guards
Jalamai:	1 Forester 1 Guard
Shublan:	1 Forester 4 Guards

Lower Kurram:

Bilyamin/Alizai:	1 Forester 6 Guards
Shabak:	2 Foresters 4 Guards
Chappri:	1 Forester
Makhazai:	1 Forester 2 Guards

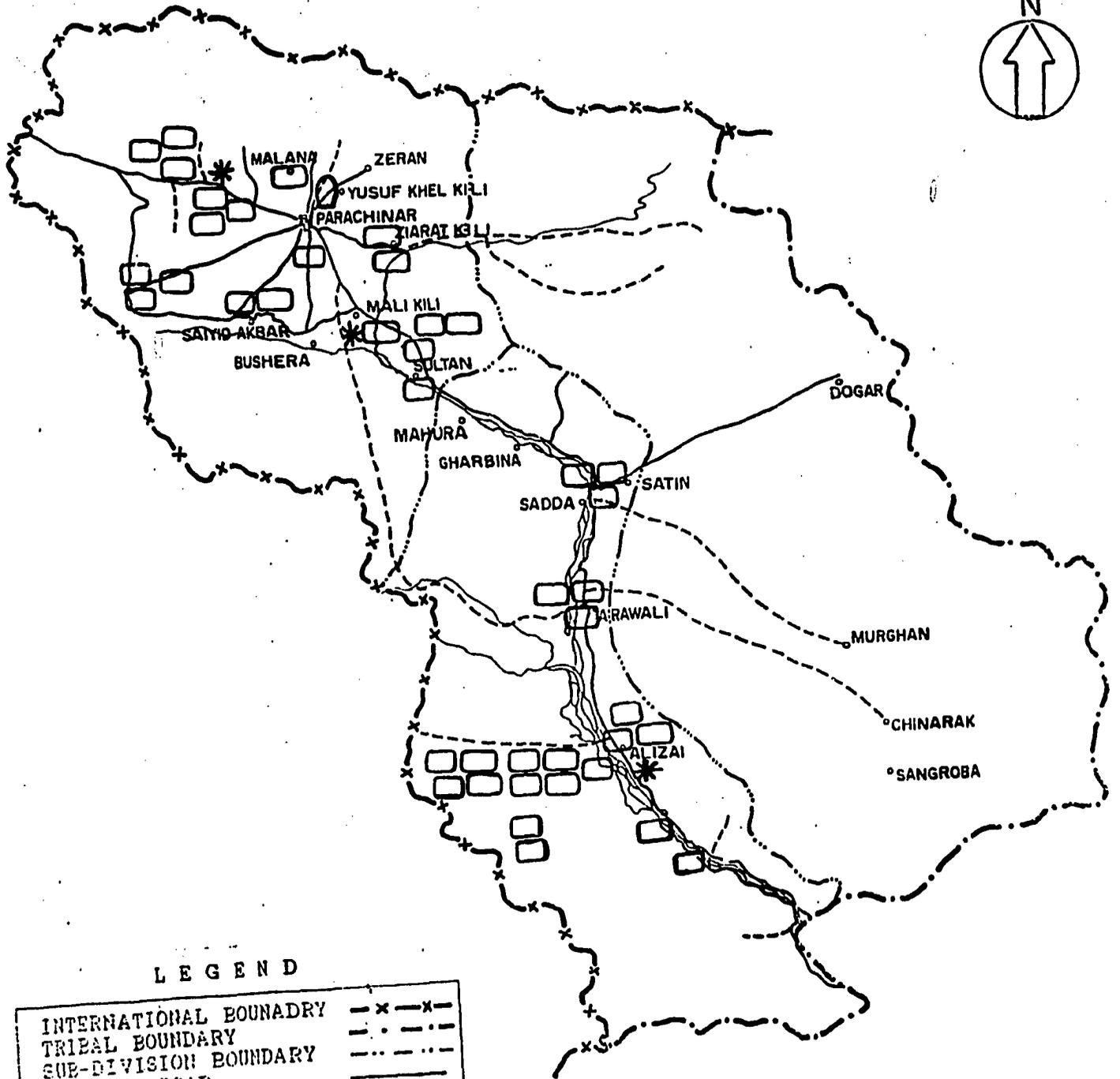
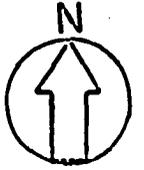
Fig. IX.1 shows the locations of nurseries and block plantations.

Staff point out that there is very limited interest on the part of locals in turning over land for block plantations. Even though the land is not in use for anything else (except perhaps grazing, which is important), people do not understand the potential represented by agro-forestry and do not want to wait several years to realize a profit.

B. Mazri

Mazri is a wild dwarf palm that has long had commercial importance in the tribal agencies. Mats and rope are made from the plant and then sold locally as well as in the down districts. The making of mazri products was once an important cottage industry

KURRAM AGENCY FORESTRY



LEGEND

INTERNATIONAL BOUNDARY	- x - x -
TRIBAL BOUNDARY	- . - . -
SUB-DIVISION BOUNDARY	- - - - -
METALLED ROAD	—————
SHINGLED ROAD	- - - - -
NURSERIES	*
AGRICULTURE NURSERIES	◻
BLOCK PLANTATIONS	◻

particularly in Lower Kurram, but it has been in decline for most of the last decade. The large concentration of refugees is in considerable measure responsible for stripping the countryside of the plant, but local residents also carry a measure of responsibility. Mostly, mazri has been cut for fuel. The refugees do not receive an adequate monthly allowance of kerosene, there are many unregistered refugees who receive no allowance, wood is very expensive, and the winters are cold.

In driving up the main road along the left bank of the river in Lower Kurram, one sees only one clump of mature mazri, at the site of a graveyard. Small, immature plants are scattered on wasteland at the side of the road. More mazri might be in evidence the further one moves off the road, but this is also where the refugee camps are. Considerable mazri is, however, reported to exist along the road from Sadda to Marghan.

Refugees as well as the local population are involved in harvesting mazri for mat production and in weaving and selling the products. Particularly those refugees living west of the road running from Makhazai to Monda. The government tries to some extent to control the harvesting by selling licenses to export mazri from the Agency, but policing is impossible. There appear to be no estimates on mazri production and value of products made.

The World Bank, in part trying to address the problem of refugee environmental impact, is funding through the Forestry Department a mazri re-forestation project. The plan is to plant 15,000 acres with mazri (generating some employment for refugees at the same time). To date, 10000 acres have been planted. There are four block plantations, one near Shabak, one at Makhazai, one near Alizai and one in the vicinity of Bilyamin and Muzzafar Kot. The plantations are surrounded by fences and protected by chowkidars. As with the tree planting, at the end of the project, these plantations will be turned back over to the owners of the land on which they rest. Eventually (but not for some years), the owners will be able to harvest the mazri for commercial purposes.

An extension of this project is expected. A total of Rs. 8 million will be invested by the Bank in planting 3,750 acres of mazri and 1250 acres of trees in Lower Kurram, to help address reverse the deleterious environmental impact of the refugees further.

C. Sericulture

Kurram was once known for its silk production. Through the years, however, the raising of cocoons and spinning of silk

thread declined. Sericulture now is a very limited seasonal cottage industry, the main activity of which takes place over a two month period in the Spring in Upper Kurram. The climate is ideal for the production of dry cocoons, requiring only modest and simply

made elevations in temperature and humidity. Mulberry leaves are readily available.

The Forestry Department has been trying to promote sericulture, but with rather limited success. A special development center was established and staffed in 1952-53. Staff receive each year a quota of seed packets. Those packets are mostly imported from Korea and they are sold to participating farmers every April at a cost of Rs. 175 per packet. This charge has been constant for the last few years. There is some local production of seed packets and these sell at Rs. 35 per packet. Roughly 20,000 eggs are included in each packet and if properly tended they can produce 12-15 kg. of dry cocoon, although Department staff in Kurram suggested that 10 kg. per package was the average result.

The eggs hatch after three days and the worms must thereafter be fed mulberry leaves. Tending the worms is generally done by women and children in the family. It takes 35 days for the cocoons to be completed. At the end of the period, the cocoons are sold back to the Sericulture Department. Apparently, some farmers sell their cocoons directly to commercial dealers visiting the Agency. The Department noted that this year, as of the end of June, it had purchased 1104 kg, while a commercial dealer had bought 500 kg. The Department has four "reelers" on staff in Parachinar, and these men spin yarn from the cocoons, after boiling. The yarn is then sent to the Department's Peshawar headquarters for commercial sale.

The department has a small farm of about 2 acres of young mulberry trees to provide leaves for the worms they hatch for seed multiplication purposes. In addition, there is a 3/4 acre nursery at Sultan. Last year 20,000 mulberry seedlings were distributed to farmers at the cost of 10 paisa per plant.

In 1988, roughly 1385 kg. of cocoons were produced. In 1989, the "harvest" will be larger than 1600 kg.

The number of farm families taking part in sericulture seems to be declining every year. In 1987, 300 participated; in 1988, 235; and in 1989, 200. This may be because the local market has been taken over by cheaper Korean yarn, so that the price paid to participating farmers has suffered. Most countries in which sericulture is highly developed use eggs that have more than one production cycle per year. Those used in Parachinar produce only one "crop" of cocoons per year. If it were possible to undertake this activity year-round and thus to produce a greater profit, it is possible that more families might be interested. It costs little except for time and seed packets, provided one has access to mulberry leaves. However, it is possible that one reason that participation is so minimal is that female farm family labor is already fully committed, and women have no time to spare. Income generating activities that require considerable female labor are probably doomed to failure in the absence of investments that

reduce their required labor in other areas.

The department has two professional staff to look after sericulture activities in the agency.

X. COMMUNICATIONS

A. Roads

C&W, with a limited amount of assistance from the TADP project funded by USAID, has made excellent progress in extending a road network around the Agency. In 1987-88 there were 454 km. of roads, and more than half the total km. were paved. Kurram then had 0.13 km. of roads per sq. km. of territory, and ranked third after Khyber, Orakzai and Bajaur with respect to km. of roads per sq. km of area. The map at the beginning of this report shows the locations of paved and shingled roads.

In comparing the three tehsils, Upper Kurram has 0.26 km. of road per square kilometer of area; Lower Kurram has 0.16 km. of road per sq. km.; while FR Kurram lags behind with only 0.06 km. of road per sq. km. of area. Upper Kurram then has the best network of roads - Parachinar is relatively easily accessible from most parts of Upper Kurram. Upper Kurram is also more densely populated than the other two tehsils, one important factor in determining the placement of roads. Lower Kurram, while it has fewer kilometers of road, has a smaller population that is largely concentrated (except for the refugees) along the river. Road construction in FR Kurram should continue to be a priority.

The major road in the Agency for political and commercial reasons is the road which links the Agency with Kohat and then on to Peshawar. This is the Thall-Parachinar road, which was black-topped under the Raj. It is the most heavily trafficked road in the whole of FATA. For much of its course, it runs along the left bank of the river. It is single lane until Mali Kili, just outside of Parachinar, at which point it becomes two lanes. It is not in very good condition and is cut in several places by flood damage from hill torrents. Travel on this road must be damaging to soft fruit and vegetable crops. Following discussion with the government and the conduct of a feasibility study, USAID's TADP project agreed to fund the resurfacing of this road, including the construction of 28 bridges. The design was completed. However, the cessation of U.S. development assistance mandated in early 1991 brought about the cancellation of this planned reconstruction.

There are now five main roads leading to FR Kurram from Upper and Lower Kurram: one paved and four gravel roads. This is quite an accomplishment, given the difficulties of construction in FR. One of these roads is the Sadda-Marghan road, a 24 km. road in use for over two years now, funded by the TADP project. This road previously existed as a dirt one but was upgraded through USAID funding. These roads are important in helping to establish better links between Upper and Lower Kurram and the politically difficult area of FR Kurram. Travel within FR, from one part to another can still be difficult, involving a drive to Upper or Lower Kurram and then out along another access road to the tehsil.

There are several roads leading from Parachinar to various parts of the Parachinar plain - most of these are single lane paved roads but some are also shingled. These provide better access for Upper Kurram farmers to markets at Parachinar and at Sadda.

Travel in Lower Kurram is easier than elsewhere in the Agency because many villages are near or on the main road, which runs alongside the river as far as Sadda. Shingled roads linking villages to the main road have been built to improve farm to market access.

There is a shingled road running along the right bank of the river, from Thall up through Lower Kurram to Gharbina. This road also branches away from the river at Gidara and passes west and north until it joins with the Mali Kili-Karlachi paved road (running east to west at the southern end of the plain) just beyond Ahmadzai. There are also two other shingled roads in the lower part of Lower Kurram, linking the Afghan border with the Thall-Gharbina right bank road. These roads help link right bank communities with agricultural markets, but they must first cross the river. Bridges are currently situated at Alizai, Manduri and Sadda. Reconstruction of the bridge at Manduri has been underway for a few years. A new bridge is under construction at the Shashoo Causeway. When not convenient to a bridge, locals will use tractors to cross the river to get to the left bank. The GOP has been considering building additional bridges across the river at Chinaclay 24 km from Sadda and Mahusa, 4 km north of Chinaclay. It is much easier to cross the river if one lives in the lower part of Lower Kurram, where there are more bridges. One bridge across the river is now under construction at Kunj Alizai in Upper Kurram.

A number of shingled roads have also been constructed from the main road to various refugee camps. Some of this work has been undertaken by various foreign NGOs working with refugees.

Roads under construction in autumn 1989 include:

- o Shahsoo to Chinarak (32 km.)
- o Blacktopping of Alizai-Gharbina Rd.
- o Makhrani to Sarpakh via Gogani (shingled)
- o Blacktopping of Ahmadzai road
- o Blacktopping of Shalozan road

Road building has been an important source of employment for both refugee and local unskilled labor in the Agency. Work scheduled for the Thall-Parachinar road should generate additional employment.

Table X.1 lists roads in the Agency with width and length as of June 1988.

