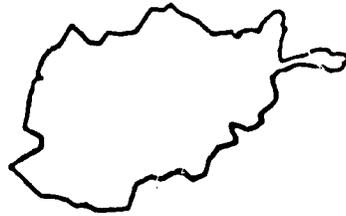


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The Agricultural Survey of Afghanistan



FIRST REPORT ON THE AGRICULTURAL SURVEY OF AFGHANISTAN

NATIONAL TRENDS AND AVERAGES

MAY 1988

AGRICULTURAL SURVEY OF AFGHANISTAN

Showing Zones & Provinces

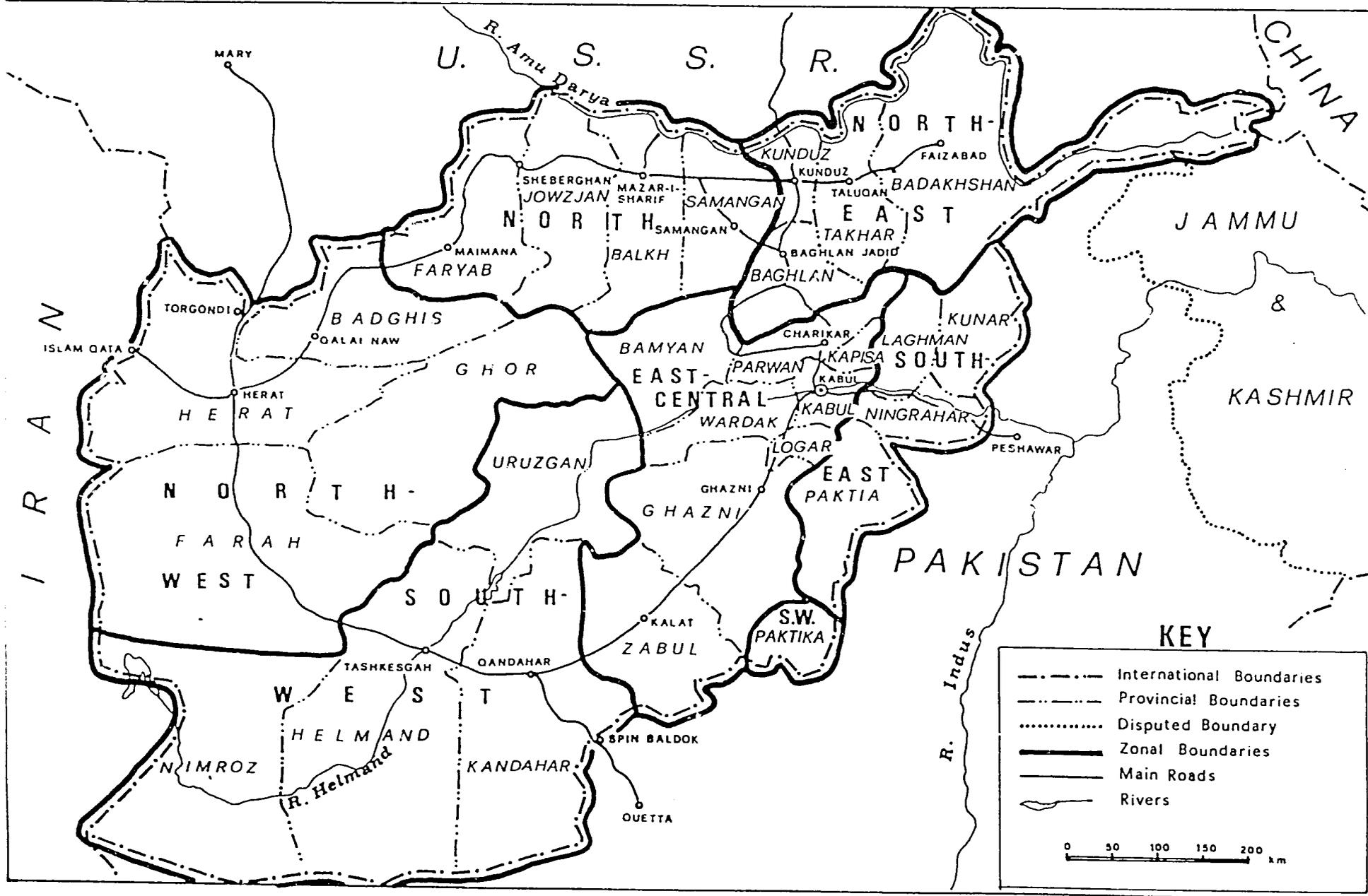


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Measures: 1 Seer = 7kg
 1 Jerib = 0.2 ha
 1 Seer/Jerib = 35 kg/ha

1. INTRODUCTION

1. This report summarises the results of the 1987 Agricultural Survey of Afghanistan. The survey involved interviewing farmers and village communities in the mujehadin controlled areas of each of the 29 provinces of Afghanistan, and also refugee farmers in the camps in Pakistan.
2. The survey was initiated in 1986 by Anders Fange, the Representative of the Swedish Committee for Afghanistan (SCA) based in Peshawar, Pakistan. Initially the survey comprised the Director, Dr. Azam Gul, the Administrator, David Webster, and Agrisystems, an agricultural consulting company which advised on survey design and methodology, and computerisation. The Director and Agrisystems were contracted to Energy Development International (ED/I), Europe.
3. Later, following the selection, training and screening of a large number of candidates, the following survey staff were also recruited: 68 Enumerators, six Enumerator Supervisors, five Computer Operators (later augmented to seven), and one Computer Supervisor. These were established in three offices, of which two are in Peshawar and one is in Quetta. The staff totalled more than 100 during 1987, which was the first year of survey operations.
4. The survey seeks to reveal a representative profile of the average farm, and the average farm family. It does not attempt to present aspects of the whole picture of agriculture such as total area farmed, total production of wheat, or any kind of a census.
5. The survey received financial assistance from the following organisations:

Dutch Committee for Afghanistan
Austrian Relief Committee, Peshawar
Bureau International Afghanistan, France
International Rescue Committee, Peshawar
NOVIB, Holland
Oxfam, England

2. SUMMARY AND CONCLUSIONS

- 2.1. This report is based on a survey which directly interviewed the heads of about 20,000 farm family households in Afghanistan and in the refugee camps in Pakistan, of which, after screening for reliability, 11,000 were entered into a computerised database. This represents more than 1% of all farm households in Afghanistan, counting together those still in the country and those in Pakistan. The database occupies over 30 megabytes of disc space and took six men 12 months to input. It was obviously not possible to cover areas controlled by the Kabul regime and which are estimated by independent observers to be up to 20% of the country (and estimated to be no more than 25% by its President). Nevertheless, it is the largest, most wide ranging and most comprehensive survey of agriculture ever conducted in Afghanistan in peace or war.
- 2.2. The survey is not a census and gives no estimates of total agricultural production or other absolute figures. Rather the survey focuses on the farm family and its situation, the factors that have affected it, and trends in production, means of production, farm resources, and physical farm inputs which have occurred over the last ten years. This report is based on a set of 21 tables of basic data worked out for each province, and it can thus be seen that the report presents a very basic summary of a total of over 600 tables. Individual reports which will be prepared in the future will deal in depth with specific topics. Apart from the basic data already worked out, there is a mass of other more complicated data and relationships to be worked out. The results will take several more months to analyse and this report provides only a rapid overview of some of the main findings.
- 2.3. The results show that the refugees and those who stayed to farm in Afghanistan are two different groups in terms of area farmed, ownership of livestock, use and availability of labour, use of fertiliser, and a number of other factors. Those who became refugees were better off in terms of farm resources, but on the other hand their farming operations suffered more from the direct effects of war.
- 2.4. Yield figures given by the farmers show a substantial decline; 33% for irrigated wheat and 50% for dryland wheat between 1978 and 1986, and that the area cultivated by individual farmers has declined by 30%. On these two counts alone the survey indicates that total agricultural production in 1986 fell to about 45% of its 1978 level. There was an increase in yield levels in 1987 which increased production to about 53% of the 1978 level. This increase may be attributed to good rainfall as well as reduced levels of attacks on agriculture. It is important to note, however, that the reduction in total production may be an underestimate in that the figures apply only to those farms which were still worked at the time of the survey and does not take into account abandoned farms. On the other hand yield figures should be treated with caution as farmers are notorious for giving misleading data on yields, and particularly the figures given for the early years of the survey have been commented upon as being high by people familiar with Afghan agriculture.