TABLE X.1

KURRAM

ROAD STATISTICS SHOWING WIDTH AND LENGTH AS OF 30TH JUNE 1989

Name of road.	Pavement width (Meter).	Length on 30-6-88 (km)
<u>BLACK TOPPED</u>		
1. Kohat Thall Parachinar road.	3.66	72.42
2. Parachinar Civil Station road.	6.10	8.38
3. Parachinar Kirman road.	3.66	7.71
4. Sadda Doggar Tarai road.	3.66	7.24
5. Parachinar tarimangal road.	3.56	24.14
6. Parachinar Zeran road.	3.66	20.92
7. Mali Killi Kharlachi road.	3.66	3.03
8. Bypass road connecting T.P. road to Zeran Malana road.	3.66	17.70
9. Alamsheer Dangila road.	3.66	2.72
10. Malana road.	3.66	4.43
11. Shakardara road.	3.66	3.44
12. Alimangal Kharlachi road.	3.66	4.83
13. Parachinar Karakhela road.	3.66	11.60
14. Alizai to Gharbina road.	3.66	15.01
15. Ahmadzai road.	3.66	14.40
16. Parachinar Nasti Kot road.	3.66	0.80
17. Luqman Khel road.	3.66	8.90
18. Link road between T.P. road Thall Kharlachi Alizai road.	3.66	4.00
<u>SHINGLED ROAD.</u>		
1. Ahmadzai road.	3.66	7.24
2. Ahmadzai Lakka Tiga road.	6.10	30.58
3. Arawali Lakka Tiga road.	6.10	16.09
4. Woocha Dara Mir Jamal road.	3.66	5.63
5. Mir Jamal road.	3.66	2.01
6. Parachinar Dendar road.	3.05	8.05
7. Parachinar Makai road.	3.05	5.63
8. Upper & Lower Manduri road.	3.66	3.22
9. Shabak road.	6.10	7.24
10. Bato Killi Gano Obe road.	3.05	4.02
11. Ziarat Killi Malik Akbar Khan.	3.05	0.95
12. Alizai Khardand road.	6.10	8.64
13. Shalozan road.	3.66	2.01
14. Thall Kharlachi road on the right bank of Kurram River.	3.66	53.10

Name of Road.	Pavement width (Meter).	Length on 30-6-88 (km)
15. Kalat to Khyber Border.	3.66	4.83
16. Parachinar to Peshawar via Parachankani Hawee Dara road.	3.66	32.18
17. Sadda Marghan road.	3.66	23.67

The LG&RD Department carries out small scale road works. Construction of culverts and retaining walls make up most of the department's work, but it also undertakes construction of roads of less than a few miles in length.

B. Telephones, Telegraph and Post Offices

In 1987-88, there were 532 telephone connections in the Agency, all in Upper and Lower Kurram. The 1980 housing census recorded 37907 housing units in the Agency - there of course would be more now. The census did not include government buildings, which are generally the first to receive telephone connections. It seems clear from this that a telephone connection is a very scarce commodity in the Agency. There were 24 post offices that same year, providing convenient access at least in Upper and Lower Kurram to mail service. There is one telegraph office, established in Parachinar in 1985-86.

C. Air Transport

An airport has been completed at Parachinar, but service has not started due to fear the PIA planes would become targets of the Kabul regime. There could be considerable passenger traffic on this route, to save the long, roundabout drive from Peshawar. It could be useful as well for shipping perishable high value fruit and vegetables to down markets at Peshawar and elsewhere.

XI. EDUCATION

A. Note on Data Sources

Statistics on enrollment in Kurram's primary, middle and high schools published in FATA Development Statistics and Important Agency-Wise Socio-Economic Indicators of FATA, both of which are published by the Bureau of Statistics, do not agree with those recorded by Education Department staff in Parachinar. The following shows the difference in recorded primary, middle and high school enrollments for three years, chosen at random:

Year	ENROLLMENT IN PRIMARY SCHOOL	
	Bureau of Statistics	Educ. Dept. in Kurram
1976-77	4,105	11,193
1980-81	5,262	13,587
1984-85	7,353	14,632

Year	ENROLLMENT IN MIDDLE SCHOOL	
	Bureau of Statistics	Educ. Dept. in Kurram
1976-77	1,922	2,352
1980-81	2,281	3,246
1984-85	5,394	3,124

Year	ENROLLMENT IN HIGH SCHOOL	
	Bureau of Statistics	Educ. Dept. in Kurram
1976-77	3,713	384
1980-81	3,704	469
1984-85	4,590	509

It is clear from the above that Bureau of Statistics publications consistently report lower primary school enrollments but higher middle school and high school enrollments than are recorded in Education Department files in the Agency. The explanation for this appears to be that the published data organize enrollments by the formal classification of the school. In other words, all students in a middle school are counted as middle school students, and all students attending a high school as high school students. However, most middle and high schools in the Agency offer lower grades as well since they generally are schools upgraded from the previous level. A middle school usually contains a primary section while a high school often includes primary and middle level students. In the published statistics then, recorded primary school enrollments count only those students attending a primary school but not those children attending a primary class in a middle or high school. This explains the much lower figures for primary

school enrollment that the Bureau of Statistics shows. At the same time, those primary school students who attend their classes in a middle school or a high school are counted in the middle or high school enrollments respectively. Finally, middle school students sitting in classrooms in a high school are counted as high school students. This would help explain the higher middle school and high school enrollments offered by Bureau of Statistics publications. Counting by formal category of school as opposed to totalling all children in each class regardless of where their classroom is physically located leads, in this instance, to data that are not very useful. If the unwary researcher uses primary school enrollment figures in FATA Development Statistics and compares it with numbers of children in the appropriate age group to derive the primary school participation rate, he will derive a percentage that is far too low and that is unjust to Department of Education efforts. At the same time, the researcher will derive participation rates that are too high for middle and high school. In the case of high school enrollments, using Bureau of Statistics data leads to a male participation rate in 1980-81 of approximately 46%, well above the primary and middle participation rates Bureau data would lead to and much higher than the national average.

The same problem appears also to apply to the recording of numbers of teachers in FATA Development Statistics. The reporting is done according to what category of school teachers teach in, regardless of the grade level they teach. Therefore, it is not possible to use these data to derive student-teacher ratios by primary, middle and high school level.

In this section, a decision was made to use enrollment and teacher data, which were provided on a per class basis for several years and on a per school and per class basis for the 1988-89 academic year by Education Department staff in Parachinar. Table XI.1 shows those enrollments over time. These enrollments could not be verified. Four schools were visited as part of work on this profile. In two of the four schools, enrollment showed little resemblance to the previous academic year's enrollment as recorded in 10/88. The third school, Yusuf Khel middle school, was not included in the roster obtained from Education Department staff in Parachinar. Enrollments in the fourth school, the Parachinar girls' school were close and the enrollment reported in 10/88 can therefore be viewed as accurate:

SCHOOL	DOCUMENTED ENROLLMENT	CURRENT ENROLLMENT
	10/88	6/89

Lugman Kehl Boys' Middle School:		
Primary Section	240	172
Middle Section	86	27

Shahji Khel Girls' Primary School	60	160
Parachinar Girls' High School:		
Primary Section	382	340
Middle Section	156	129
High Section	42	45

Enrollments can fluctuate considerably, both during the academic year and from one year to the next. Such fluctuations could explain the differences with respect to Lugman Khel enrollments. For Shahji Khel, one would suspect the omission of a "1" in the 10/88 record except that these data were presented by class and then totalled.

One further point worth noting is that while a primary school may serve primarily boys or primarily girls, children of the other sex do attend. A boy may accompany his older sister to school or perhaps more commonly, girls will attend a boy's school because there is no girls' school in the village. These data do not appear to reflect opposite sex enrollments. They may therefore under-count in particular girls attending primary school. This under-counting could lead to a female primary participation rate that is lower than it should be.

The formal medium of instruction remains Urdu, although in NWFP settled areas the medium of instruction is now Pushto. The use of Urdu at the lower grades may increase attrition by discouraging students. Most of the teachers, however, speak Pushto and so can explain the texts in Pushto.

B. Primary Education

The primary level is variously reported as running from Class 1 through Class 4 or 5. In the Agency, it appears to run through Class 4, while middle school begins with Class 5. There are two first grade classes: 1-Jr. and 1-Sr. This is because the set texts are so difficult that it normally takes at least two years to finish first grade work and pass to second grade. Kindergarten and nursery-age children seem often to join the first class, boosting enrollments and slowing down progress.

1. Enrollment and Participation

At every grade in primary school significantly more boys are enrolled than girls. Girls' enrollments, however, have increased more dramatically since the mid-1970s, but this is from a very low base.

Using census data and primary school enrollments in 1980-81, it is possible to make some rough estimates of the rate of participation of children in the relevant age group. The overall participation rate, and this figure must be viewed as inexact, was around 27% in 1980-81, compared with a national rate of 54% in 1978. In 1980-81, 49% of male children aged 5 to 9 were attending primary school (grades 1-4). This again is not exact because it has been estimated nationally that 15% of children enrolled are older or younger than the usual age group. In addition, enrollment figures do not differentiate between repeaters and new admissions. Both factors would tend to lower participation rates.

Since the population growth rate in the Agency is not known, it is not possible to make any attempt to calculate the participation rate for later years. However, it appears that, in addition to keeping pace with population growth, there has been a small expansion in the percentage of eligible male children obtaining some primary education. Male primary school enrollment grew by 27% in the seven year period from 1980-81 to 1988-89. Even without knowing the exact growth rate, it is likely that this increase in school enrollment was at least slightly higher than population growth in the Agency. The growth in enrollment reflects improving parental attitudes and increased opportunities. However, the participation rate of boys is still below the national average, suggesting a need for high levels of investment. In 1986, it was estimated that nationally 67.6% of boys aged 5-9 were enrolled in grades 1-4.

With respect to girls, the percentage of eligible females enrolled is very small. There would be more girls than boys aged 5 to 9 owing to better female survival rates, so in 1980, fewer than four percent of eligible girls were enrolled. The increase in female enrollment in primary school has again more than covered population growth, so that the participation rate would be higher now.

2. Attrition and Completion

Many students nationally become discouraged with the difficult set texts in Class 1 and never make it to second grade. This is true in Kurram Agency as well. Table XI.2 shows the substantial attrition rates as students move from first class-jr. to first class-sr. and then from first class-sr. to second class. Tables XI.3 and XI.4 follow two classes of children over time, one class starting first class in 1976 and the second in 1982.

The attrition rates for girls, at least until the early 1980s, were sharply higher than for boys. There has, however, been improvement and a higher percentage of girls starting the first class are at least reaching the second. Girls have also been more likely to drop out after Class I-Jr. than boys. Attrition continues to be a problem throughout primary school, with fewer students continuing

TABLE XI.2

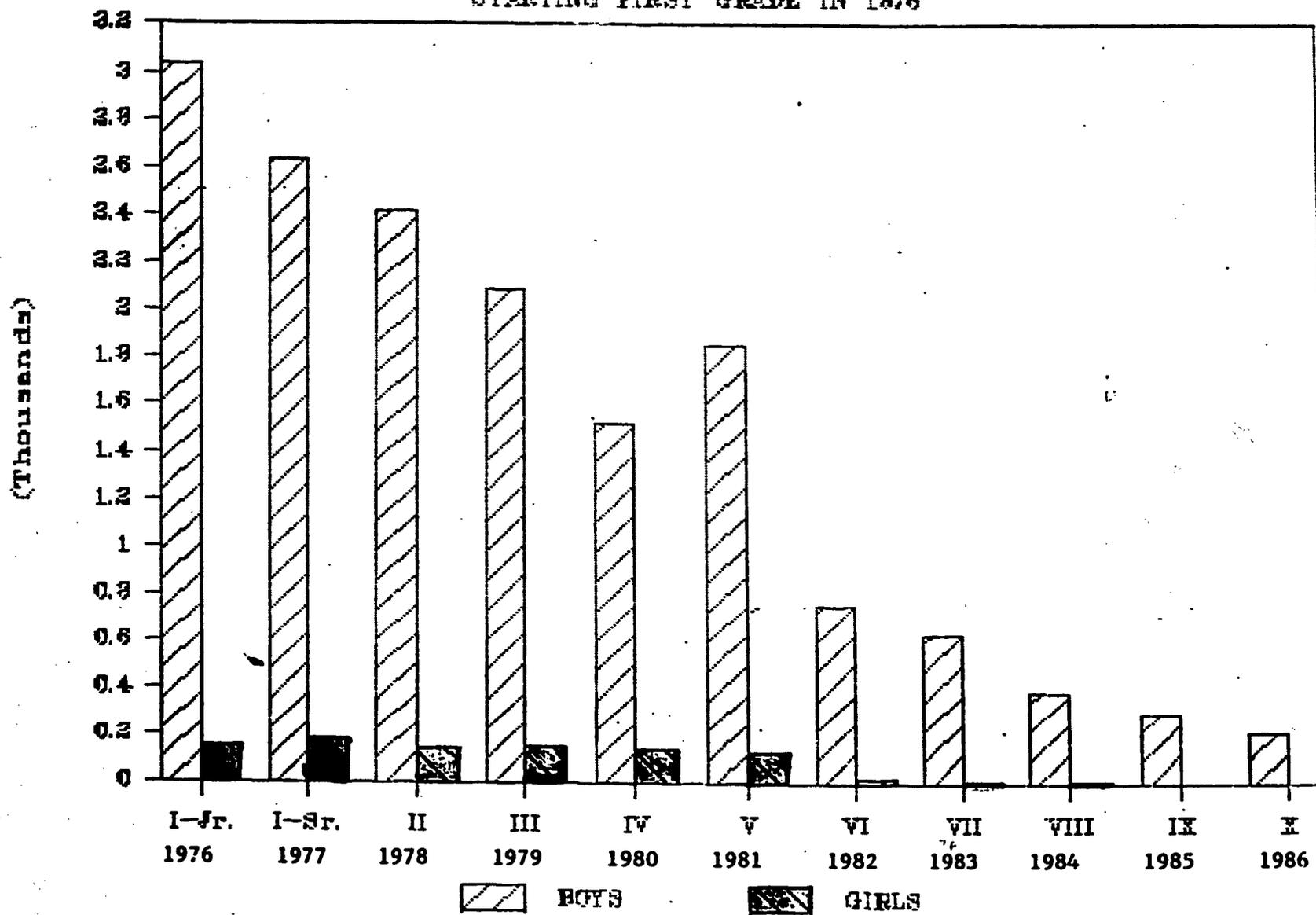
CHANGES IN ENROLLMENT GRADES I JR, I SR & II 1977-1986

Percentage gain or loss in enrollment

School Years Compared	Grade I-Jr to Grade I-Sr		Grade I-Sr to Grade II	
	boys	girls	boys	girls
1977&78	(6)	(23)	(8)	(22)
1978&79	(7)	(22)	(14)	(22)
1979&80	(1)	(17)	(19)	(19)
1980&81	49	(24)	(21)	(22)
1981&82	(9)	(24)	(52)	(19)
1982&83	(10)	(13)	(18)	(18)
1983&84	(11)	(12)	(15)	(21)
1984&85	(12)	(10)	(15)	(19)
1985&86	(6)	(5)	(7)	(1)

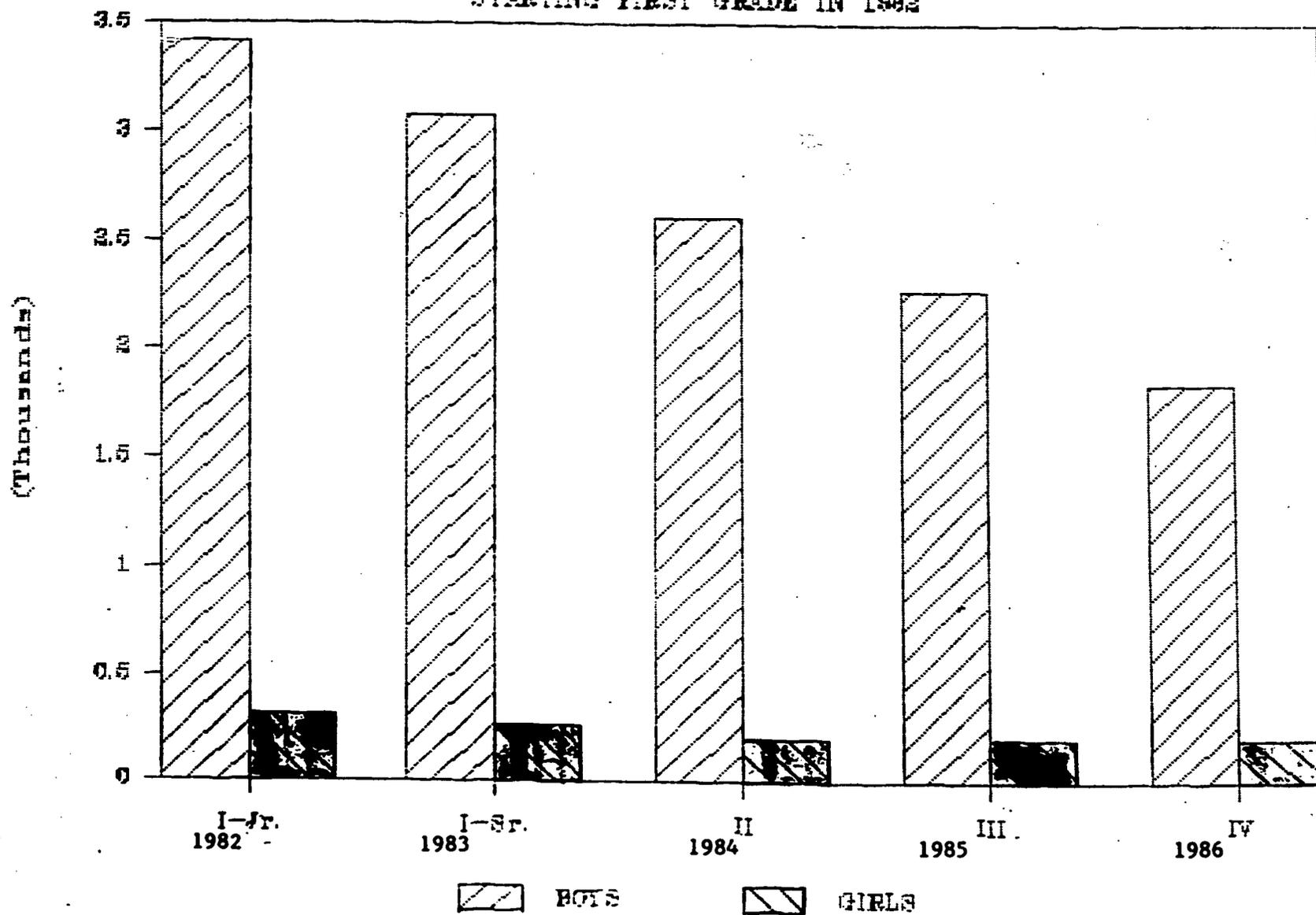
ENROLLMENT OVER TIME OF CHILDREN

STARTING FIRST GRADE IN 1976



ENROLLMENT OVER TIME OF CHILDREN

STARTING FIRST GRADE IN 1982



in each succeeding class. Third class may be some sort of a natural cutting off point for some parents of boys, since data suggest that the attrition rates are, for the most part, substantially higher for students moving from third to fourth grade than from those passing from second to third. This does not seem to be the case for girls but the enrollments here are so small that percentages mean very little - a loss of ten girls may mean an attrition rate of 8% or more but in fact the parents of those girls could easily have moved and enrolled the girls elsewhere. It is not safe to conclude with such small numbers that those ten girls have been lost to further education.

A crude attempt to derive rough primary level completion rates was made for six classes of children, beginning with those starting primary school in 1976-77. The data are presented in the two tables below:

BOYS

Starting Year	Completing Year	Percent Enrolled in IVth Class
1976-77	1981-82	50 %
1977-78	1982-83	52 %
1978-79	1983-84	53 %
1979-80	1984-85	56 %
1980-81	1985-86	53 %
1981-82	1986-87	52 %
1982-83	1987-88	54 %
1983-84	1988-89	53 %

GIRLS

Starting Year	Completing Year	Percent Enrolled in IVth Class
1976-77	1981-82	77 %
1977-78	1982-83	58 %
1978-79	1983-84	61 %
1979-80	1984-85	58 %
1980-81	1985-86	56 %
1981-82	1986-87	59 %
1982-83	1987-88	70 %
1983-84	1988-89	53 %

It should be kept in mind that the above assumes, obviously erroneously, that all students enrolled in the fourth class eventually passed and thus completed primary school. Some of those enrolled would have dropped out during the year or failed the exams, thus lowering the completion rate. In addition, this makes no allowance for repeaters, who would drop back and be recorded with a succeeding class. Here they can only be counted as drop-outs because there is no information on repeater rates. These rates are the maximum possible, but for boys they are similar to

the national average of 50% completion. The girls' rate seems surprisingly high, but the numbers are very small to begin with, making statistical calculations of this kind risky.

3. Progress by Tehsil

Placement of primary schools seems rational. The lowest boys' school enrollment in October 1988 was 24, but only a few schools had enrollments this low. Most had enrollments in the 30s and many were substantially above this.

Table XI.5 shows schools and enrollment by tehsil. In comparing the October 1988 school list with the October 1989 list, we have discovered that one school is missing from the October 1989 list - Ghujar Ghani in Upper Kurram. While we have counted this school in Table XI.5, we do not have the enrollment for October 1988, so we were unable to include the enrollment. In order to compare the three tehsils in terms of progress in primary education, we are using Table XI.5 and assuming that each tehsil's proportion of the Agency's total population has remained roughly constant since 1980. The table below shows percentage of Agency population and percentage of primary students, by tehsil.

Tehsil	% of Agency Population	% of Students
FR Kurram	42%	17
Upper Kurram	40%	54
Lower Kurram	18%	29

These percentages indicate that FR Kurram lags considerably behind the other two tehsils in terms of enrollments. This is largely the result of a later start. There were no primary schools in the tehsil until 1976. Forty boys' primary schools were opened in that year, presumably the first year it became possible for the government to open schools in this difficult area. Since 1981, another ten schools have been opened. In addition, there are now three middle schools that include primary sections. While this is major progress in a short period of time, FR is still not as well served, either geographically or in terms of number of schools relative to its larger population than Upper and Lower Kurram. While an attempt has obviously been made to obtain a reasonable geographic spread, there is only one school in the large area south and southeast of Manatu and Nararai. There are no schools from Masti Malak and Gwaza to Gaodar, an area bordering Upper and Lower Kurram. Finally, there appear to be no schools in the northeast part of the tehsil around Narai, Tor Nao and Manro. Enrollments in boys' schools ranged from 33 to 230.

Fig. XI.5(a) shows the locations of girls' schools. The situation with respect to female primary education in FR Kurram is dismal. There is only one girls' primary school, opened at Tarali in 1985. Tarali is just off a main access road into the tehsil. In October

1988, only 32 girls were enrolled. Opportunities to open new schools for boys and girls in this inaccessible area may be limited by political difficulties, inability to recruit teachers, lack of parental interest and inadequate resources to cover capital and recurrent costs.

Upper and Lower Kurram are both very well served with primary schools. Male participation rates in both tehsils are probably very similar. The first two boys' schools in the Agency were opened in Upper Kurram, at Parachinar in 1902 and Shalozan in 1935. In Upper Kurram, between 1950 and 1975, 24 primary schools were established, while the remainder were opened since the latter date. All middle and high schools in the tehsil have primary sections. The number of primary students enrolled per school ranged from 22 to 1005 in October 1988. Generally enrollments are largest in the primary sections of middle and high schools because these latter are placed in the larger villages. The first primary school in Lower Kurram opened in 1929. Additional schools were opened starting in the 1950s. In 1988 there were 29 primary schools as well as 8 middle and 7 high schools that include primary classes. Enrollments ranged from 29 per school to 339 in the primary section of the Sadda high school.

The first girls' schools in the Agency opened at Alizai and Sadda in Lower Kurram in 1956 and 1961 respectively. Two more opened in 1972, and others followed thereafter. These primary schools are small, with enrollments ranging from 13-44. Enrollments in the primary section of the three middle schools in the tehsil are much higher, ranging from 41-104. The first girls' school in Upper Kurram, which now includes grades 1-10, opened at Parachinar in 1973. Seven primary schools were next established in 1977. Now there are nineteen in Upper Kurram. Per school enrollment ranges from 21 to 118. 74% of all girls enrolled in primary school in the Agency are inhabitants of Upper Kurram, suggesting that parents in that tehsil have a comparatively strong interest in educating girls. Teachers' quarters at the Luqman Khel girls' school are currently under construction.

In 1989, 9 new GGPS were opened; 8 in Lower Kurram and 1 in FR Kurram at Gogani. Fifteen new boys' primary schools opened in Upper Kurram in 1989, 5 in FR Kurram and 3 in Lower Kurram. These are not included in the above discussion, which was based on information concerning schools as of October 1988 and collected in the late spring of 1989. As of March 1990, there were 55 boys' primary schools in FR Kurram, 71 in Upper Kurram and 33 in Lower Kurram.)

B. Middle School

TABLE XI.5

PRIMARY LEVEL, CLASSES 1-4
As of October 1988

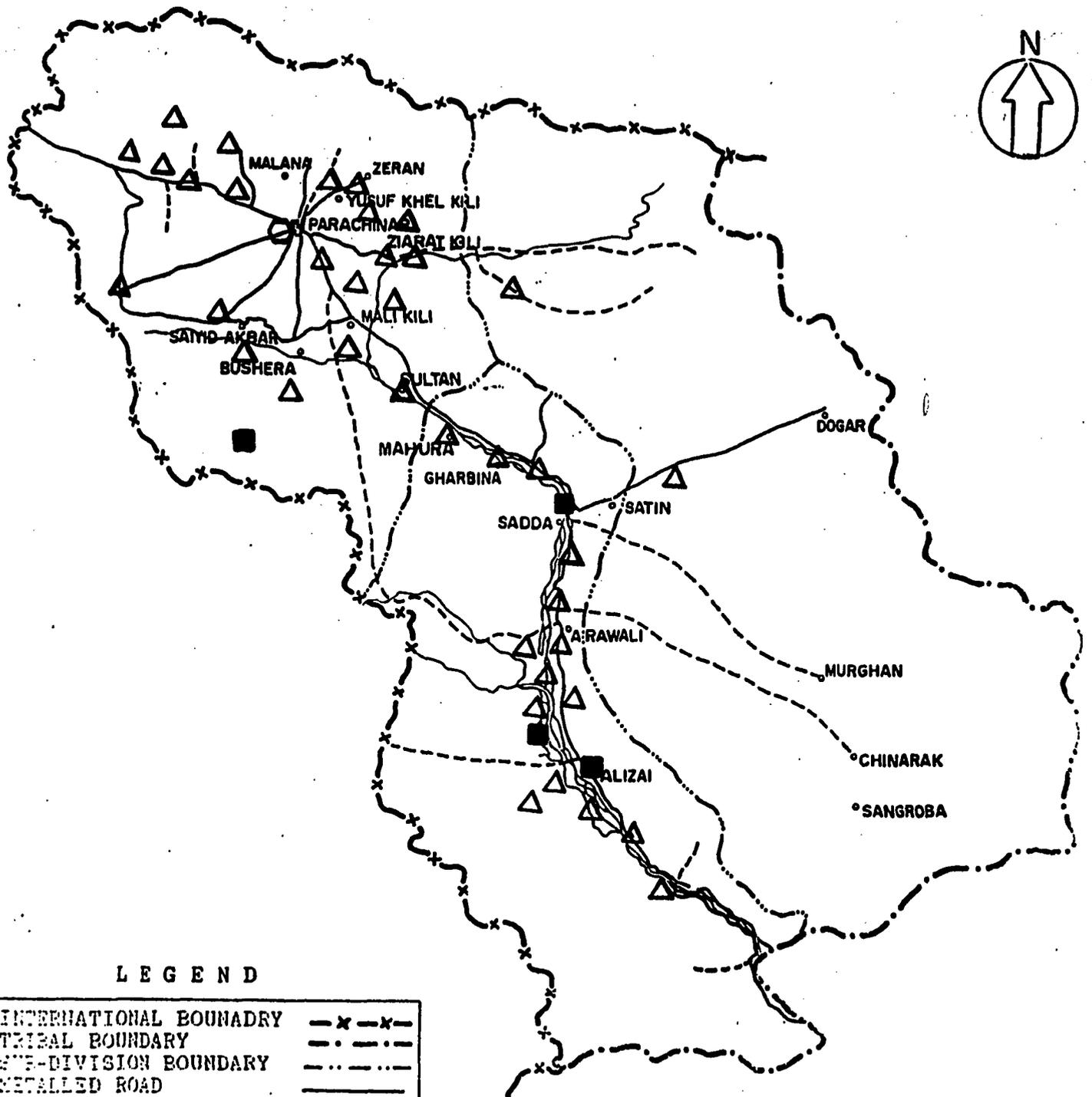
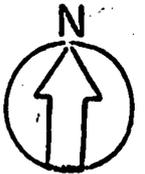
	NUMBER OF SCHOOL	NUMBER OF HIGH & MIDDLE SCHOOLS W/ PRIMARY CLASSES	NUMBER OF STUDENTS
FR KURRAM			
Boys	50	1	3210
Girls	1	0	32
TOTAL	51	1	3242
UPPER KURRAM			
Boys*	58	22	8320
Girls	19	2	1486
TOTAL	77	24	9806
LOWER KURRAM			
Boys	29	15	4415
Girls**	13	3	480
TOTAL	42	18	4895
GRAND TOTAL	170	43	17943

*These includes one school missing from the October 1988 list, but not that school's enrollment.