- 2.5. These figures confirm the worst fears and the most pessimistic reports on Afghan agriculture which have reached Peshawar through refugees, journalists and other observers over the last few years, but which have been unsubstantiated till now.
- 2.6. The reasons for this decline, apart from the direct effects of war, appear to be first, a reduction in family and hired labour availability, so that the use of family labour by farmers still in Afghanistan fell by 19.5% and hired labour by 19%, while for farmers who left in 1987 the figures were 44% and 29%. Second, the number of draught oxen owned by farm families has fallen by 40%. Third, although the survey has evidence which is not yet analysed, it appears that the genetic potential of wheat seed has declined substantially. Fourth, the proportion of farmers using urea (or white) fertiliser has declined to 53% from 76% and of those using compound (or grey) fertiliser to 33% from 57%. Added to these figures of the decline in the means of production, there has also been a decline in livestock numbers. It is against livestock that the Afghan farmer has traditionally fallen back after poor harvests. For farmers who stayed in Afghanistan the decline in the numbers of Karakul sheep, and of ordinary sheep and goats, was 70% and 67%, and for those who fled in 1987, the decline was 60% and 56% up to 1986, after which they lost, or disposed of, almost all their flocks. The decline in the numbers of horses, and donkeys and/or mules has been less - for those who still farmed in Afghanistan in 1987 the figures were 45% and 6%, while for those who left in 1987 the figures were 8% and 24%.
- 2.7. The direct effects of war on agriculture reached a peak in 1985, and although they have since declined they are still substantial. In 1985 53% of farmers who stayed in Afghanistan, and 65% of those who left in 1987 had their villages bombed. The equivalent figures for the destruction of irrigation systems are 24% and 36%; for livestock shot, 23% and 31%. Those who eventually left also had more livestock shot each year compared to those who stayed - 4 compared to 5. In addition to animals shot, 6% of farmers who left in 1987 were losing 5 head a year to mines. In 1987 22% of farmers still experienced bombing of villages, 12% had their irrigation system destroyed, 6% had their livestock shot, on average losing two head a year this way and the same number to mines. Three percent had their grain stores destroyed, down from 13% in 1985.
- 2.8. Now that repatriation of refugees may become a political possibility, it is relevant to ask what picture does the survey provide of Afghan agriculture and what may be some of the problems facing returning refugees. Would the returning farmers be able to plough? Would they have sufficient irrigation water? Would it be more cost effective to improve the health of existing cattle, or to import draught oxen, or to encourage tractor mechanisation? If they are able to grow a crop of wheat, what will be the yield, and therefore for how long must they receive supplementary food, and how much? What farm inputs do they require, in what order of importance, in what quantities, and how does this vary from province to province? The information collected can assist in answering these questions.

- 2.9. The conclusion to be drawn from data so far analysed is that the present agricultural production is insufficient to support the existing population let alone a large number of returning refugees. The steady impoverishment of farmers who remained in Afghanistan, and of their farm resources, is shown in the report. Returning refugees, as well as the existing farmers, will therefore require food support during the first season while crops are growing. Thereafter food assistance will still be required, but at a decreasing level depending on how quickly the returning refugees are able to rehabilitate their own agriculture. Returning refugees might ease the labour shortage, but it is clear that, if draught oxen are to be bred locally, it will take several years to reach pre-war herd sizes, and that the problem of shortage of farm power will persist for some time. Similarly, even if the national sheep and goat flock increases by 25% a year (an optimistic assumption) it will take five years for it to reach its 1978 level. Improved wheat varieties will need time for testing and multiplication. Irrigation systems will need to be rehabilitated and farm inputs will need to be procured and distributed.
- 2.10 The indications are, therefore, that large amounts of aid will be required. This aid will be in two forms: immediate inputs of food and, in addition, a comprehensive agricultural input programme. This programme should be designed to meet the individual requirements of provinces and districts, and quite possibly valleys. The survey can provide information at least on a provincial basis, as well as case studies on a more detailed level.
- 2.11 The main conclusion of the report is that in order to ensure timely procurement and distribution of both food and agricultural inputs, a slow, phased repatriation is required. Reconstruction will be the key as opposed to rapid repatriation.

3. THE OBJECTIVE AND SCOPE OF THE SURVEY, ITS METHODOLOGY, RECRUITMENT OF ENUMERATORS AND OTHER STAFF, PRETESTING AND TRAINING, LOGISTICS, AND THE ISSUE OF BIAS.

THE OBJECTIVE

3.1. The survey seeks to reveal a representative profile of the average farm, and the average farm family. It does not attempt to present aspects of the whole picture of agriculture such as total area farmed, total production of wheat, or any kind of a census. The objective of the survey was to obtain a time series of information from 1978 (the last 'normal' year before hostilities began) to the present. The survey was primarily directed at those factors which affect agricultural production. These were, for example, physical inputs such as seed, fertiliser, labour, and draught animals, but also included the direct and indirect effects of war. The reason for obtaining a time series of information was to identify trends and changes, and this report puts forward possible reasons for these changes.

THE SCOPE

3.2. The scope of the survey was to cover all 29 provinces mainly by interviewing farmers on their own farms and in their own villages, or, if they were refugees, in the refugee camps. Interviews were carried out in 49 camps, where refugees are generally grouped on a provincial basis, thus enabling individual Enumerators to concentrate on one province.

APPROACH AND METHODOLOGY

3.3. The survey was in two main parts; within Afghanistan and in the refugee camps in Pakistan. Because of the rather sophisticated information required, the general approach was to interview relatively few farmers intensively rather than many superficially. There were two types of questionnaire; one was aimed at village communities and generally took place with a group of people at the village mosque. The purpose of this was to obtain an overview of the village farming situation and to select a representative cross-section of farmers for the second type of interview, the individual farmer questionnaire.

3.4. In the event some 20,000 individual farmer interviews, each taking about two hours, were obtained. As a proportion of the base rural population surveyed this was about 2% of the total. This estimate is based on the rural population now in Afghanistan, which may be as high as 7 million, according to some estimates, but is probably lower, plus the refugee population in Pakistan and Iran, estimated at 5 million; a total of 12 million. The present average household size, as determined by the survey, is about 10, giving a total of about 1 to 1.2 million farming households. In fact, after rigorous screening for accuracy the number of completed questionnaires which were accepted for processing was reduced to 11,000, of which 1301 were community questionnaires. Questionnaires were rejected if there was the slightest suspicion that the interview had not actually taken

surveys. Even this number, however, at about one percent of total rural households, is a useful level of survey intensity. Certainly, it is the largest, as well as the most wide-ranging survey of Afghan agriculture ever carried out in peace or war. It is only the second to have covered every province, the first having been carried out in 1983 by Dr. Azam Gul, the Director of this survey. In that survey 705 refugee farmers were interviewed.

- 3.5. Planning the scope of the survey was difficult, and the planners succumbed to the common temptation of ambition, which in the event did not turn out to be over-ambition. Two facts were exploited; first, was the extraordinary enthusiasm of the survey team which was founded in imperfect knowledge of the difficulties and hard work which the interviews involved. It was clear that this enthusiasm could only be exploited once, and a survey of the same scale could not easily be conducted a second time. Second was the fact that the survey was carried out with the cooperation of individual mujahedin commanders in the different areas. This, as well as the fact that there had been no agricultural survey before in the period of the war, meant that farmers were encouraged by the expectation of material benefits and assistance to agriculture which might arise out of the survey. (Identification of such assistance is a purpose of the survey).
- 3.6. As a result, it was decided to try to obtain a series of information from five different years. The first year was 1978. To expect farmers to remember the details of their farming operations of ten years before was perhaps rash. Nevertheless, because it had been the last year of normal agriculture, it was hoped that the events would cause that particular year to stick in their minds. Pretesting of the questionnaire showed that farmers could remember the details of that year (when the war had started) with better than expected clarity. This was fortunate as the survey without a base 'normal' year would have been of limited use and would have meant relying on pre-war (Afghan Government) statistics collected by a different team using different methodology.
- 3.7. Similarly, 1980, the second of the five years in the questionnaire, was the first cropping year after the Soviet intervention. This event had, it turned out, served to fix the details of their farming operations in farmers' minds.
- 3.8. Finally, it was reasonable to expect farmers to remember the previous two years as well as the year in which the survey was carried out, the spring and summer of 1987.

RECRUITMENT

- 3.9. Recruitment for the survey team was from within Afghanistan as well as from the refugee population in Pakistan. Some 350 applicants were interviewed over a period of two months starting in November, 1986. They were selected on the basis of a number of characteristics. First, they had to be good communicators and from a background which made them readily acceptable to farmers. The

average Enumerator was therefore from a farming background and had been brought up in the province he was to survey, had been to agricultural school (although academic qualifications were considered to be of little importance during recruitment), was a mujehad resistance fighter serving under the commander of the area, and belonged to the political party generally supported in the area. The fact that the survey was carried out on a provincial basis rather than a commander area basis, meant that there was not always a perfect match. However, with a team of two covering, on average, one province, it was possible to provide a mix of qualifications in the provincial team which allowed them to cover a representative cross section of the farmers in that province.

PRETESTING AND TRAINING

3.10. Training was carried out in the classroom and the in the field where they could be observed. The emphasis was on field training. Seventy five men were trained of which 60 were eventually selected for the survey. Pretesting of the questionnaires and training in the field was carried out in two locations in Pakistan before the survey started, and training and supervision was also a continuous process throughout the period of the survey. In Pakistan, the first training exercise was with Pushtu speaking farmers near Peshawar, whose farming records had been lent to the survey by the Agricultural Development Bank of Pakistan. This enabled the gathered information to be compared to the recorded facts, and the level of accuracy of the Enumerators thus determined. The second training exercise was carried out in the refugee camps under supervision. This, interspersed with sessions of analysis in the classroom, allowed the development of interviewing skills and an increase in accuracy and speed of recording information. This procedure simplifies the actual situation in which Enumerators, who were constantly being assessed by their Supervisors, were sometimes dismissed (a total of 11) because their work was of insufficient quality, thus making recruitment and training a continuous exercise. In addition, a further 14 were dismissed following the careful checking procedure which preceded the sending to Afghanistan of each Enumerator. This procedure was necessary to find if the individual would be acceptable to the commanders, the political parties, and the farmers. Training and testing were thus a more or less continuous exercise during the period of the survey. The second training exercise was in the refugee camps in Pakistan. Although this yielded much useful information which was used in the database, many of the Enumerators had to be replaced even at this late stage.

LOGISTICS

3.11. For the purpose of the survey Afghanistan was divided into six zones on the basis of agro-ecological considerations, as shown in the map at the beginning of the report and summarised below:

North-east	comprising	Baghlan, Takhar, Kunduz, and Badakhshan.
North	comprising	Faryab, Balkh, Samangan, Jowzjan.

East-central comprising Kabul, Bamyān, Parwan, Logar, Wardak, Kapisa, Ghazni and Zabul.

South-west comprising Helmand, Kandahar, Nimroz, Paktika and Uruzgan.

North-west comprising Herat, Ghor, Badghis and Farah.

3.12. These zones are administered from two offices: an office in Peshawar is in charge of the first four zones, and an office in Quetta is in charge of the last two zones. These two survey offices report to a third, central administrative office in Peshawar. A Supervisor and an average of 10 Enumerators are in charge of each zone, with two Enumerators assigned to each province. The six Supervisors report directly to the Survey Director on technical matters, and to the Survey Administrator on administrative matters.

3.13. From the beginning of May, 1987, Enumerators were despatched to Afghanistan under the supervision of their Supervisors who travelled with them. For Europeans, an idea of the difficulty of the exercise can be gained by comparing it to surveying the whole of France between the southern border and a line of latitude running through Paris, from a base in north Italy, travelling only by foot or by horse, and in wartime. Each man was equipped with a set of questionnaires, a calculator, money for the hire of horses and living expenses, and other equipment for personal maintenance. An earlier plan for each man to carry a 1:50,000 map and a compass was dropped as being too incriminating; however, by means of a diary in which the itinerary and detailed impressions were written up, verified by photographs, their routes were recorded and verified on the maps on their return. A total of 68 Enumerators and Supervisors travelled into Afghanistan and covered every province.

3.14. By late autumn, when weather conditions made travel, particularly from the northern areas, difficult or impossible, teams had returned from every province with the exception of the following:

Badakshan, 4 men. They cannot now return until early summer, 1988. However, their Supervisor was able to bring some of the work they had completed.

Badghis, 2 men They also cannot return till the early summer of 1988 and no information is available for this report. Information was collected from the camps in Pakistan, however. There is no news of them at this stage.

Ghor, 1 man His partner returned with the completed questionnaires.

Wardak, 1 man He fell sick and trained his brother to continue the work. His partner returned with the completed questionnaires.

3.15. There are some other incidents which illustrate the difficulties presented by the survey. One Enumerator was ambushed by Government forces in Wardak and lost all his equipment but survived. He borrowed one form from his partner and copied it out by hand for each interview. Through this laborious work he salvaged the survey in that province. Another was arrested in Ghazni and later released and continued his work. One of the Enumerators in Balkh was wounded in fighting with Soviet and Government forces but was able to carry on his work. Two Enumerators on their way to Kunduz were ambushed and were separated. One continued to carry on the survey while the other had to return to Peshawar to re-equip, after which he returned to Kunduz and completed his work. Another Enumerator in Kunduz lost all his completed questionnaires, except for 20, in an ambush. To obtain further forms he tried to find the Enumerator who had had to return to Peshawar to re-equip, but failed. There are worse stories than these, about which no details can yet be given in the interests of the safety of the individuals and their families.

SCREENING OF QUESTIONNAIRES AND DATA PROCESSING

3.16. On their return to Peshawar, Enumerators were debriefed and their questionnaires checked by their Supervisors and by the Survey Director. A tally of inconsistencies was made for each Enumerator and if this was high enough to put his competence in doubt, then the whole of his work was rejected. As a result of this checking procedure, about half of the questionnaires were rejected and were not entered into the database.

3.17. Data processing was carried out using a computerised data base and three desktop computers were used for the inputting of the data. A total of 30 megabytes of information was entered by six operators over a period of 12 months.

THE ISSUE OF BIAS

3.18. This survey covers only those farmers who were farming in the mujahedin controlled areas in 1987, and refugee farmers who left the same areas in 1987. As a survey of total Afghan agriculture it is therefore biased, but as a survey of agriculture in the 80% of the country controlled by the mujahedin it is impartial. If the survey had attempted to gather information in the Government controlled areas, the simple fact is that the Enumerators would have been shot. The same would have happened if the Afghan Government had tried to survey the mujahedin controlled areas.

3.19. It was not possible to control the survey sample, either in the selection of villages or in the selection of individual farmers within those villages. However, the survey went as far as it could to avoid bias in this respect. First, in the community survey, a comparison was made with three neighbouring villages (which were not visited) regarding the number of unoccupied houses. This is a good indicator of the pressures of war and will show, when analysed in detail, whether or not the surveyed villages are similar to some of

3.20. Second, the Enumerators were trained and tested in the selection of a representative cross-section of the village farming community during the initial community survey. Those farmers selected were then interviewed individually. Nevertheless, in any farmer survey it is always difficult to obtain a true cross section and still observe the common courtesies expected of an enquirer in a rural community. The bias is almost always towards the larger farmers, partly because they are generally the most forward in a group survey, and partly because they have more food to share. This is an important point since food shortages were often serious and some the interviews took more than two hours, and the rules of hospitality are the same for large and for small farmers.

3.21. In any case, the main purpose of the survey was an attempt to show the relationship between values for each of the five years, rather than to establish absolute values. In this respect, then, absolute values should be treated with caution for planning purposes. This is to be expected since the question to the farmer was simply, 'What was your yield per jerib from the total area under the crop?' No complicated cross questions were asked to check the values (as would have been necessary if absolute yields had been the main objective). It is a universal characteristic of farmer interviews that yields do tend to be somewhat inflated. Since there was no way of checking his yields in the four years other than 1987, it was necessary to ask the same simple question on yields for all years so that a comparison between them was valid.

4. AGRICULTURAL BACKGROUND

- 4.1. A brief description of Afghanistan's agriculture before the present war provides a setting for the survey results described in the rest of the report.
- 4.2. The Afghan people, land and economy were, up to 1978, mainly agricultural, and the small amount of industrial development that there was, was largely linked to the processing of agricultural commodities or manufacture of farm inputs. In the conventional sense, Afghanistan is one of the least developed countries in the world, and one aspect of this is absence of verifiable statistics. Yet it seems that before the war, according to the statistics (1) which are available, about 85% of the population lived in the country, and much of the other 15% still owned land.
- 4.3. Much of the country is too steep for cultivation or is dry desert. Irrigation of the flat land is limited by the amount of water available in meltwater, rivers, wells or spring-fed karezes. Thus before the war, the statistics show, only 7.6 million hectares, or 12% of the country was cultivable. Of this 1.4 million ha was rainfed and 5.2 million ha was irrigated. Of this area developed for irrigation, only about half was annually cultivated because of unreliable water supply, the other half lying fallow, and water sufficient for double cropping was available for about (a further) 1.4 million ha. Nevertheless, irrigated land provided the country with 77% of all wheat, and 85% of all food and industrial crops, according to pre-1978 statistics. They also showed that a total of 4 million ha were cultivated annually by about 1.2 million farm families, i.e. average farm size was 16.7 jeribs or 3.3ha (although this figure does not agree with the average areas given by the survey).