**The Education Department double listed girls' primary schools in Lower Kurram and gave two estimates of enrollment. The higher estimate was used.

KURRAM AGENCY

GIRLS' SCHOOLS



LEGEND

INTERNATIONAL BOUNDARY	-x-x-
TRIBAL BOUNDARY	-.-.-
SUB-DIVISION BOUNDARY
METALLED ROAD	————
CHINGLED ROAD	- - - -
PRIMARY △
MIDDLE ■
HIGH ○

Middle school starts with the fifth class and ends with eighth class.

1. Enrollment and Participation

The overall participation rate was in the neighborhood of seven percent in 1980-81. Again, significantly more boys are enrolled than girls. In 1980-81, based on numbers of boys aged 10 to 14 recorded in the census, roughly 13 % of this age group were enrolled in middle school. In 1980-81, 3,069 boys were enrolled in middle school, while in 1986-87, 3,749 boys were enrolled. This constitutes a 22% improvement in enrollment in six years. Population growth was unlikely to have exceeded this, suggesting that increasing opportunities for middle school education are keeping pace with population growth, and perhaps allowing some improvement in participation rate. For girls, the numbers enrolled are so small that statistical calculations would be meaningless. Fewer than 1% of girls in this age group were enrolled in a middle school.

2. Attrition

The decline in enrollment continues from one grade to the next during the middle school years. In fact, there is a sharp drop in enrollment as students move from primary to middle school. Curiously, through 1982, boys' enrollments increased as students moved from fourth to fifth class - it is hard to explain this. From 1983, there is again a significant loss of students as they graduate from fourth to fifth class. Not all of these students drop out (or move to another area). Some are repeaters. For boys, this sharp drop may reflect parental feeling that middle school education is an unnecessary luxury. There is now a good spread of middle schools although children would not necessarily have one within walking distance of their homes. For girls, while parents may be more reluctant to send their daughters to school once they reach or approach puberty, lack of nearby middle schools is perhaps just as great an inhibiting factor as increasing maturity. Parents would also be more reluctant to send their teenage daughters to a boys' middle school, even if within the same village. The establishment of middle schools for girls is a critical step toward increasing the numbers of female teachers, particularly in rural areas.

3. Progress by Tehsil

Table XI.6 shows schools and enrollment by tehsil. FR Kurram, with approximately 42% of the Agency's population, had only 5% of the male middle school students in October 1988. There are only three boys' middle schools in the tehsil, opened in 1981 (at Tindo) and 1987 (at Dogar and Badama) so access is recent and limited. However, the very small enrollments in these schools, ranging from 27-49 students, suggest parental lack of interest. It is poss

of course that some FR students are sent to middle schools in Upper or Lower Kurram. FR has not yet reached a female primary level enrollment to justify the establishment of a middle school.

In Upper Kurram, a number of middle schools opened their doors between 1950 and 1972, and they are well distributed around the tehsil. The boys' high schools at Parachinar also has a large middle section. Upper Kurram with 40% of the Agency's population has 61% of its middle school students. If FR is omitted from this calculation in order to permit a comparison between Upper and Lower Kurram alone, Upper Kurram had 69% of the population of both tehsils and 64% of the middle school enrollments, while Lower Kurram had 31% of the population and 36% of the middle school students, suggesting that participation rates are very similar. Lower Kurram boys also have relatively easy access to middle schools if they live on or near the main road, with eight such schools and another 7 high schools offering middle classes. Many would still need transport. The first middle school in Lower Kurram was opened in 1958. Two more followed in the 1960s. The remainder opened since 1973.

Upper Kurram has one girls' middle school at Arkhayo Kali, established in 1984. The middle section began as a private school, which was later taken over by the government because of its success. This school has six classrooms, ten teachers and 95 students. It appears to stop with sixth class. In 1989-90, the girls' primary school at Alamsher was upgraded to middle school status. Plans also exist to begin offering middle classes at the girls' primary schools at Kunj Alizai and Kirman, and to build accompanying teachers' quarters for the new teachers who will be required.

The girls' high school at Parachinar has a large middle section. Lower Kurram has three girls' middle schools, two with 41 students each and the third, at Sadda with 104 girls enrolled.

There appear to be instances of teachers in primary schools offering middle classes privately if a middle school is not available in the area. This could be a helpful development.

Two boys' primary schools were upgraded to middle schools in 1989; the primary school at Parachinar and the one at Karlachi. Boys' primary schools whose enrollments and distance from existing middle schools might justify the addition of middle classes include Durrani and Khanano Kili in Lower Kurram and Shublan and Shedani Sehra in Upper Kurram. These are not included in discussions concerning Table XI.6, which is based on October 1988 data.

TABLE XI. 6

MIDDLE SCHOOL LEVEL, CLASSES 5-8
As of October 1988

	NUMBER OF SCHOOLS	NUMBER OF HIGH SCHOOLS W/ MIDDLE CLASSES	NUMBER OF STUDENTS
FR KURRAM			
Boys	3	1	167
Girls	0	0	0
TOTAL	3	1	167
UPPER KURRAM			
Boys	10	9	2081
Girls	1	1	70
TOTAL	11	10	2151
LOWER KURRAM			
Boys	8	7	1191
Girls	3	0	18
TOTAL	11	7	1209
GRAND TOTAL	25	18	3527

D. High School

In Pakistan, high school includes ninth and tenth class. There is only one girls' high school, and it is located in Parachinar. It has a hostel with 39 students and 4 teachers residing, (in 1989). As reflected in the table showing enrollments, the number of girls attending high school is minuscule. The department plans to initiate the upgrading of girls' middle schools at Arkhayo Kili, Alizai and Sadda, and to construct quarters for teachers at each school.

There are eighteen boys' high schools so it is easier for boys graduating from middle school to continue their education. For the most part, the attrition rate of students moving from 8th to 9th classes ranges from 7 - 20%. The range is no higher than for other years so there does not seem to be any psychological barrier that would prevent a larger number of students from reaching 9th grade than from reaching 7th or 8th. The department plans to initiate construction of buildings at existing high schools at Qubad Shah and Bagan in 1989-90.

FR Kurram has one boys' high school at Angori. It does not have a hostel. The enrollment at 30 students hardly justifies the expense of teachers but it will take time to build middle school enrollments and increase parental interest. Probably a number of FR students continue with their education at Parachinar or Sadda - the quality may be better in these older high schools. The Department has plans to initiate high school classes at the Dogar middle school in 1989-90.

Upper Kurram has nine high schools, with an excellent geographic spread. There is a high school within relatively easy reach of most villages. The boys' high school at Parachinar has a hostel. Kunj Alizai middle school will offer high school classes beginning in the next academic year. Lower Kurram with its 7 high schools also gives residents easy access to ninth and tenth class, particularly for those living on or near the main road. Those living in the hinterland, near the Afghan border, do not have easy access. The first two high schools in Lower Kurram opened in 1957 at Alizai and 1967 at Sadda. The one at Sadda has a hostel. Table XI.7 shows schools and enrollments by tehsil.

Based again on 1980 census data concerning numbers of boys aged 15 and 16, 6% of that cohort were enrolled in high school in 1980. Between 1976-77 and 1986-7 (11 school years), there was an increase in enrollment of 33%. Because the rate of population increase is probably in the range of 3% per annum, an increase in enrollment of 33% during this period does not suggest that there was any solid improvement in the participation rate. Again, government investment in high school education appears to be only just keeping pace with population growth.

In 1989, two boys' middle schools began offering high school classes, the one at Kunj Alizai in Upper Kurram, and the one at Dogar in FR Kurram. These are not included in the above discussion concerning Table XI.7 because data in the table is drawn from October 1988 reports.

E. College

Currently, there is no girls' college in the Agency. One was under construction in 1989 in Parachinar so high school girls should in the near future have the chance to continue their education closer to home. In fact, the problem may be not with obtaining physical space but with finding teachers with adequate qualifications. It appears that some parents have informed the Political Agent that they would be willing to have their daughters taught by male teachers if female teachers could not be found. There is one boys' Inter College (to 12th class) and degree college (14th class) at Parachinar. There is a second boys' inter college at Sadda. These colleges have hostels. A total of 621 males were enrolled in the two in 1987-88, while the previous year 418 were enrolled.

F. Facilities

Primary schools are generally constructed with two classrooms and a veranda which itself can accommodate a limited number of students in clement (and often inclement) weather. A number of primary schools and sections in middle and high schools appear to be overcrowded, if data on enrollments and numbers of classrooms are accurate. This problem may be most acute with respect to first grade students, whose enrollments are the largest and who are most likely to be crowded together in one classroom. At this time, particularly with respect to Upper and Lower Kurram, it might make more sense to add onto existing overcrowded schools and to assign additional teachers, rather than to serve new villages that might have very small enrollments. Small children who are crowded together have little chance to learn anything, and it is possible that overcrowding is an important contributing factor in the high attrition rate. In middle and high schools it is also possible that there is some misallocation of space, with the primary students getting short shrift while the middle and high school students, who are far fewer in number, are allocated more classrooms. Table XI.8 lists those schools that would appear to be overcrowded. The criterion of 40 students as the maximum acceptable number of students per classroom was used to judge overcrowding. The researchers visited two such schools, a boys' primary school at College Colony with 310 students enrolled and 235 students present on the day of the visit in three classrooms, and a boys' primary school at Manduri. At the latter, the researchers found 46 students enrolled plus 20 under-aged children attending, instead of the 142 reported the previous year. Also, there were

TABLE XI. 7

HIGH SCHOOL LEVEL, CLASSES 9-10
As of October 1988

	NUMBER OF SCHOOL	NUMBER OF STUDENTS
FR KURRAM		
Boys	1	30
Girls	0	0
TOTAL	1	30
UPPER KURRAM		
Boys	9	563
Girls	1	42
TOTAL	10	605
LOWER KURRAM		
Boys	7	274
Girls	0	0
TOTAL	7	274
GRAND TOTAL	18	909

TABLE XI.8

SCHOOLS WITH OVERCROWDED CLASSROOMS
As of October 1988

Primary School	No. Classrooms	Enrollment
Upper Kurram-Boys:		
College Clny.	3	255
PCR #2	4	388
Alishari	2	388
Bushera	2	109
Dall	2	84
Karlachi	2	92
Shublan	2	119
Mullah Bagh	2	95
Shedani Sehra	2	148
Upper Kurram-Girls:		
College Clny	2	118
Luqman Khel	2	95
Shalozan	2	81
FR Kurram-Boys:		
Badama	2	230
Gandow	2	140
Lower Kurram-Boys:		
Sadda #2	2	181
Manduri	3	142
Primary Section of Middle School		
Upper Kurram:		
Ghuzgai	2	150
Karakhela	2	112
Luqman Khel	2	240
Kunjelizai	2	119
Bughdi	2	97
Yardah	2	200
Malana	2	215
Nastikot	2	121
Ahmadzai	2	129
Jelandar	2	111
Mir Jamal	2	170
Alamsher	2	122
Lower Kurram-Boys:		
Arawali	2	82

only 2 classrooms instead of the reported three. While the school was not overcrowded per se, the classrooms were reserved for the upper primary grades and there were 44 small children (the 1st-junior class and the under-aged children) sitting on the veranda.

There are also a number of primary schools that do not have a school building. Some of these were established in the 1970s. Twenty-one boys' schools are designated as "open-air schools." Where enrollments justify it, these schools should be candidates for the construction of proper facilities. Seven girls schools in Upper and Lower Kurram meet in private residences. As long as enrollments are small, this is a satisfactory solution, and permits the establishment of schools where there might not otherwise be ones. The boys' open-air schools are located as follows:

UPPER KURRAM	LOWER KURRAM	FR KURRAM
Taida	Jilamaya	Tatang
New Dandar	Talo Kunj	Dar
Alam Khel	Khapyanga	Zaamela
Karpuchi		Khawresan
Aka Khel		Baza
Korizgai		Star Kali
Abdullah Khan		Sam Khakakh
Mirmai		Seakram
		Takhtu
		Sarak

All middle and high schools have school buildings.

Routine and minor maintenance on the buildings is often taken care of by the parents themselves. While this is not a formal expectation of the GOP, which has given this responsibility to C&W, resources are often thin, and parents find it more expeditious to take care of problems themselves. It is not unreasonable to expect them to make this sort of contribution. Parents may also provide housing for teachers who are not from the area. Finally, it is also not unusual that parents provide money to cover running costs, particularly of primary schools.

A few middle schools offer residential quarters for teachers, as do several high schools. Only the girls' and boys' high schools at Parachinar include students' hostels. Table XI.9 lists those schools providing some accommodation for students or faculty.

F.R. KURRAM**BOYS**

High:	1. GHS, Doggar	1	-
Middle:	1. GMS, Tindo	1	-
	2. GMS, Badama	1	-

G. Teachers

Recruiting qualified teachers in or for the tribal Agencies is difficult. In Kurram, Education Department staff say that they have only twenty vacancies in the number of sanctioned teaching posts. Eighty per cent of the male teachers are locally hired, while the remaining 20% come from outside the Agency. By contrast, only 5% of the female teachers are locally hired - the vast majority are recruited from outside the Agency. For the girls' high school in Parachinar, the majority of the teachers in all three sections (primary, middle and high) were from Parachinar or Kohat. The Department says that all its teachers in the Agency are Pushto speakers.

No breakdown of teacher qualifications was available. Standards must often be relaxed in order to get teachers at all. The closer to a major town or village, with its own good education system, the more teachers one will find of a good standard. Teacher qualifications in the four schools visited are reviewed below, but it should be kept in mind that these schools are either in or near Parachinar.

1. Shahji Khel Girls' Primary School - all four secular teachers hold an F.A. diploma (twelfth class) but have no teacher training; the theology teacher is from the village.

2. Luqman Khel Boys' Middle school - one teacher has an F.A. diploma and four are matriculate (tenth class), none has teacher training.

3. Yusuf Khel Boys Primary and Middle School - one headmaster with an MA (university graduate); 7 teachers finished tenth class and have Primary Teaching Certificates (PTC); 1 has a Bsc (fourteenth class) and no teacher training; 1 has a B.A. and is a certified teacher (CT); 1 has an FA and no teacher training; and finally the 3 theology teachers are matriculate.