AREA AND PRODUCTION OF CROPS IN 1978

CROP	AREA, '000HA	PRODUCTION, '000T
Wheat	2,345	2,652
Maize	480	760
Barley	310	300
Rice	210	400
Other cereals	43	35
Cotton	128	136
Sugarbeet	5	97
Sugarcane	4	64
Oilseeds	50	36
Vegetables	114	860
Fruits	210	1,122
Other crops	77	413
Total	3,976	

Source: (1) Afghan Agriculture in Figures, published by Central Statistics Office, Ministry of Planning, December, 1978

- 4.4. Wheat, maize, barley and rice were, and are, the most important staple crops. Industrial or cash crops were mainly cotton,

production of these crops were estimated by Afghanistan's Ministry of Planning as follows:

- 4.5. The livestock industry was also important. The national flock of ordinary sheep, Karakul sheep, and goats was an estimated 25 million in 1978, with pastoralists and nomads moving between the winter grazing in the plains and the high mountain pastures in the Hindu Kush. Cattle, estimated at 3.6 million, were mainly for draught, milk and meat. Of these, draught oxen were probably in the region of 1.2 million pairs (on the basis of one per farm family and the fact that very few tractors were imported up to 1978). Camels, horses and donkeys, in all about 2 million, were the main means of transport in the difficult terrain. Livestock were also a vital buffer against poor harvests when they were sold to buy grain.
- 4.6. The pace of development in Afghanistan's agriculture up to 1978 had been impressive, given the physical difficulties of the country, and is evidenced by the decline and elimination of imports of its most important crop, wheat. For the decade up to 1973, annual imports averaged over 115,000 tons. By 1974 it was self-sufficient. This was in parallel with exports of other commodities which in 1978 were: cotton, 34,000t worth US\$55 million; fruit, US\$106 million; hides and skins and other agricultural exports, US\$61 million; a total of US\$222 million. This was more than twice as much as non-agricultural exports, estimated at US\$92 million in the same year. Meanwhile the percent share of agricultural imports compared to total imports was falling and been 24% in 1975 and 15% in 1978.

AGRICULTURAL ZONES

NORTH-EAST (Baglan, Takar, Kunduz and Badakshan provinces).

By 1978 the area was well developed in terms of irrigation and other infrastructure. It has wide fertile plains in the north towards the Indus, and in the south and east has mainly mountainous topography (Badakshan has more peaks over 7,000 metres than any other province) and agriculture is in narrow valleys or in high altitude pockets of flat land. Before the war this was the most important agricultural zone in the country, had highly productive irrigated agriculture, 17% of the national total, and double cropping in most areas. Dryland agriculture, 30% of the national total, was also important here. In order of importance, crops were irrigated wheat, dryland wheat, rice, cotton, barley, maize, sugar-beet, and horticulture, particularly fruit production, of which the area produced a fifth of the national total. Sheep are important and give rise to the local carpet weaving industry. Main exports from the region, before the war, were wheat, rice, cotton, wool, and sheep. Industry is largely cotton ginning, sugar-beet processing, and soap manufacture from cotton seed oil.

NORTH (Faryab, Balkh, Samangan, and Jowzjan provinces).

The area is the second most important agricultural area. The topography is mountainous in the centre becoming flatter in the north and east towards the Oxus river. In order of importance, crops are

wheat, barley, cotton, flax and sesame, maize, and some rice. The area is particularly noted for its sheep production; it has 17% of the national flock of ordinary sheep and 86% of the national Karakul flock. Carpet weaving is also important here. The area has 24% of the total irrigated area, and 24% of the total dryland area. Industry is mainly ginning, textiles and natural gas. It has the country's only nitrogen fertiliser factory.

SOUTH-EAST (Paktia, Ningrehar, Laghman and Kunar provinces).

This is the most heavily populated rural area with small farms and intensive irrigated agriculture, mostly double cropping. Here, 13% of the population on 4% of the cultivated land. It is a relatively warm area with generally mild winters and hot summers. Topography is mainly mountainous. Main crops are irrigated wheat, maize, rice, and vegetables, particularly winter vegetables in Ningrehar and Laghman, because of the warm climate. Livestock are mainly goats (13% of the national total) and cattle (12%). The area is almost entirely irrigated with 6% of the national irrigated area, while dryland cropping is not important with 3% of the national dryland area. It is the main forested zone with 52% of national forests.

EAST-CENTRAL (Kabul, Bamyan, Parwan, Logar, Wardak, Ghazni and Kapisa provinces).

Flat land is not abundant and occurs in narrow valleys. Important crops are irrigated wheat, maize, dryland wheat, and fruit trees, of which it has 21% of the national total. It has 14% of the national irrigated area, and 5% of the dryland area. Livestock are mainly sheep, 11% of the national flock. Industry is mainly textiles.

SOUTH-WEST (Helmand, Nimruz, Kandahar, Uruzgan, Zabul and Paktika provinces).

The area is mainly flat and, where there is no irrigation, desert. Important crops are irrigated wheat, maize, and fruit trees (21% of the national total). Helmand, with a modern irrigation infrastructure, was, before the war, the most highly mechanised area in the country. In addition to the well developed modern infrastructure, mainly in Helmand and Kandahar, there is also a traditional irrigation infrastructure based on springs and karezes (of which it has more than a third of the country's total). In all the area has 22% of national irrigated land, and 11% of the dryland area. Industries are fruit canning in Kandahar, and ginning in Helmand. Livestock are mainly sheep, 13% of the national total.

NORTH-WEST (Herat, Ghor, Badghis and Farah provinces).

This is a relatively undeveloped area of mainly dryland farming, particularly Badghis and Ghor. There is nearly 400,000ha of irrigation development, mainly in Herat and Farah. Important crops are dryland wheat, irrigated wheat, cotton, maize, fruit trees, and some rice. Forests, mainly of natural pistachio, are 12% of the national total. Industries were ginning and silk production. Livestock were mainly sheep (22% of the national flock) and Karakul

national flock.

5. SURVEY RESULTS

5.1. THE SCOPE OF THE REPORT

5.1.1. Compared to the amount and detail of the information in the database, this report must be regarded as a brief summary. Its purpose is to highlight some of the more serious problems facing Afghan agriculture at present. The information presented is, however, derived directly from the database. For example, although the stored information is particular to each province, little information is presented on a provincial basis, in the interests of clarity of presentation. Also, for the same reason, the information is often presented as a mix of data collected from within Afghanistan and from the refugee camps in Pakistan, although these can easily be divided, and in certain cases in the report it is useful to do so. Furthermore, a large part of the stored information is crop specific. For example, the method of land preparation (of which there are seven) can be itemised for irrigated wheat, dryland wheat, maize, rice and several other crops, as well as by province. This kind of detail is not presented in this report except when this assists a particular discussion or argument. The database has details on 52 crops, but only the four main staples are dealt with in this report. They are irrigated wheat, dryland wheat, maize and rice. Yield figures have only so far been analysed for dryland wheat and irrigated wheat and then only for ten provinces.

5.1.2. Nor does space permit much detail on a discussion of the correlation between factors. It might be interesting to know, for example, the difference in the use of fertiliser between farmers using oxen and those using tractor cultivation; or the yields of farmers who use any of the four different categories of seed; or the extent to which crop yields or total production correlate with a farmer's perceived notion of his most limiting factor. But such information can be readily retrieved.

5.1.3. The intention is to reserve this detailed information for designing area specific, or crop specific, or input specific reconstruction and development projects, when this is required.

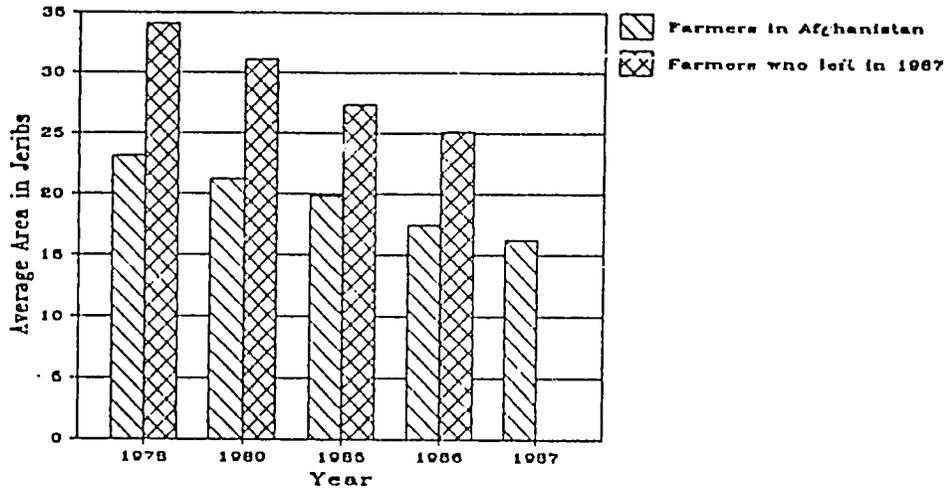
5.2. DIFFERENCES BETWEEN REFUGEES AND FARMERS WHO STAYED IN AFGHANISTAN, AND OTHER DEMOGRAPHIC FACTORS.

5.2.1. The survey shows a marked difference between farm families which became refugees and those which chose to remain in Afghanistan. In several ways they are two entirely different groups. Graph 1 below shows that the average area cultivated on farms owned by refugee farmers, until they left in 1987, was nearly 50% greater than average area cultivated by farmers resident in Afghanistan, a ratio which has not changed over the last ten years. In other words the average refugee farm family which fled the country, was richer, or less poor, than the average farm family which stayed in Afghanistan. The ratios between the proportion of irrigated land and dry land is more or less the same (Graphs 2 and 3).

5.2.2. There are a number of possible interpretations of these

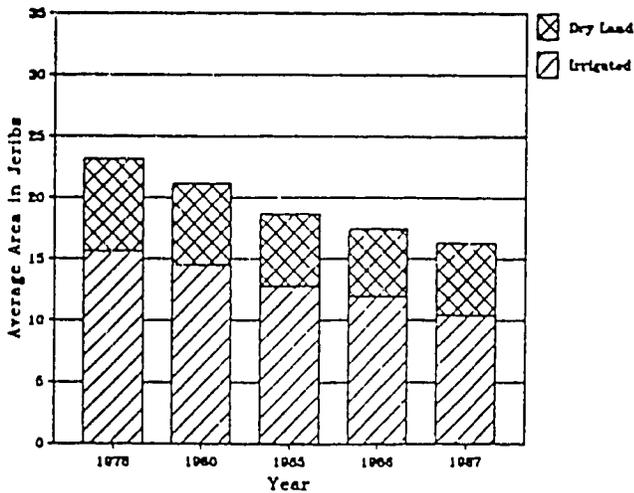
differences. It should be borne in mind that the original cause of the present war was land tenure reforms which the communist President Taraki sought to introduce in 1978. As a result of general dissatisfaction with the reforms, the Government became increasingly unpopular and this resulted in the Soviet occupation to provide support to the regime. It is therefore to be expected that the larger farmers should have been the most ready to leave. First, the larger farmers and the Government were ideologically opposed to each other. In any particular village or province, the Government regarded the larger farmers as their main enemy. 5.3.

GRAPH 1. AVERAGE FARM CROPPED AREA

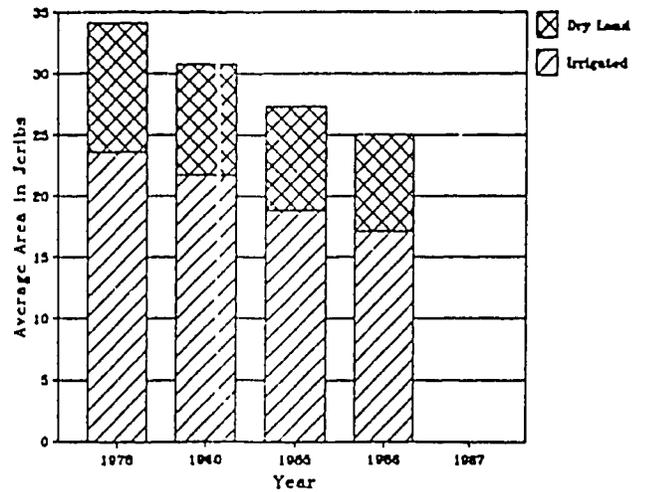


GRAPHS 2 & 3. AVERAGE FARM CROPPED AREA - IRRIGATED AND DRYLAND.

Farmers in Afghanistan



Farmers who left in 1987



5.2.3. Second, the larger farmers could afford the costs of the journey. A large number of those who remained are said to have had no alternative but to stay as they had no means of raising the cash. The survey results support this view. Livestock ownership is a good indicator of relative wealth and poverty in Afghanistan and Table 1 below shows that, at the beginning of the war, refugee farmers owned more livestock than those who remained in Afghanistan. Now, the position has been reversed and refugee farmers own fewer livestock than those who remained. The table shows that this is true for oxen as well as other types of livestock. The statistics show this as a gradual process as the numbers of refugees grew. For the individual farm family, however, the reality was that usually all livestock were sold before it fled.

TABLE 1. LIVESTOCK OWNERSHIP, AVERAGE NUMBER PER FARM FAMILY

	1978	1980	1985	1986	1987	Percent. Decrease
AFGHANISTAN						
Av.no.of horses	2.17	1.26	1.55	1.19	1.19	44.94
Av.no.of donkeys & mules	1.74	1.71	1.61	1.62	1.62	6.46
Av.no.of Karakul sheep	27.64	24.09	17.43	12.27	8.41	69.57
Av.no.of other sheep & goats	42.81	30.92	21.23	16.81	14.33	66.53
Av.no.of cattle	6.25	5.51	4.27	3.66	3.27	47.65
FARMERS WHO LEFT IN 1987						
Av.no.of horses	1.31	1.24	1.21	1.20		8.00(1)
Av.no.of donkeys & mules	2.12	1.95	1.67	1.62		23.77(1)
Av.no.of Karakul sheep	34.53	31.15	22.12	13.71		60.29(1)
Av.no.of other sheep & goats	39.39	35.31	24.52	17.25		56.19(1)
Av.no.of cattle	9.53	8.75	6.52	4.76		50.06(1)

(1) To 1986

5.2.4. Third, in some zones the larger irrigated farms, which the survey shows were occupied more by those who became refugees than by those who remained, tend to be in the valley bottoms where they were closer to roads and more vulnerable to the effects of war. The figures which support this are given in Annex 2, Table 1. The South-east and South-west zones illustrate this clearly.

5.2.5. The survey results show changes over time between the two farming groups. Table 2 in Annex 2 shows that refugee farmers have found it increasingly difficult to continue farming. In many cases they were unable to grow a crop during the year before they left for one reason or another. The actual reasons on a provincial basis have yet to be analysed, but a cursory look at the data shows that it is usually due to the destruction of irrigation systems or the destruction of livestock and draught oxen which have finally forced them to leave.

5.2.6. The survey shows average family size is more or less the same for refugees and farmers in Afghanistan, as Graph 4 below illustrates.

5.2.7. For some provinces, however, there are differences in family sizes between the refugees and those who remained, as well as differences

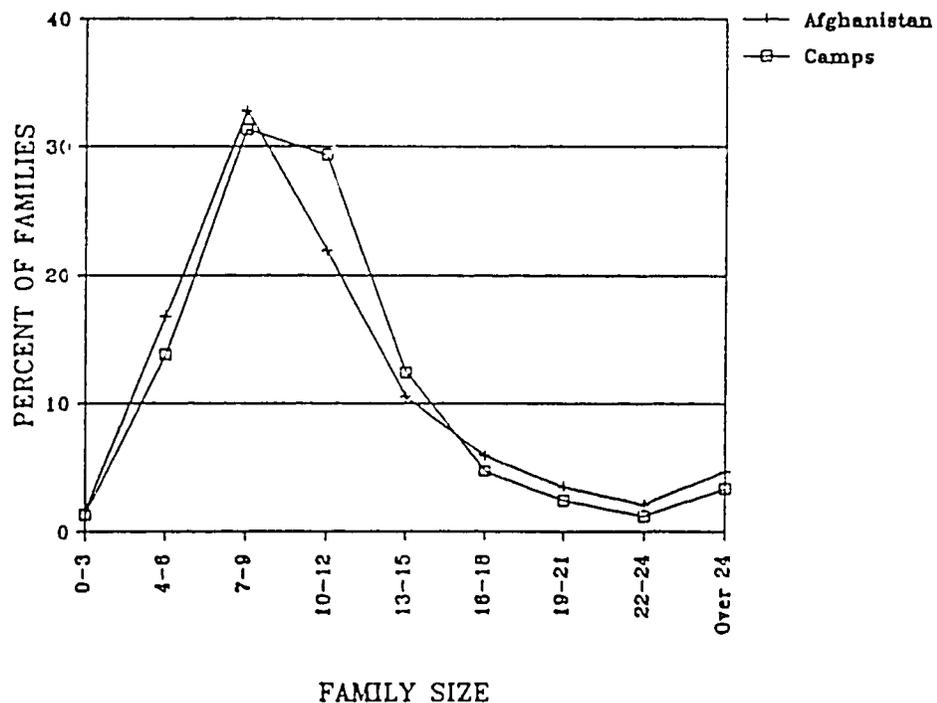
in the age distribution of those families. Space does not permit the presentation of this data on a provincial basis in this report.

5.2.8. The community survey shows, for those villages surveyed, a large fall in the average number of families in each village, a national average of 64% (see Table 2 below). In other words, 36% of families have left. There are, of course, significant differences between the provinces according to the intensity of the war against agriculture; in the South-west village occupation has fallen to 45% of its 1978 level.

TABLE 2. VILLAGE OCCUPATION

	1978	1980	1985	1986	1987	Percent. Decrease
Number of Villages Surveyed	1303					
Average Number of Houses	175.27	161.88	126.09	117.77	111.16	36.6
Average Number of Families	255.28	233.04	182.40	171.25	162.29	36.4

GRAPH 4. AVERAGE FAMILY SIZE



5.2.9. These values were obtained from interviews in the villages still occupied and takes no account of those villages which were completely abandoned. The survey has collected information on the number and degree of abandonment of other villages but this has not yet been analysed.

5.2.10. From time to time in the rest of the report further differences between those who left in 1987 and those who stayed will be referred to.

5.3 FARM POWER

5.3.1. In most wars the shortage of farm power, in the form of manual labour, draught animal power, or more sophisticated mechanisation such as tractors or threshers, is critical. Young men are away from the farm fighting, or dead or injured; livestock may have to be sold to buy food and other necessities, or are killed by the enemy; and fuel and parts for farm machinery are often not available. The Afghan war is no exception.