4. Parachinar Girls' High School - 3 primary teachers with either matriculation or F.A. and PTC; 3 teachers with S.E.T. diploma (15th class); 13 with B.A. or B.Ed. (14th class).

It would be necessary to visit more schools to gain a better sense of the numbers of untrained teachers and the numbers of those who are only tenth class graduates. No formal in-service training is available, and the Education Department in Kurram does not have the staff to do any serious supervision and on-the-job training. In larger schools, headmasters may be able to do some training, but only middle and high schools have headmasters and their teachers tend to be more qualified anyway.

In primary schools it is customary to have two secular teachers and one theology teacher. Despite significantly smaller enrollments, middle and high schools are better provided with teachers because of the increase in the number of subjects taught and because the teachers tend to specialize in certain subjects. Overall student:teacher ratios are very favorable, particularly at the middle and high school level. However, school populations vary so much in size that it is useless to calculate such ratios by level or tehsil. Primary schools might have a student-teacher ratio ranging from 8:1 to 167:1 (the primary section at the Parachinar boys' high school). Only two schools in FR Kurram appear to have unacceptably high student: teacher ratios, while a number in Upper and Lower Kurram have ratios of 50-60:1 and sometimes higher. At the same time, smaller primary schools end up with the same complement of teachers. This suggests that it could be worth redeploying some of the teachers from smaller schools and reassigning them to a larger one. In addition, middle school teachers teach only middle level classes, even if they are under-utilized and the primary section teachers overwhelmed. Table XI.10 lists those schools that had student-teacher ratios higher than 50:1 in October 1988.

G. Advanced Training

There is no teacher training institute in the Agency. Students wishing to train as primary school teachers must go to Kohat (the closest point) or further afield. The closest point for those wishing to train to teach the higher levels is Peshawar.

A commercial training institute was established in Parachinar in the 1970s. It has a principal and six instructors. In 1984-85 it had 49 students.

Construction of a vocational training institute at Sadda was completed last year.

H. Alternative Education

The Agency used to have a fifty Nai Roshni schools, 20 of which were for females.* It had the only FATA female enrollments. These schools, or really teachers because there was no facility and only one teacher per school, offered a condensed primary school

TABLE XI. 10

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**SCHOOLS WITH STUDENT-TEACHER RATIOS OF
MORE THAN 50:1 IN OCTOBER 1988**

School	No. of Teachers	Enrollment
Primary Schools:		
FR Kurram- Badama	3	230
Upper Kurram- Yusuf Khel	2	157
College Colony	3	255
Prchnar. #2	3	388
Lower Kurram- Sadda #2	3	181
Khanano Kill	3	194
Durani	2	104
Saraghurga	2	115
Primary Section of Middle Schools:		
Upper Kurram- Luqman Khel	3	240
Yardah	3	200
Malana	3	215
Jelandar	2	111
Mir Jamal	3	170
Lower Kurram- Shah Ibrahim	3	188
Primary Section of High Schools		
Upper Kurram- Prchnr	6	1005
Hali Kill	3	157
Shalozan	6	317
O/Khel	3	180
Kirman	3	161
Lower Kurram- Alizai	3	175
Bilyamin	3	181
Makhizai	3	151
Baggan	3	154
Sadda	3	339

program to older children and adolescents who had missed the chance of obtaining schooling. The PPP Government has ended the program nationally, so these schools have been or are being closed down in the Agency.

One program started in recent years was the establishment of mosque primary schools. These offer a cheaper alternative to regular primary schools and so permit faster expansion of primary education. They use the same curriculum as regular primary schools.

There are regular primary schools in some of the villages in which mosque schools have been established. This may be because tribal or religious differences prevent one group in the area from attending the regular primary school so another school was required. In the Agency most but not all of the 29 mosque schools continue through the fourth class. Fifteen of these schools are new. Generally, they have one secular teacher and one theology teacher, but sometimes numbers justify the employment of a third secular teacher. Each mosque school has an enrollment of anywhere between 29 and 118. It may be difficult for the average village mosque to accommodate in a way that permits any real learning to take place those schools with enrollments at the higher end of the scale. Because all these schools are relatively new, they may have very large numbers of students in the first grade, making it very difficult for the

*Data provided by Kurram Education Department staff. FATA Development Statistics reported for 1986-87 that there were 11 male schools with an enrollment of 177 and 3 female schools with an enrollment of 93.

teachers to teach. One mosque school, for example has 106 students in the first grade, while another has 76. Out of a total of 1411 students in all the mosque schools, 1035 are in the first grade. It is not known how many of the students are male and how many female. There are 58 teachers, one-half of whom are theology teachers. Table XI.11 gives the location of the mosque schools.

There was an adult literacy program but it did not appear very successful. It was closed in June 1989.

A program for the establishment of women's centers exists under the supervision of the Area Education Officer. The program includes religious studies, some literacy in Urdu and sewing and knitting. However, no curriculum exists, nor does any training for those hired to teach in the program, so it is difficult for teachers to know exactly what they are supposed to accomplish and often they appear to lack appropriate skills for implementing the program. The centers are also supposed to meet in girls' schools at the same time that the school sessions are going on, and often must rely on the school teacher for guidance. No materials or resources are made available, and supervision appears to be lacking. A women's program was established at the girls' high school in Parachinar. It reportedly ran for 4-6 months and has been closed for the last year. Programs appear not to have started yet at Alizai and Bilyamin in Lower Kurram and Gogani in Fr Kurram, even though enrollments are shown for the three. At Alizai and Bilyamin it is planned that the programs will meet in girls' primary schools, while school is in session. At Gogani, there is not even a girls' school in which interested women can meet, so it is not clear who will run the program or where it will be held. In Upper Kurram, 19 women are currently attending the women's center at Qubad Shah Khel. This is the best of the centers functioning in Kurram and there is only one teacher for girls' classes one through five and the women's program. Women are also shown as attending the center at Sakhi Ahmed Shah (Lower Kurram), which again meets in the girls' school and appears to count primary school students as attendees. The conclusion that one might draw about these centers is that they are not a priority of the education department. While the idea of getting maximal use out of a school building is valuable, it is probably a mistake to try to run a women's program at the same time that school is in session and with the same teacher. This makes the school more crowded, distracts the teacher from her real job of teaching children, and decreases the learning of children. It also probably reduces the interest of women in the community. If this program has any value at all, then it should have a curriculum, some training made available for the instructors, materials and equipment should be provided, and alternate meeting times or locations should be explored.

TABLE XI. 11

LOCATION & ENROLLMENT
IN MOSQUE SCHOOLS
IN KURRAM

School	Enrollment
Lai Mela	55
Dogar	65
Gowadar	65
Bushera	82
Sher Khan Khapa	35
Raghai Kali	36
Maidamak Sehra	39
Kemal Bazai	44
Dree Mani	29
Kasher	58
Kalat	58
Ganda	43
Zangi	41
Ismail Khan Colony (UK)	28
Yusuf Khel (UK)	53
Shingak (UK)	70
Manozai (FR)	71
Dalsai Kali	26
Gido	28
Alizai	31
Sadda	38
Shakardara	76
Bilgamin	52
Rawoz	27
Lalasin Wasir	30
Chapar Masuzai	118
Warsa Mela	23
Said Ali Mela	41
Toor Nazum	49

XIII. HEALTH

The Agency is provided with the following facilities, in order from lowest to highest level of service:

- o 10 Dispensaries
- o 5 MCH Centers
- o 10 Basic Health Units (BHUs)
- o 4 Hospitals

Fig. XII.1 shows the locations. In addition, there are EPI centers at some of the dispensaries, BHUs and hospitals. EPI services are also offered at one private facility in Zeran and at the Agency Surgeon's office in Parachinar.

There are a few vertical programs as well: malaria control, leprosy control (managed from Hungu) and sanitation.

Once again, FR Kurram is poorly served owing to its later start and the difficulty of recruiting staff who will agree to a posting there. Upper Kurram is perhaps best served at all levels. Lower Kurram figures somewhere in the middle but facilities are placed along the river and are therefore less accessible to those who live at some distance from the river.

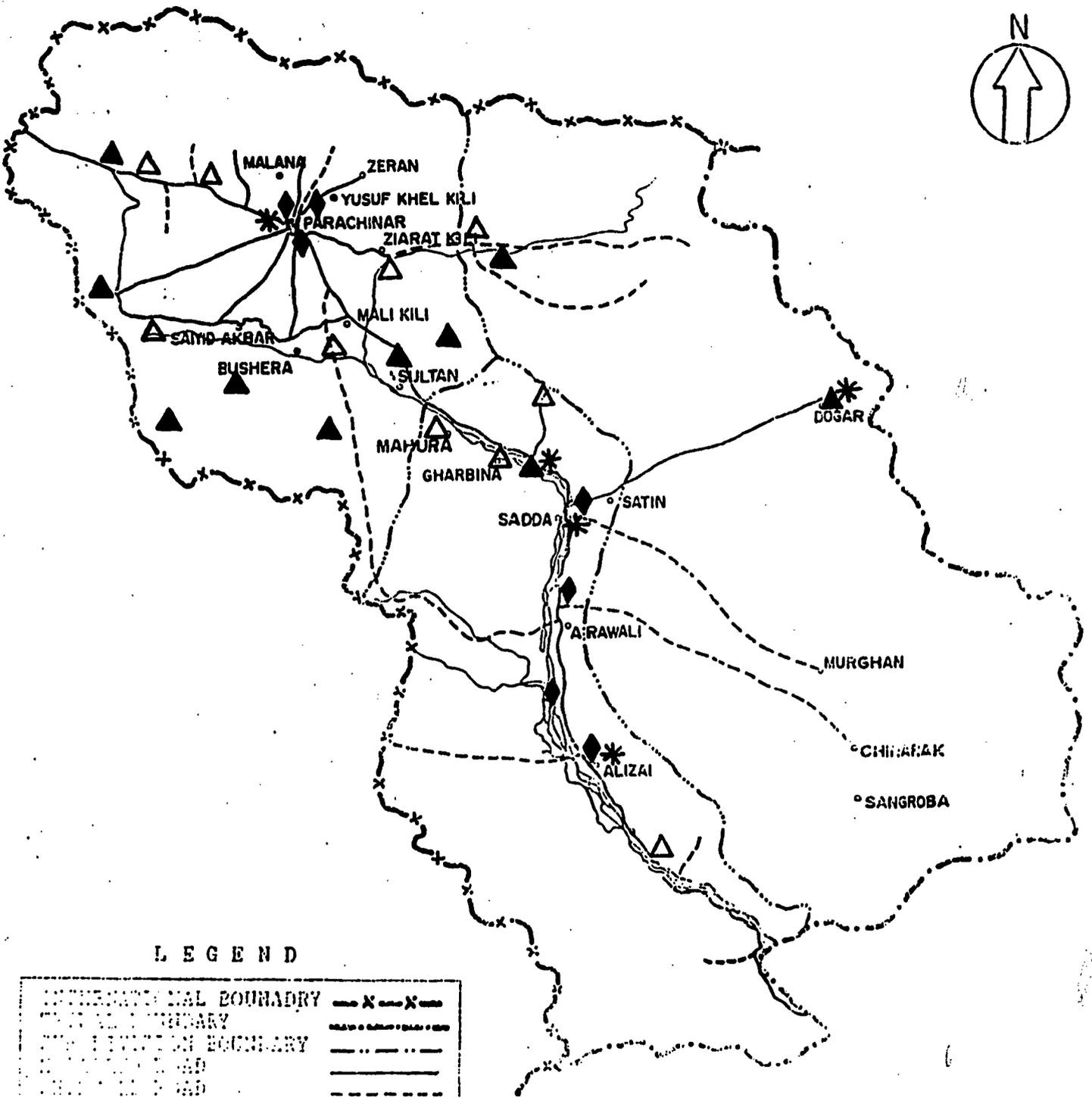
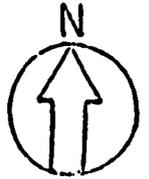
The chief problem with respect to providing health care is the shortage of professional staff, and of female health care workers in particular. Postings to the tribal Agencies are not popular. Accordingly the Agency is short of all categories of health care providers, from doctors and dentists on down the scale. The hardship allowance is too small to attract staff (200 Rs per month for medical officers and similar specialists; 75 Rs. per month for health technicians and those with equivalent or lesser training). Raising the allowance might help with recruitment but this is a higher level policy decision and requires the allocation of similar amounts for similar areas, a decision which would be of some consequence for the department's recurrent costs.

The staffing problem is not one that admits of any easy solution. Time and improved educational opportunities in the Agency will eventually resolve it. Attaching an LHV or midwifery training program to the girls' high school at Parachinar has been mentioned as one possibility, but these are not high status professions. In Pakistan as a whole, the image of nursing and allied patient care professions requires improvement if larger numbers of females are to be attracted for training and later work. The number of male health technicians trained will be limited as long as training programs only exist at Saidu Sharif and DI Khan. The closest TBA training program to Kurram exists at Kohat.

The shortage of staff in some facilities leads to high case loads - health workers have too little time in which to see too many

KURRAM AGENCY

HEALTH FACILITIES



LEGEND

INTERNATIONAL BOUNDARY	---x---x---
COUNTRY BOUNDARY	-----
AGENCY BOUNDARY	- - - - -
ROAD	=====
RAILROAD	- - - - -
HEALTH FACILITIES	◆
HEALTH FACILITIES	▲
HEALTH FACILITIES	△
HEALTH FACILITIES	*

patients. Time for health education may not exist. The referral system is weakened, and patients who should see a more skilled professional must sometimes be sent to a hospital or out of the Agency. Many women may not be seen because female health workers are lacking or are unavailable close to home. Difficult labors are often referred to Kohat. The opportunities costs for patients are increased as they must wait longer and/or travel farther to receive medical attention.

In some facilities, however, the case load is very small and health staff are under-utilized. It is possible that some re-distribution of health staff could be beneficial, shifting those from light load to heavier load facilities, but transfers may be resisted if health workers are from an area.

The Agency Surgeon and his deputy, the Assistant District Health Officer, are responsible for supervising the health care network with the exception of the Agency Headquarters hospital at Parachinar. These two officials routinely visit facilities. The Agency Surgeon tries to visit two to four facilities per week, and plans two surprise visits per month.

In-service training opportunities do seem to exist for those staff who can travel to other parts of NWFP.

Health facilities and the services they provide are discussed in the relevant sections below.

A. Dispensaries

Dispensaries are generally staffed with one or more compounders and a da'i, or trained TBA. A compounder takes a one year course after matriculation. The Da'is receive one year of training but appear to be in competition with other local TBAs who are untrained. There is one physician assigned to an Agency dispensary, perhaps because there is a militia post there. The dispensaries at Ali Mangal and Manduri have two male in-patient beds each. There are ten dispensaries, whereas there were 11 in 1979, so the number has not increased in the last decade. More attention has been paid to establishing Basic Health Units.

Dispensary locations and staff are as follows:

Upper Kurram:	Ali Mangal	1 medical officer
		2 compounders
		1 da'i
	Shalozan	1 compounder
		1 da'i
	Kirman	1 compounder
		1 da'i

	Ahmadzai	1 compounder 1 da'i
	Shingak	1 compounder 1 da'i
Lower Kurram:	Mahura	1 compounder 1 da'i
	Gharbina	1 compounder
	Manduri	1 compounder 1 da'i
	Shakardara	1 compounder 1 da'i
FR Kurram:	Makhrani	1 compounder 1 da'i

The dispensary at Ahmadzai was visited. The da'i there travelled out from Parachinar daily and so was not available for anything more than routine care. Apparently, most women in the area chose a local untrained da'i to help with deliveries.

The department planned in 1989 to upgrade the dispensaries at Mahura, Kirman, Makhrani and Shalozan to BHUs.

B. Basic Health Units

There are ten BHUs, the first two of which opened in 1981. Upper Kurram is much better served with BHUs. In 1989, five BHUs were under construction: two in Upper Kurram at Kirman and Zeran, two in FR Kurram at Marghan and Makhrani, and one in Lower Kurram at Manduri. Construction at Manduri and Kirman may consist of additions to the dispensaries there. There are also plans to upgrade the dispensaries at Shalozan and Mahura, posting at least one health technician to these. In addition, the department has plans to establish in the future new BHUs at Tabai Khani Khel and Manatu.

BHUs are supposed to be staffed by health technicians, Lady Home Visitors (LHVs), and midwives. Sometimes physicians are posted depending on location and patient load. Only three BHUs have physicians while another four have posts sanctioned for physicians but vacant. BHU locations and staffing are as follows:

Upper Kurram:	Teri Mangal	2 health technicians
	Burki	1 medical officer 2 health technicians
	Jalandar	2 health technicians
	Mali Khel	2 health technicians
	Goz Ghari	2 health technicians

	Kunj Alizai Agra	2 health technicians 1 health technician
Lower Kurram:	Ibrahimzai	1 medical officer 2 health assistants
FR Kurram:	Angori Dogar	1 medical officer 2 health technicians 2 health technicians

It is obvious from this list that not one BHU has an LHV or midwife with the exception of Ibrahimzai and Dogar which have attached MCH Centers.

Two BHUs were visited - at Jalandar and Ibrahimzai. The one at Jalandar had treated 14 patients the day of the visit. Three of those were children with diarrhea. The BHU had run out of ORS packets but was teaching home preparation of the solution. For the first six months of 1989, the Center had treated 344 patients; the previous year the total number of patients seen was 748. This suggests a very low daily case load. The BHU had a piped water supply but the source was contaminated. The Ibrahimzai BHU was a bigger unit, well placed on the road side, and with a physician assigned. It receives 18-20 patients per day, all of whom are seen by the physician which may leave at least one of the compounder with relatively little to do. In 1988, the Center saw 3,535 patients; and in the first six months of 1989, 2456 patients.

The BHUs do not have an laboratory facilities so little diagnostic testing must be done.

The department plans to start new BHUs at Tabai Khani Khel and Manatoo this year (1989-90).

C. Maternal and Child Health Services

Pre, peri and post natal services are offered to women by private da'is and government trained da'is posted to dispensaries, as mentioned above. In addition, there are five MCH Centers, three or four of which have been in existence since at least the early 1970s. Three are attached to the Agency Surgeon's Office at Parachinar and the hospitals at Sadda and Alizai respectively, and two to BHUs (Dogar and Ibrahimzai). Three of the centers are in Lower Kurram, 1 in Upper Kurram and one in FR Kurram. They are staffed with Lady Health Visitors (LHVs) and da'is. The center at Parachinar also has a physician. It appears that the centers generally treat 15-30 patients per day, but must refer many of the females to a gynecologist or other specialist. The staff offer

health education classes to pregnant and nursing women. Family planning services do not appear to be routinely available and, at sites visited, contraceptives were not stocked. The Agency has no Family Welfare Centers, the GOP's vertical program for providing family planning services.

MCH Centers staff are also responsible for the WFP food distribution program which gives rations of powdered milk, wheat flour and vegetable oil to pregnant women and malnourished children under three. However, at least two and probably all Centers had no wheat to distribute for one year (1988-89). An allocation was received in 1989. Such programs can take a considerable amount of time to administer and may interfere with the provision of health care and health education. These centers could probably benefit from administrative staff to handle such programs, permitting the LHVs and da'is to do what they are trained to do.

One of the MCH Centers at Ibrahimzai was barely functional because the LHV assigned is from Peshawar and resides most of the time in Peshawar and is hardly to be found at her job site. The LHV assigned to Parachinar was in place and clearly engaged in her work. The other centers were not visited so their level of activity could not be assessed. The Agency LHV Inspector is posted at Kohat but appears to have no facilities for travel, so supervision is difficult.

The LHV at Parachinar commented that the Centers used to receive vitamins to distribute to pregnant women but now the supply has stopped. This she felt has caused interest in the centers to decline, since women were accustomed to receiving the vitamins. The anemia rate, as elsewhere in Pakistan, is high, so the vitamins were no doubt useful. These can of course be purchased at a pharmacy but the population is accustomed to receiving free medications from government health facilities.

The LHV assigned to the Parachinar MCH Center tried a few years ago to train local TBAs but she had no budget and the students received no stipend. She had no kits to give to those who graduated. Only nine lasted the course, and no attempt has been made since to upgrade the training of Agency birth attendants. The technicians at the Jalandar BHU said that there were four untrained da'is in the village, and they thought that the da'is would be willing to go to Parachinar for some training. Those at the Ibrahimzai BHU thought that there were no TBAs locally, and that the issue of training any who might exist would be too sensitive to be raised. Staff at the Ahmadzai dispensary felt that local TBAs would not be interested in training. So opinions conflict.

The MCH Centers do not themselves provide immunizations, but they are on the same site as EPI facilities. EPI services are provided at three sites in Parachinar, all dispensaries and BHUs, one private clinic in Zeran, and at the Sadda, Alizai and Muzzafar Kot

hospitals. All the dispensaries have one vaccinator assigned. The BHUs and hospitals may have one or two depending on case load. The BHU at Ibrahimzai had two vaccinators and vaccinated 222 children in June. Assuming that the clinic was open 25 days that month, an average of eight children per day were vaccinated. There is also one mobile team of six vaccinators and one vehicle operating from Parachinar. The team mostly visits areas in Upper and Lower Kurram that do not have easy access to a fixed facility. It also travels to a few villages in FR, probably those closer to the tehsil boundary or on one of the main access roads into FR.

EPI program management appears bifurcated, which is probably not in the program's interest. There are 12 vaccinators who report to an Area (tehsil) Supervisor Vaccinator (ASV) who in return reports to the Agency Surgeon, the person formally in charge of Agency health services. There are also 23 Junior EPI technicians and 7 senior technicians who are also vaccinators but who are managed by the Peshawar EPI office directly. The Agency Surgeon appears to have limited authority over them. They are hired in Peshawar. Most of them seem to be from Upper Kurram and are reportedly unwilling to travel to or take postings in FR Kurram or Lower Kurram, making it sometimes difficult for the Agency Supervisor to obtain the kind of coverage he wants. There two other higher level supervisory staff, one of whom (an ASV) has been detailed to Abbotabad and so lost at least temporarily to the Agency. Two supervisory positions are vacant.

Agency staff estimated in 1989 that roughly 72% of the children in Upper and Lower Kurram are immunized. The percentage in FR Kurram is low enough that staff think that it would drop overall coverage for the Agency to 36%. No attempt could be made to validate these statistics.

ORT seems to be in limited use in Agency facilities. At all but one site visited, ORS packets were found. MCH Centers and BHUs are charged with making a particular effort to teach the preparation and use of ORS. EPI program managers are responsible for this program as well. In reviewing stock lists for 7 months in 1988, it appears that the number of packets issued, agency-wide, varied considerable from one month to the next:

January 1988	424 packets issued
February	320 packets issued
April	1041 packets issued
June	252 packets issued
July	211 packets issued
November	561 packets issued
December	90 packets issued

There is little point in averaging such a small six month sample with widely varying totals. One would expect the summer incidence of diarrhea to be higher, requiring distribution of larger numbers of ORS packets but with the exception of December, June and July are the lowest months. If we take the January figure of 424 packets distributed and divide by two, assuming that each ill child drank two liters of ORS, then ORS was prescribed for a total of 212 children during the month. The under five population in 1980 was around 43,000. It is certainly higher now. If we in turn divide the 212 children by the 29 facilities dispensing ORS, each facility prescribed ORS on average to 7.3 children per month. This seems a very low total given the high incidence of diarrheal disease all over Pakistan.

D. Hospitals

There are four government hospitals. The ones at Alizai and Muzzafar Kot are very small, with 26 and 10 beds respectively. The Muzzafar Kot hospital does not have a women's ward while the Alizai one has allocated 10 of its 26 beds for women. The senior female medical practitioner at the Alizai facility, however, is a Da'i, so bed utilization in the female ward is probably very low. Both these hospitals function more as BHUs because of their staffing level. Each is staffed with a Da'i and a physician. The Alizai hospital has a blood bank officer and a dental surgeon. There are no nursing staff or other mid-level technicians. There is an MCH Center at Alizai and this would draw some of the women and children.

The hospital at Sadda also has a heavy outpatient load, often seeing patients with minor problems. It treats many refugees. Staff see 120 to 220 out-patients per day. If the hospital sees an average of 170 out-patients per day and has 5 in-patients, then it may be that the medical staff are overburdened. While hospital staff claim to have a total of 30 beds, only ten are open at this writing. The operating theater and the female ward have been closed owing to their dilapidated condition, and only one male ward is open. The other male ward is being used as an operating theater. Given the high population density around Sadda, and this reduction in bed strength, many patients may go elsewhere. Curiously, bed utilization is only about 50%. This may confirm that patients are seeking hospitalization elsewhere. Certainly, women needing hospitalization must go to Parachinar or outside the Agency. Low bed utilization may also say something about how local people view the hospital, but it may be that the staff do not encourage admission because they have their hands full with outpatients. The staff for example, do emergency surgery on the many gunshot wounds that come their way and then send the patients on to Parachinar once they are stable.

The Sadda hospital has two male physicians, one female physician, 1 LHV, 2 EPI technicians, and 5 dispenser/compounders. The latter five package and dispense medications but do not see patients as they might in a dispensary. The X-ray unit has been closed owing to the vacancy for a technician. The laboratory also cannot be used since there is no technician. The hospital relies on a private lab in Sadda.

At Parachinar, the Zenana or female hospital has recently been joined to the Agency Headquarters Hospital. This hospital has its own director and is not under the Agency Surgeon. Bed strength now amounts to 136 female beds and 92 male beds (this does not accord with agency records but is the bed strength found during a visit.)

The hospital handles all but very major cases of surgery. Admissions for 1988/89 fiscal year amounted to 3006, which suggests low bed utilization.* If each patient stayed 10 days in hospital, this would give a bed utilization of 36%. The hospital again functions primarily as an outpatient facility. In 1988, it treated between 81,000 and 85,000 outpatients. Of these, 29,293 or roughly 35% were children. If patients are seen on 285 days out of the year (a rough guess), then an approximate average of 82 patients per day show up for the clinic. If bed utilization is around 36%, then 82 beds are occupied with in-patients on any given day. This gives a daily case load of 164 patients. The staffing level seems adequate to handle this number except for some major gaps.

The hospital is staffed by 24 physicians and surgeons, some of different specializations (3 of whom are female), 5 nurses, 19 compounders, an X-ray technician, and 5 da'is. The hospital should have but is missing a radiologist, anaesthetist, pathologist, orthopedic surgeon, a lab technician and assistants, a midwife, and an LHV. The laboratory is closed. Improving government lab facilities in the Agency should be a priority.

*In 1985, there were 316 hospital beds in the Agency and 3,357 indoor patients. This is very low bed utilization.

There are also two private hospitals at Parachinar:

1. Dr. Afzal Hussein's hospital has 16 private rooms but can accommodate up to 30 in-patients. Out-patients range from 120-150 per day. It has its own x-ray, ECG, and lab facilities and its own pharmacy. It is staffed by two doctors, 4 compounders, 1 x-ray technician, 1 lab technician and other auxiliary staff. Assuming that patients come to see a doctor and not a compounder, which they can see at a government facility, the two doctors in the establishment must be over-worked.

2. While Dr. Syed Hussain is probably the only pediatrician in the Agency, his hospital is a general facility. He sees 60-100 outpatients per day and looks after 15-20 in-patients. He is the only physician. There are also two compounders, 1 X-ray technician, 1 lab technician, and auxiliary staff. He must be as busy as the two doctors mentioned above. While these three physicians may be technically very good, one questions the quality of care that can be provided given the patient load. Neither hospital appears to have nurses.

E. Malaria Control Program

This program is staffed with 10 supervisors, 1 Inspector and 1 Asst. Malaria Superintendent. The latter reports to the Agency Surgeon. There is a vehicle but no driver so travel is difficult and must inhibit to some extent detection of mosquito breeding areas and spraying with insecticide. Apparently, the program plans to de-emphasize spraying in future and to put greater emphasis on case detection, perhaps so that spraying can more accurately target problem areas. The rationale for this is not known, particularly when lab facilities are limited. It would appear to be more cost-effective to try to prevent mosquito breeding, particularly since malaria seems to be a significant medical problem in the Agency.

The ten supervisors are assigned to cover areas in Upper and Lower Kurram. None are assigned to FR Kurram which could possibly have less of a malarial problem owing to the higher altitude terrain. This is not, however, why it has been omitted from coverage. The Inspector tries to visit each supervisor every fortnight. The program also includes case detection through blood analysis. This is difficult because people do not like to have blood taken, and because there are no laboratory facilities that have staff who can read the slides. The Inspector is currently making use of UNHCR's lab facilities at Sadda, Muzzafar Kot and Alizai in order to get his slides read. Currently the inspector himself reads slides. Some of the supervisors have been trained to read slides but none has any laboratory equipment. Training and some simple equipment would improve case detection and make the program more efficient.