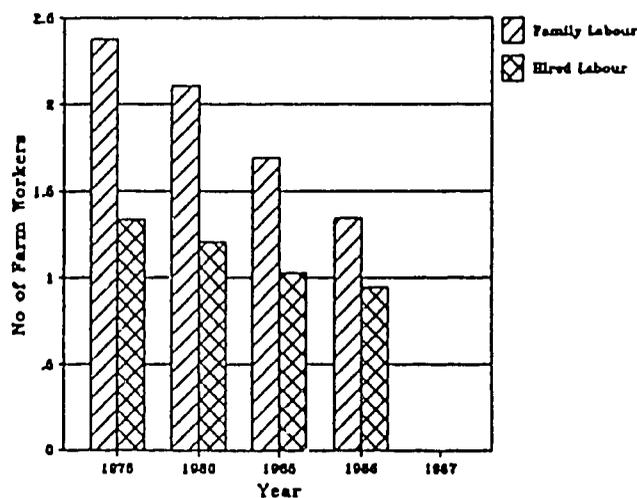
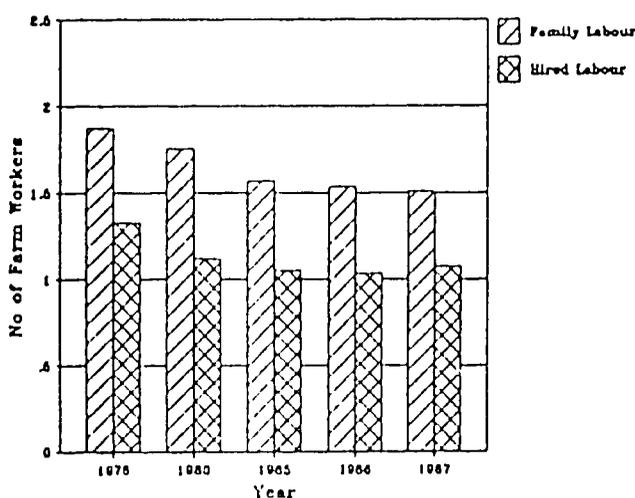
5.3.2. The availability of family labour and the use of hired labour has declined substantially in all provinces. Graphs 5 and 6 illustrate this decline. Statistics on labour availability on a zonal basis are given in Annex 2.

5.3.3. Given the fact that farm family size of those in Afghanistan and those who became refugees is the same (see Graph 4), the difference between family labour in the two graphs above can be explained by the fact that poorer farmers, i.e. those who remained in Afghanistan, had less room on their farms for their sons who had to look for work on other farms as hired labourers or sharecroppers. Or because their family farm was unable to provide enough food they had a greater need to work for cash. Those who eventually became refugees had, as explained in Section 5.2., more land and could therefore afford to keep more family labour. In addition, Graphs 7 and 8 below show that in 1978 over half of the farmers who eventually left in 1987 hired labour, whereas it was less than a third for those who stayed, and had dropped to just over a fifth by 1987. Details of labour availability and use on zonal basis are given in Annex 2.

GRAPHS 5 & 6. LABOUR AVAILABILITY AND LABOUR USE PER FARM (1).

Farmers in Afghanistan

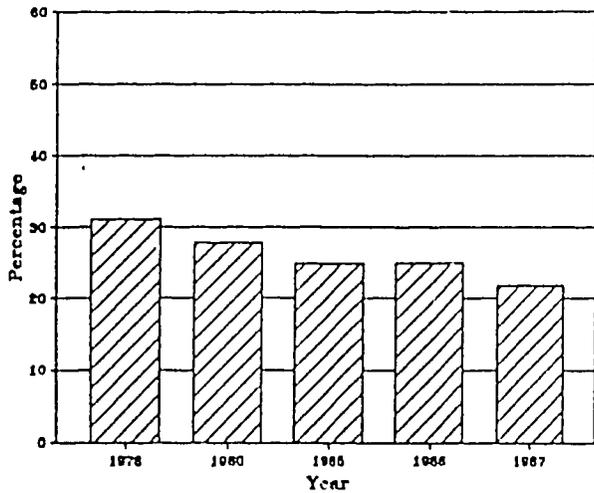
Farmers who left in 1987



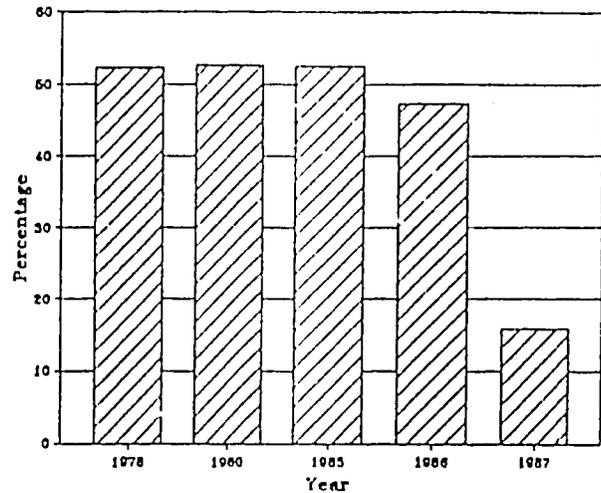
(1) For those farmers who hired labour

GRAPHS 7 & 8. PERCENTAGE OF FARMS USING HIRED LABOUR

Farmers in Afghanistan

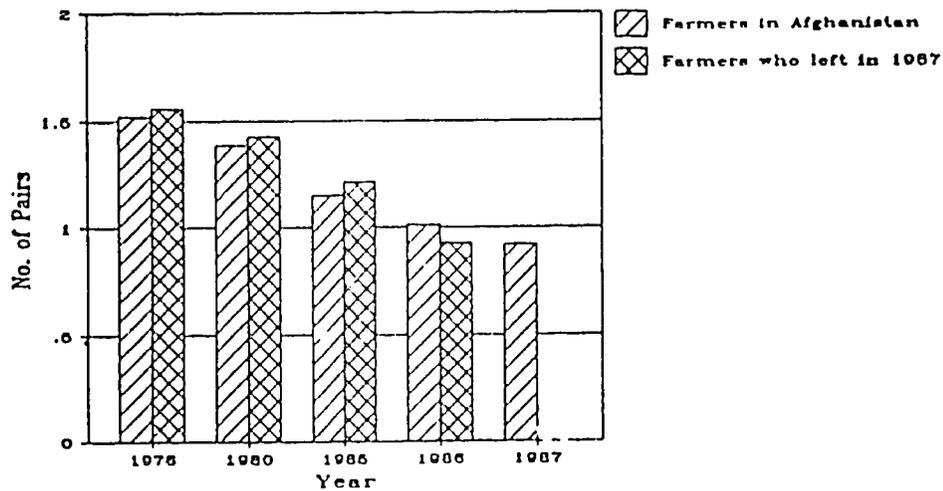


Farmers who left in 1987



5.3.4. The consequences of trying to farm with less labour are that greater reliance has to be put on alternative sources of farm power such as draught animals, or tractors and other motorised machinery. If these are not available either then the area cultivated has to fall, or yields have to fall, or both. In fact, the survey shows that draught animal power availability has also fallen by more than a third, as Graph 9 below illustrates.

GRAPH 9. NUMBER OF PAIRS OF OXEN PER FARM FAMILY



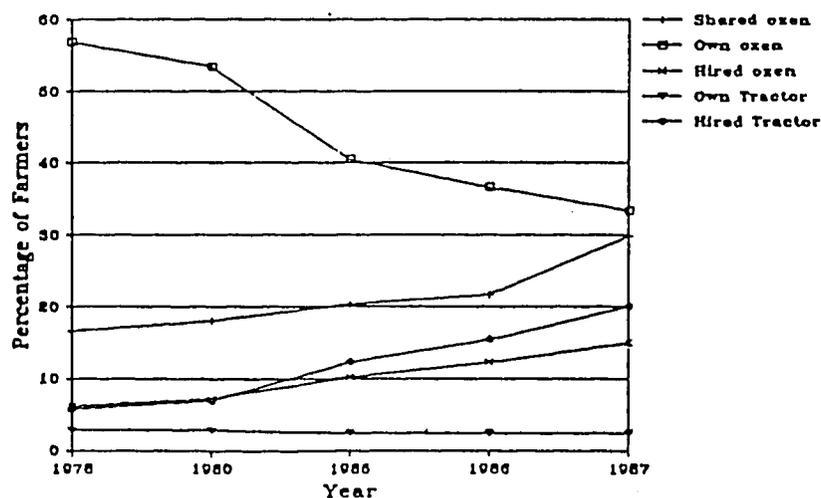
5.3.5. Farmers can, of course, use oxen in a number of ways without actually owning a pair of their own; they can hire them or they can share one with a neighbour to make up a pair. Graph 10 below shows that hiring of oxen has increased in most areas, and that the sharing of oxen has increased substantially in all areas. In some areas the

increase in hiring and sharing of oxen has made up the whole of the shortfall in farm power created by the war. It is clear also that the large majority of farmers, 78%, still use oxen in one form or another in 1987, a small change from the equivalent figure of just under 80% in 1978. (This is in spite of the high prices (currently Afs200-400/seer) for wheat straw, the usual fodder for cattle, (one ox may consume a seer of wheat straw a day) and the high prices for slaughter cattle, together with the risk of having them shot by Government forces (see Section 5.11)). But these figures for the use of oxen are for fewer farmers on less land (as shown later in this report) and the indications are from a combination of factors (the principal of which is the reduction in the average area cultivated) that there is a power shortage which farmers have sought to fill by sharing and hiring oxen, and hiring tractors. It is not possible to say where the increase in the use of tractors has come from. It could be from a greater utilisation of existing tractors, but the indications are that it is more likely to have come from imports of new or used tractors from Pakistan and from new Soviet built tractors purchased in the cities