F. Leprosy

There appear to be a considerable number of leprosy cases in Kurram Agency. The construction of a Rs. 20 million clinic has been approved but no action has been taken. A leprosy specialist stationed in Hungu is responsible for leprosy patients in the Agency and he visits Parachinar on occasion. It would seem to make most sense to integrate leprosy patient care into the existing health care network, but prejudices do continue to exist.

G. Sanitation

This program is also under the Agency Surgeon. There is one inspector, 3 supervisors and 4 patrol staff. They kill stray dogs and keep track of rabies. They track and try to solve other sanitation problems and do what they can to prevent summer outbreaks of cholera.

H. Dental Care

There is a dental clinic at the Agency HQ hospital in Parachinar, staffed by a dental surgeon and a dental technician. There is also one dental surgeon attached to the Alizai hospital and one at Sadda. There are no dental technicians to assist them because the posts cannot be filled. The dentist at Sadda sees 12-15 patients per day. There are two untrained dentists working privately at Parachinar and apparently a number of compounders and health technicians practice dentistry (i.e., pulling teeth) as a side line in rural areas.

I. Drug Cure Facility

There is a small drug cure facility started by a young doctor who works at the Parachinar hospital. He has founded an NGO and solicits funds from wherever he can get them. This facility has treated approximately 400 patients since inception in 1982. It accepts twelve addicts at a time, keeping them for periods of two to three months. Because it runs on a shoe-string and the only professional staff person is the doctor, who can only work part-time at the center, the main treatment consists of locking the patients up and medicating them during the initial withdrawal period. No behavior modification can be attempted. Follow up possibilities are limited, again because of financial and staff resources. The actual success rate is unknown. Yet this is a worthy attempt, and one of the few treatment facilities in the country. It primarily draws patients from the Agency and Kohat. Some come from farther afield. Many are young - late teens and twenties, and generally they seem to have been addicts for periods ranging from 6 months to three years. They appear to be addicted to a variety of substances and mixing of substances is common.

Many of them were or are truck drivers who initially began using heroin to keep awake on long distance hauls. One gram of high grade heroin cost 25 Rs. in Parachinar, in 1989 making it relatively affordable.

J. Other Private Practitioners

There are a total of 9 private physicians. The hospitals of two were mentioned above. Of the other seven, one is at Zeran, one at Parachinar, 3 at Sadda, 1 at Baggan and 1 at Satin.

K. The Disease Pattern

Compiled statistics on disease incidence in the Agency do not really exist. The record of deaths in 1988 misses one quarter and only records deaths for the other three quarters from gastroenteritis, chicken pox, neonatal tetanus, TB, dysentery, and infectious hepatitis. The deaths from chicken pox are odd. Chicken pox rarely kills and is only serious in the elderly. No deaths were recorded from other childhood diseases such as measles, diphtheria or pertussis. Of course, many who are ill and recover or ill and die do not receive medical treatment and so those cases go unrecorded. Even if good data from health institutions were available, incidence would be seriously under-counted, particularly for FR. It would also miss out those individuals who sought help outside the Agency.

The main medical problems are the same ones that one encounters all over Pakistan. Deaths from diarrheal disease for 1988 are as follows:

QUARTER	AGE OF CHILD	
	UNDER ONE YEAR Dysent.	ONE TO 14 Dysent.
First Quarter	53	41
Second Quarter	27	29
Third Quarter	No statistics	
Fourth Quarter	47	106

XIII. ELECTRIFICATION

By 1986-87, the publication FATA Development Statistics indicates that WAPDA had brought electricity to 213 villages in Kurram Agency. In that same year, about twice as many villages in Mohmand and Khyber Agencies had been electrified and even South Waziristan, with its difficult terrain, had a larger number of villages with electricity.

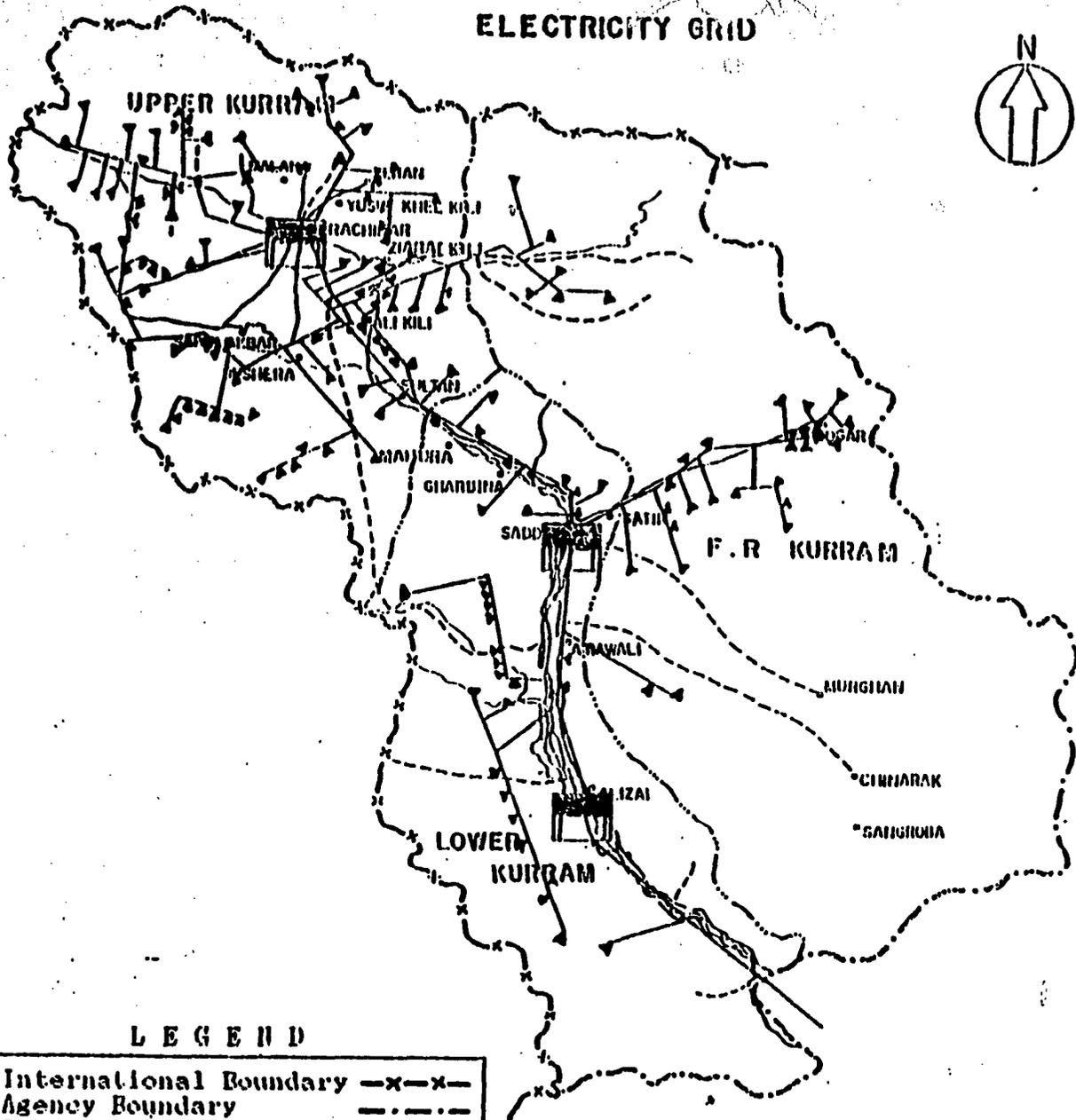
A list, through June 1989, of electrified villages obtained from WAPDA includes 193 villages, or fewer than indicated above for the period three years earlier. The discrepancy cannot be accounted for.

Priority has been given to Upper and Lower Kurram tehsils, most of whose villages are at least relatively accessible from a good road. In addition, government agencies and major bazaars are centered in these two tehsils. The hilly terrain in FR Kurram, as well as the political environment, make electrification in this tehsil a formidable and expensive task. Few villages in FR Kurram have received electricity, and these are along the main access roads.

Table XIII.1 shows the electricity grid.

KURRAM AGENCY

ELECTRICITY GRID



LEGEND

International Boundary	-x-x-
Agency Boundary	-----
Subdistrict Boundary
Metalled Road	=====
Shingled Road	-----
Grid Station 66. K. V.	
Transformers	

XIV. INVESTMENT

A. Annual Development Plan & FATA-DC Investment

A note of explanation is first needed here. It proved difficult to recover revised development allocation/expenditure figures for past years. We were able to obtain some revised (and therefore real) allocations for 1988-89. We also received actual expenditure figures against original investment allocations from the Agriculture Extension Service. We have mostly, however, been obliged to rely on the initial development allocations, which are always published, and therefore readily available. Initial allocations may, in the instance of some agencies or department, be higher or lower than what a department actually spends or can spend. The initial allocations show the level of commitment to particular sectors but not always the level of absorptive capacity. We were told that the Education and Health Departments in particular have difficulty spending allocated investment funds. This may be true for several reasons - difficulties recruiting new staff for new sites, the time lag between approving a new site and the actual construction of the building by C&W, and failure of the recurrent cost budget to keep pace with investment.

In terms of development investment, Kurram has generally done well relative to other tribal agencies. Total investment for most sectors funded under the ADP since the early 1970s has been greatest in Kurram. FATA-DC has also invested more funds in irrigation in Kurram than in any other Agency. This relatively high level of investment is a reflection of Kurram's population (third highest population in the tribal agencies), its agricultural potential, its interest in education, and perhaps also its geographical location and political importance.

Table XV.1 shows the combined ADP and FATA-DC allocations for the different sectors in Kurram Agency from 1971-2. The total allocation has for the most part shown a steady increase and currently stands at around Rs. 100 million annually. In 1988-89, the allocation fell by 8%. Allocations reflect the continued need for investment in infrastructure in the Agency. Tables XV.2 and XV.3 show ADP and FATA-DC investments in the Agency separately. It should be kept in mind that PP&H includes investment in potable water supply.

Communications receives annually the largest allocation, reflecting the political and commercial importance of roads and the high cost of building them. In the 1970s, C&W sometimes received as much as 42% of the combined ADP/FATA-DC allocation, which was then a very small allocation. Now that the allocation is larger and a certain amount of road building has been accomplished, the share garnered by Communications has dropped. In the last three years, it has ranged from 30% in 1986-87, 28% in 1987-88, and 25% in 1988-89.

109A

TABLE XIV.1

GONWFP
 YEAR/SECTORWISE ADP ALLOCATION
 Agency: KURRAM

YEAR/SEC	AGRI	POWER	COMMUNI	HEALTH	EDUCAT	PP&H	INDUS	RUR DEV:	P&D	IRR	FORESTS	HOUSING	RES. DEV	TOTAL
1974-75	0.359	0.500	9.219	5.502	2.133	1.709	0.123							19.545
1975-76	1.132	0.300	8.837	3.000	1.111	2.263	0.079							16.722
1976-77	0.434	1.500	10.957	1.707	0.345	0.861	0.085							15.889
1977-78	0.669	1.000	4.914	4.607	2.575	1.788								15.553
1978-79	1.917	2.000	9.209	4.201	3.106	1.600	0.085	0.482						22.600
1979-80	1.852	2.311	14.233	4.143	3.857	4.522								30.918
1980-81	1.855	3.200	10.913	2.389	2.293	2.837								23.487
1981-82	2.768	4.839	13.719	1.158	4.431	4.940		3.561						35.416
1982-83	1.113	5.180	27.153	0.800	8.559	3.174		4.225						50.204
1983-84	2.911	6.900	21.676	1.500	10.095	5.869		2.029						50.930
1984-85	6.414	3.240	22.224	5.682	10.399	6.236		2.626						56.821
1985-86	6.886	9.824	16.680	3.715	11.784	9.967		2.303						61.159
1986-87	4.884	9.060	30.349	4.136	16.296	10.472		2.303						77.500
1987-88	4.342	11.444	30.054	4.136	18.908	9.427		2.592						80.903
1988-89	3.556	14.477	24.140	6.450	21.842	4.592		1.556			1.446	2.593		80.652
TOTAL	41.092	75.775	254.277	53.126	117.734	70.257	0.372	21.677	0.000	0.000	1.446	2.593		525.349

TABLE XIV.2

FATA-DC, P&D AND MNA/SENATOR
 YEAR/SECTORWISE ADP ALLOCATION
 Agency: KURRAM

YEAR/SEC	AGRI	POWER	COMMUNI	HEALTH	EDUCAT	PP&H	INDUS	BURDEV	P&D	WATER	FOREST	RESDEV	MINERAL	TOTAL
71-72														0.000
72-73							4.967			0.314				5.281
73-74							0.294			1.534			0.250	2.078
74-75	0.359	0.500	9.219	5.502	2.133	1.709	1.123			3.314			0.500	24.359
75-76	1.132	0.300	8.837	3.000	1.111	2.263	2.994			3.165			2.300	25.102
76-77	0.434	1.500	10.957	1.707	0.345	0.861	2.461			5.897			1.430	25.842
77-78	0.669	1.000	4.914	4.607	2.575	1.788	0.178			3.535			0.870	20.136
78-79	1.917	2.000	9.209	4.201	3.106	1.600	0.085	0.482		4.083			2.600	29.283
79-80	1.852	2.311	14.233	4.143	3.857	4.522				8.343			0.405	39.666
80-81	1.655	3.200	10.913	2.389	2.293	2.837	2.490			17.129			0.339	40.145
81-82	2.768	4.839	13.719	1.153	4.431	5.842		3.561		14.236			0.046	50.594
82-83	1.113	5.180	27.153	0.800	8.559	4.348		4.225		20.237			0.050	71.865
83-84	2.911	6.900	21.676	1.500	10.095	5.869		2.029		17.540			0.100	68.820
84-85	6.414	3.240	22.224	5.682	10.399	7.586		2.626		19.527			0.060	77.758
85-86	6.886	0.824	16.800	3.715	11.784	11.479		2.303	3.332	22.097			0.060	88.160
86-87	4.884	9.060	30.349	4.136	16.296	12.112		2.303	3.332	19.119				101.591
87-88	4.342	11.444	30.054	4.136	18.908	9.744		2.592	3.332	21.957				105.509
88-89	3.558	14.477	24.140	6.450	21.842	7.230		1.556		14.377	1.446		0.400	95.474
TOTAL	41.092	75.775	254.277	53.126	117.734	79.790	14.592	21.677	9.996	196.404	1.446	0.000	9.154	875.063

FATA-DC generally receives the second largest share of combined investment funds, most of which has been spent on the development of irrigation water resources. In recent years its share has stood between 14 and 26%, but only in this last year was the allocation below 18%. In some years in Kurram, its expenditure was higher than the allocation. FATA-DC investment in Kurram has been high relative to other Agencies and FRs.