5.3.6. In Annex 2, the zonal figures for the different uses of farm power are shown.

5.3.7. In Section 5.9., 'Biggest Problems as Perceived by Farmers' which has not yet been completely analysed, the problem of farm power ranks high in some provinces such as Paktia and Paktika, but in others is not perceived as important as certain other problems. There is clearly a wide variation in the severity of the farm power shortage in spite of the rather alarming national picture, and rehabilitation efforts should be tailored accordingly. Farm Power will be the subject of one of the reports to be produced after further analysis of the database.

GRAPH 10. THE USE OF FARM POWER



5.4. OTHER FARM INPUTS

A. SEED

- 5.4.1. Many farmers in Afghanistan use no other physical crop input except seed. Graph 11, The Percent of Farmers Using Fertiliser, shows that in 1978 22% of farmers used no fertiliser and that this had increased to nearly 50% by 1987. Although not analysed for this report, the survey results show that the use of other inputs such as crop protection are minimal.
- 5.4.2. On this basis seed is the most important of all inputs. Even for farmers who do use other inputs, the benefit of using them cannot be realised unless the seed used has the genetic capacity of making use of them. For these farmers also seed is the first and most important input. At the same time, it is an agronomic law that any out-crossing crop, i.e. one that does not self-pollinate, must decline genetically. Out-crossing crops are wheat, maize, rice and barley, among the more important. Without positive selection and the introduction of genetically improved seed on a continuing basis, the whole genetic potential of a provincial or a national crop must decline. Of course, farmers in Afghanistan, as elsewhere, make their own selection of seed for next year's crop, either from their own crop or from their neighbour's, and this goes some way towards slowing the decline. This is important and has probably become more widespread as a result of the war. Yet it is insufficient to halt the decline. In short, in order to, as a minimum, maintain the status quo of genetic potential of (at least) the four major crops of Afghanistan, there is no alternative to centralised plant breeding facilities.
- 5.4.3. Of course, this has not been possible in the mujahedin controlled areas of Afghanistan. The Government controlled areas, however, have had access to improved seed available from the Ministry of Agriculture in Kabul, which reportedly receives 10,000t of wheat seed annually from the USSR. It is probable that some of this seed has found its way into the mujahadin areas. In addition to this, farmers may have also purchased what they believed to be improved seed locally. Whether it was truly superior genetically or just looked good in the field is another matter. When farmers purchased local seed, rather than used their own, it is important, for the survey, to know whether they did so because they perceived it as improved seed, or whether, as was often reported before the survey started, they had eaten all their crop and had later sold livestock to buy seed of any description.
- 5.4.4. The survey therefore asked four main questions on seed: had the farmer used improved seed, or used his own produced seed or bought from a local grower, or had he used Government seed? The results have not yet been fully analysed but may well shed some light on the decline in yields reported.
- 5.4.5. However, indications are that the survey will show that, first, a high proportion of farmers in all provinces used Government seed in 1978 and its value was recognised by a large proportion of farmers. It was only used for wheat, however. It will also show a massive drop in the use of Government seed from 1980 to almost nil, as was to be expected. What is surprising, perhaps, is that a few farmers were

still able to procure it up to 1987. This must have been difficult and shows that farmers still place high value on it. The number of farmers who still imagine they are using improved seed is also surprising, and is presumably based on the fact that they once used it and they have not been aware of the genetic decline, or attribute it to causes other than this. As expected, the number of farmers who used their own seed has risen as dramatically as the use of truly improved seed has fallen. Finally, it is clear that at least some of the farmers are aware that their own seed is declining in potency, as evidenced by the moderate increase in the number of farmers who purchased seed locally.

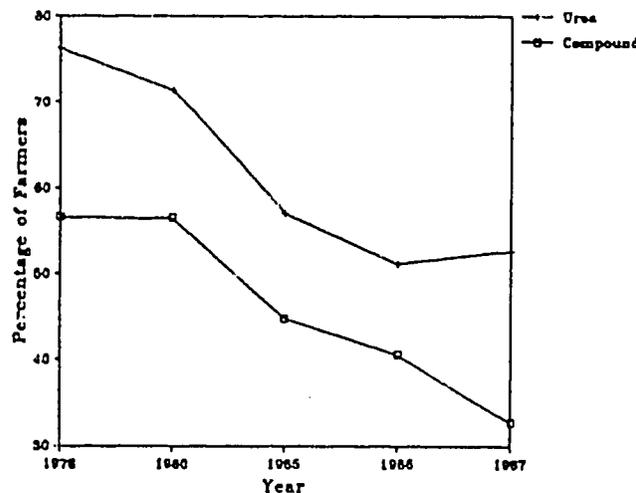
5.4.6. The implications of these results for future development projects is discussed in Section 6.

B. FERTILISER

5.4.7. Two main types of fertiliser are in regular use. Compound fertiliser, colloquially known as grey fertiliser, is used at or before seeding and is mainly DAP (diammonium phosphate). Nitrogen fertiliser or urea, colloquially known as white fertiliser, is used at seeding and on the growing crop in the Spring. Although data are available for all crops, the use of fertiliser has been analysed only for wheat, the most important crop.

5.4.8. The percentage of farmers using compound fertiliser has declined from 57% to 33%, and the percentage of those using urea has declined from 76% to 53%, as illustrated in Graph 12 below.

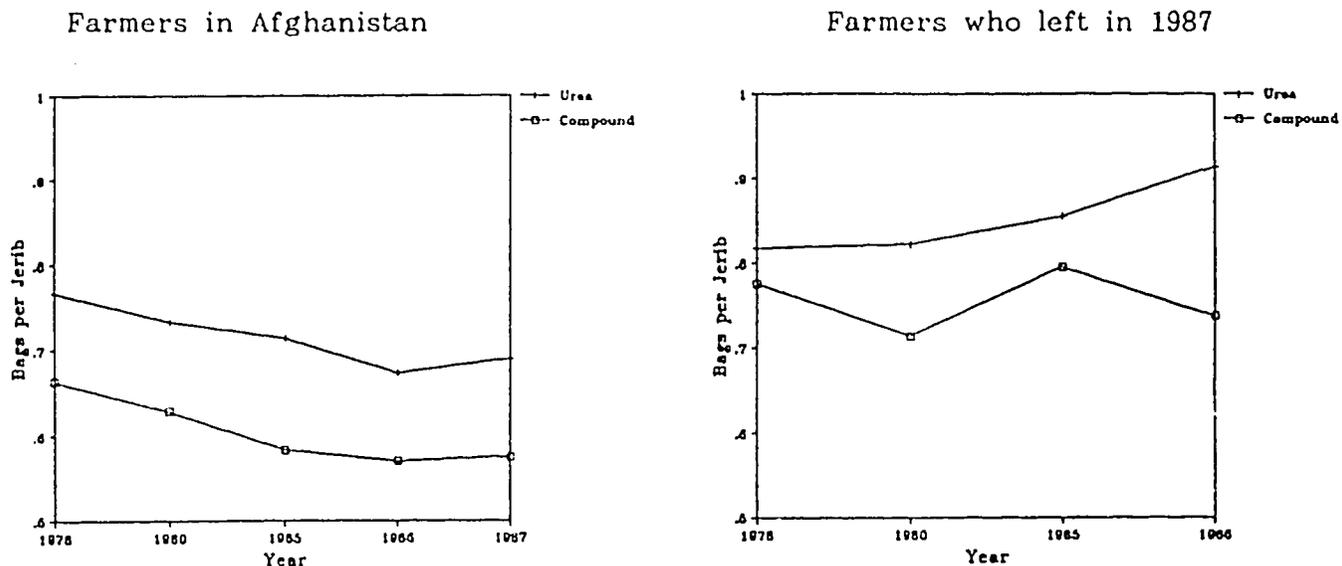
GRAPH 11. PERCENTAGE OF FARMERS USING FERTILISER



5.4.9. However, for those farmers who could get it, the actual level of use of fertiliser has not declined by much on the whole, and for farmers who left in 1987, the level of use of urea has actually increased, presumably in response to the high price of wheat.

Details on a national basis are given in Graph 12 and 13 on the below, and on a zonal basis in Annex 2.