In recent years, substantial amounts have been allocated initially for education. Last year, the government allocated more for education than for development of irrigation facilities. This suggests growing commitment to education. In the 1970s, the education allocation hovered between 8% and 11%, which was very low relative to need, but perhaps was not low relative to popular interest. Since 1983, education investment has topped 13%, and in 1988-89 it received 22% of the total allocation.

The share of funds allocated for electrification has been increasing, as WAPDA has moved into rural areas. Generally, it has ranked fourth in investment allocations, but sometimes it has fallen below this. In 1988-89, it was initially granted 15% of the ADP funds, while the previous year it garnered 11%.

Development of health care services, when considered by itself, has declined in importance as far as ADP investment is concerned. In the 1970s, it generally received over 10% and some years over 20% of the total investment. In the early 1980s, development allocations were greatly reduced and in some years were less than 3%. In 1984-85 expenditure picked up but then dropped again the following year. For the last three years, investment as a share of ADP has stood at 4-7%. While these sums are very low, if investment in potable water supply (in Table XIV.1 and XIV.2 this is part of the PP&H investment) is considered as part of the investment in health, then the share of investment rises and becomes more respectable. Since 1982, investment in potable water has increased. During the 1988-89 fiscal year, Rs. 4.6 million was initially allocated for potable water while Rs. 6.45 was devoted to health services, totalling 11.2% of total investment. In the previous year's ADP, funding for PHED was Rs. 4.74 million or twice what it was in 1982-83. When combined with health, the two together equalled 8.3% of total investment. This is in contrast with 1983-84, when combined health and potable water investment equalled 6.3% of total investment.

Agriculture typically receives little investment. Tables XIV.1 and XIV.2 gives the total agriculture allocation which includes extension, research, mechanization (land levelling), livestock, and until 1988-89, forestry and sericulture. In several years, the forestry/sericulture allocation was higher than the extension, research and mechanization allocation. For some recent years (1987-88 and 1988-89), livestock received a larger allocation than the purely agricultural components of this sector. This very

limited investment in agriculture proper is unfortunate, given agriculture's importance as the main resource base in the Agency, and the considerable improvement that could be made in production. In 1988-89, for example, the extension service received a tiny amount of money to spray 600 ha. of orchards, hold two demonstration shows in Kohat, start a new fruit nursery at Sadda and introduce cherry cultivation. That same year, the mechanization service received no new investment funds, while Rs. 0.264 million was allocated to continue equipping the new soils laboratory at Parachinar (agriculture research). Allocations (in millions of Rs.) for agriculture, forestry and livestock for recent selected years are as follows:

	Agriculture*	Livestock	Forestry
1981-82	0.44	0.097	1.334
1982-83	0	0	1.113
1984-85	2.6	1.196	2.618
1985-86	4.7	0.405	1.780
1987-88	0.467**	1.650	2.225
1988-89***	1.262	2.364	separate
1989-90	2.092	0.980	"

 * This includes Extension, Mechanization and Research.

** However, at least Rs. 1.2 million was expended by the extension service so the allocation must have been revised upward.

*** Revised or final actual allocation.

During the 1970s, the ADP allocation in extension generally ranged from Rs. 0.2 to 0.3 million annually. In the 1980s, investment has been erratic - ranging from 0 to over Rs. 1 million. In 1987-88, the extension service ended up with a substantially higher revised allocation; from Rs. 0.267 million originally in 1987-88 to the above mentioned Rs. 1.2 million. The following fiscal year, its revised figure was less than the original allocation; from Rs. 1.124 million to 0.998 million. This lack of consistency in allocations suggests that there is a lack of confidence in the department, that agriculture is a shifting priority and/or that the FATA Agriculture Department requires assistance with planning. The Extension Department usually spends close to the amount that it is allocated for investment purposes.

FATA-DC's investment in developing water resources is of course an investment in agriculture, but unless that water is accompanied by improved seed, appropriate fertilizer and agrochemical use and good farm management, then the investment in water is not maximized. Agency farmers would profit from a greater investment in agriculture. The main government farms need substantial improvement. More could be done to promote the use of quality

inputs and new high-value crops, if funds and trained staff were available.

The livestock allocation for recent years is listed above, along with the agriculture and forestry allocations. As noted above, sometimes (1987-88 and 1988-89) more funds have been allocated for preventive and curative care of livestock than for agriculture, a priority that is perhaps a little difficult to understand, particularly given that the department does little to promote improved animal production, except through its small artificial insemination program.

Last year was the first year that the ADP separately allocated funds to forestry. Prior to that allocations were made as part of the overall Agriculture allocation. Forestry is a critical need, even if there may not be much popular demand or understanding. The once considerable forest resources of the Agency have been almost wiped out between the depredations of the local population and refugees, adding to problems with erosion. The original allocation in 1987-88 was Rs. 2.225 million, giving forestry much greater priority than agricultural extension or animal husbandry. In 1988-89, the allocation was cut to Rs. 1.446 million, and this year (1989-90), it is Rs. 2.416 million. Sericulture received Rs. 0.46 million in 1988-89. No funds were allocated for sericulture the previous year. During the current fiscal year, the allocation is Rs. 0.030 million. This program needs to be re-evaluated. The equipment the department has for spinning is so antiquated that it produces poor quality yarn. Without significant investment, the program may continue to stumble, with declining participation from FATA farmers every year.

The LG&RD Department (Rural Development Program in the table) reached a peak in its ADP allocation for Kurram Agency in 1982-83. The following fiscal year its allocation was halved and last year, it was cut further. Last fiscal year, its investment in the Agency consisted of Rs. 1.6 million. Its main area of concentration is potable water. In its 1983-84 ADP budget, 41% was spent on drinking water schemes. The second area of important is flood protection - LG&RD appears to be the only Agency involved in a significant fashion with flood protection in Kurram. In 1983-84, 30% of the allocation was spent on flood protection. Flood protection is very important in the Agency and perhaps LG&RD should concentrate its skills in this area. Finally, minor road improvements and construction are the third area of concentration, with 17% of ADP investment spent in this area.

B. External Donor Investment

USAID, through its Tribal Areas Development Project, has funded two boys' primary schools and teachers' quarters in FR Kurram, three surface water irrigation schemes (one is still under construction as of March 1990) and the Sadda-Marghan road. Work will start this fiscal year on the Parachinar-Thall road. In addition, the project is planning to support the development of six tubewells in the Kirman toi area through FATA-DC.

The SDP allocations for C&W and FATA-DC have been considerable. This year, the SDP allocation for irrigation development through FATA-DC is Rs. 15.436 million, or more than FATA-DC has received from GOP investment for irrigation development in the Agency. When SDP investment, particularly in recent years, is added to ADP investment, then the proportion of funds devoted to roads and irrigation development in particular becomes significantly larger.

APPENDIX A

A NOTE ON FATA STATISTICS

Quantitative data concerning various aspects of life in the tribal agencies are surprisingly abundant given political circumstances but are also in large measure partial or unreliable. The GOP routinely tries to collect data related to agriculture, education, health and other sectors. Some of the data collection has been via surveys which are based on a sample of the population in the accessible areas, a process which is the best one can hope for but which still omits large chunks of FATA. The 1981 census, for example, relied on sample surveys designed to test and permit adjustment of the population estimates given by maliks. Many surveys conducted nationally, however, omit the tribal agencies because of the difficulties of house to house enumeration in these areas. Some data are collected via department records (school enrollments, health workers, etc). These should be least prone to error because the subjects are easily quantifiable, but problems still exist. Some data are collected via estimates of field staff. Agricultural production and acreage figures for example do not result from surveys or land records, except in Upper and Lower Kurram tehsils and the Tochi valley) but are estimates made by field officers and as such can be very crude. Given the extreme difficulties and sometimes the impossibility of gathering information in FATA, it is not surprising to find that there are problems with the data. The researcher occasionally uncovers inconceivable inconsistencies moving from one source to another and sometimes from one year to another within the same source. Problems with the deletion of necessary zeros and the addition of unwanted ones are frequent and can lead the unwary researcher to form a very mistaken picture. Many adjustments must be made in the figures, and the researcher needs to have a good idea of what is there "on the ground" in order to assess the degree of reliability of the data. To illustrate problems, some examples drawn from Kurram Agency data are given below:

1. The Agriculture Census of 1980 records the cultivated area as 11,718 hectares. Data recording land use in FATA Development Statistics and Agency-Wise Socio Economic Indicators from the 1970s-1980s list the cultivated area as 27,200 hectares. Most recent data from the Agricultural Department field officer in Parachinar give the cultivated area as 17,111 hectares. Sitting in Peshawar, it was impossible to reconcile these three. Finally, in Parachinar, we were able to determine that the last figure was derived from the land records and, while it only reports on Upper and Lower Kurram, it is the most accurate estimate available. It was not possible to discover the origin of the other two estimates, except that the 27,200 ha. may represent an

attempt to include an estimate of FR Kurram's cultivated area.

2. In FATA Development Statistics, fallow area recorded from the early 1970s to 1980-1 is less than 1000 hectares. In 1981-2, however, the fallow area is recorded as 10,740 hectares, an inconceivable jump of almost 10,000 hectares. Here obviously is a case of the unwanted zero. The error is repeated in every successive year and is picked up in Agency-wise Socio-Economic Indicators, which reports that 39.7 per cent of the cultivated land in FATA lies fallow, too great a proportion given the intensity of cropping permitted by predominantly irrigated farming. This apparent error helps permit another error, this time in cropped area, to go undetected. In this version, statistics report the cultivated area as 27,200 hectares and the cropped area as 27,272 hectares. These 2 numbers are not plausible. Most farmers in Kurram raise two crops per year so the acreage for cropped area should reflect this double cropping and should be much larger than the cultivated area.
3. The amount of fallow land recorded in the 1980 Agricultural Census is 3% in 1980, while 1989 field data suggest it is 17%. That is too great a discrepancy. One figure, or both, are wrong.
4. Acreage devoted to pulses increased from the Agriculture Census (1980) figure of 466 hectares to recent statistics recording 4048 hectares. 1959-60 data indicated 4073 hectares planted in pulses. In this instance, the census may have dropped a zero, or perhaps only reported on one kind of pulse.
5. Trying to arrive at reasonable estimates of school enrollments was a painful process. Initially, the consultant worked with data published by the Department of Education and the Bureau of Statistics. After considerable analysis of these data, the consultant concluded that some or all of the reporting was according to formal designation of school and therefore did not accurately reflect primary, middle and high school enrollment. Bureau of Statistics staff felt that the reporting was according to level, however. Finally, field level records on enrollment per school and per class were received from Parachinar. These data presented a very different picture with higher primary enrollments and lower middle and high school enrollments. A decision was made to use these data, which gave a lot of useful information. However, manipulation of the data for analytical purposes still proved no easy task because the material was presented in a somewhat awkward

fashion. There were some inconsistencies in the reporting (i.e. sometimes the enrollment of the primary section of a middle school was given and sometimes it was omitted). Some schools were double counted (and even then, the two enrollments would not coincide), some schools were placed in the wrong tehsil, some classes were omitted, and often the addition was wrong. Problems in the data would have been easier to discover had there been a smaller number of schools, but with 167 primary schools, 25 primary-middle schools and 18 primary-high schools, it took some time to identify errors, and each new error required repeated calculations in participation and drop out rates, etc. In the end, the consultant believes that the enrollment figures used in this report are approximate and not exact. Anyone else going through the same exercise would probably derive different enrollments but they would be similar. There probably are not exact enrollments in any case. With such high attrition rates, enrollment would differ depending on the week or month recorded. However, some improvement in the reporting formats in particular could be helpful, and computerization would be very desirable.

6. Rainfall and Mean Maximum and Minimum Temperatures by month and year, as recorded at Parachinar.

Data taken from FATA Development Statistics was analyzed from 1982-1987. At the same time, the Meteorological Department in Lahore was asked to provide equivalent data from 1978 onwards. The Department responded very quickly with monthly data from 1978-1988. Unfortunately, the two sets of data for temperature and rainfall are different and for many months substantially different. See the range of annual rainfall given below:

Rainfall in Inches

	FATA DEV. STATS	METEOROLOGY DEPT
1982	2.6"	37.3"
1983	13.7"	25.2"
1984	34.8"	29.2"
1985	38.5"	21.2"
1986	46.5"	32.9"
1987	20"	25"

These two are not even very close, nor is one consistently higher or lower than the other. With respect to rainfall, a decision was made to use the records of the Meteorological Department because there is less of a range from least to greatest amount of rainfall and the annual amounts are closer to the 37 year average recorded under the Raj.

It turned out that the Agriculture Department has a set of gauges on its Parachinar farm and its reporting was used in FATA Development Statistics. Another set is tended by the Meteorology Dept. In this study both sets of data have been consulted, but generally data from the Meteorological Department were preferred.

More examples could be listed (and are mentioned in relevant sections of the main report) but would not make any clearer the general point concerning the difficulties of using these data and planning on the basis of them. All numbers used in this report must be treated cautiously. The margin for error could be substantial. In some cases, there were not very clear grounds for choosing one set of numbers over another, divergent set, particularly when information was known to have come from the same source or office. A serious effort was made to choose those data most likely to be accurate but the accuracy is relative rather than exact. In some cases, it was advisable to present the range of data found.

APPENDIX B

**TRANSPORT COSTS FOR SENDING
AGRICULTURAL PRODUCE TO MARKET
AS OF DECEMBER 1989**

WAGON

A wagon can transport 20-25 bags weighing 1.5-2 maunds.

From Parachinar:

<u>Destination</u>	<u>cost per wagon</u>
Local villages	Rs. 70 - 120
Sadda	Rs. 100 - 110
Thall	Rs. 250 - 300
Hungu	Rs. 400 - 450
Kohat	Rs. 500 - 600
Peshawar	Rs. 800 - 900
Rawalpindi	Rs. 1000 - 1200

LORRIES

A lorry can carry 120-140 bags or 500 - 600 crates.

From Parachinar:

<u>Destination</u>	<u>Cost per bag</u>	<u>Cost per crate</u>
Sadda	Rs. 5	Rs. 1.00
Thall	Rs. 10	Rs. 2.00
Hungu	Rs. 13	Rs. 3.00
Kohat	Rs. 16	Rs. 3.00
Peshawar	Rs. 18	Rs. 4.00
Rawalpindi	Rs. 25	Rs. 5.25