GRAPHS 12 & 13. LEVEL OF FERTILISER USE (for those farmers who used it)



5.4.10. The survey shows that fertiliser has been difficult to obtain in some areas, although this can hardly be described as serious on a national basis. Table 8 in Annex 2 shows that farmers reporting non-availability of urea in 1978 was negligible and had risen to a maximum of 12% of those who grew the crop, while those reporting non-availability of compound fertiliser was 16% of those who grew the crop in the same year. Yet in the section of this report which cursorily and informally analyses 'The Biggest Problems as Perceived by Farmers' the non-availability of fertiliser seems to rank quite highly in some areas. In Paktika for example the non-availability of fertiliser ranks higher than the direct effects of war in 1986 and 1987. It seems that a small shortage is important to farmers

C. CROP PROTECTION, AND RODENT AND BIRD CONTROL

5.4.11. This has not been analysed in detail but it seems clear from a manual inspection of the questionnaires that the use of herbicide, fungicide and insecticide is rare. However, a manual inspection of the provincial summaries of 'The Biggest Problems Perceived by Farmers' shows that farmers are well aware of the consequences of the non-availability of crop protection chemicals. For example, in Bamyan province nearly 58% of farmers interviewed identified the need for crop protection chemicals.

5.4.12. Something of a surprise that emerged from the same set of questions in the survey, but again not properly analysed, was the frequency of the reports of the problem of birds and rats, and the priority that some farmers in certain provinces attached to their control. In Baghlan, for example, birds and rats were the biggest perceived problem in 1978 and 1980, and even in 1987, when the

effects of war were affecting farming operations severely, 40% of farmers still identified them as their third biggest problem. Over the country as a whole, birds and rats are mentioned so much they clearly merit a separate analysis and report, if not a further and more detailed survey.

D. CREDIT

5.4.13. Traditional credit, mainly in kind, is an integral part of the rural social fabric and land tenure system. This the Taraki government had attempted to replace in 1978 and this had been one of the causes of the start of the war. The fierce resistance to that attempt had established firmly that the traditional system was sacrosanct. It was therefore not appropriate to ask questions in the survey about traditional credit and sharecropping. It is unlikely, even if such questions had been asked whether any change would have been revealed, except perhaps for a swing in favour of the sharecropper in his contract with the landowner.

5.4.14. The survey asked a set of questions about formal monetary credit with the purpose of establishing whether such a service would be appropriate for support during the reconstruction phase after hostilities. Again the results have not been properly analysed, but the need for credit was identified by a moderate number of farmers in the question on 'Biggest Problems as Perceived by Farmers'. The level of fertiliser used by farmers in Afghanistan is lower than that by farmers who left in 1987 and this may be due to a lower purchasing power and the need for credit. An analysis will be done as soon as time permits.

5.4.15. The survey does, however, seem to support reports of a breakdown in the credit system. In the Section 5.6. below, Table 3 shows the increase in the number of farmers who did not crop. One of the principal causes of this was lack of traditional credit.

5.5. AREA CROPPED ON INDIVIDUAL FARMS

5.5.1. All parameters considered in this section show a sharp decline. Graphs 1, 2 and 3 show the decline in dry cropped and irrigated areas on a national basis and in Annex 2 they are shown on a zonal basis. For farmers in Afghanistan the average area cropped has fallen from 23 jeribs (4.6ha) in 1978 to 16 jeribs (3.2ha) in 1987, a drop of over 30%.

5.5.2. These figures are all the more serious since they do not take account of farmers who did not crop at all (see Table 3.under). Nor do they take account of the farmers who had already left. So the decline in the total area farmed is approximately the product of all three factors added together; i.e. the decline of the cultivated areas per farm for farmers in Afghanistan, plus a factor for those farmers who remained in Afghanistan but did not crop. The table below shows the percent of farmers in Afghanistan who did not crop. Since, as the table shows, they all farmed prior to 1978, it is assumed that they were later prevented from doing so due to the effects of war. It is therefore valid to multiply these values by the average areas

they would have farmed if they had been able to.

TABLE 3. PERCENT OF FARMERS IN AFGHANISTAN WHO DID NOT CROP

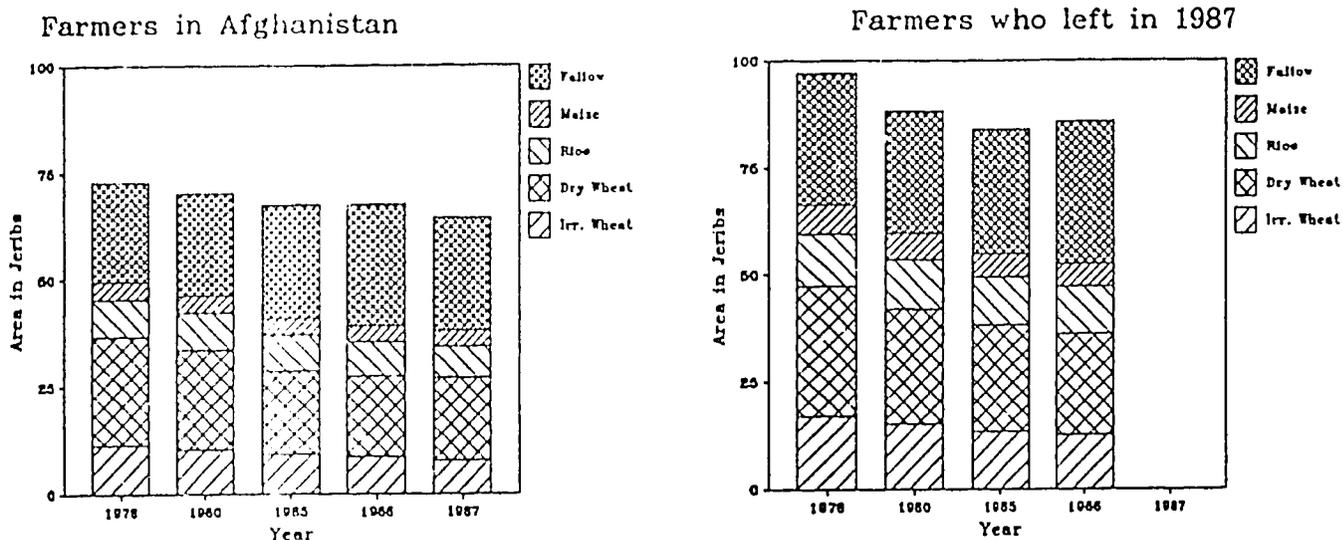
=====				
Farmers in Afghanistan				
	1978	1980	1985	1986

NORTH-EAST	0.00	0.00	0.16	1.79
NORTH	0.00	14.52	0.00	0.62
SOUTH-EAST	1.00	7.51	5.88	1.36
EAST-CENTRAL	0.14	0.07	0.63	0.56
SOUTH-WEST	0.09	2.89	1.94	2.41
NORTH-WEST	0.00	0.57	12.37	13.09
NATIONAL	0.30	3.40	2.90	2.40
Farmers who left in 1987				
	1978	1980	1985	1986

NORTH-EAST	0.10	3.50	1.27	15.90
NORTH	0.36	9.71	0.53	18.45
SOUTH-EAST	0.24	1.08	2.82	28.83
EAST-CENTRAL	0.00	1.51	1.37	26.15
SOUTH-WEST	0.09	1.01	1.29	10.31
NORTH-WEST	0.00	0.00	3.09	16.78
NATIONAL	0.10	2.70	1.60	18.6
=====				

- 5.5.3. The final factor, the area of abandoned farms, can be calculated from the percent of farms abandoned multiplied by the average area cultivated on the average farm, derived from Table 2 in Section 5.3.
- 5.5.4. The calculation above, although rather theoretical, leads to the conclusion that the total area abandoned is rather more than the 30% on individual farms as discussed in para 5.5.1 above.
- 5.5.5. The decline in cultivated area can also be presented on a crop specific basis, where the area under fallow is also shown, and is illustrated in Graphs 14 and 15 over. The zonal figures to support this graph are given in Annex 2.
- 5.5.6. The graphs show that the mix of crops has not changed much since 1978 but that there has been a steady decline in the area of all major crops and a proportional increase in the area of fallow.

GRAPHS 14 & 15. AVERAGE AREAS OF MAIN CROPS PER FARM (for those farmers who grew the crop)



5.6. YIELDS

5.6.1. For this report the yields of dryland (rainfed) wheat and irrigated wheat have been analysed. Ten provinces (see Table 10 Annex 2) for which a large number of questionnaires were received, have been analysed. The information of yields is presented in a simple form, and no attempt is made in this report to correlate the values with the several factors which would have affected them. This will be the subject of a further report to be published at a later date but one may suppose that there will be correlations between yield and seed quality, fertiliser, farm power and labour, and the use of crop protection, as well as the other factors identified by the farmers as their greatest farming problems. These, of course, include the direct effects of war. A later report will include information on over 50 other crops the survey revealed as being grown in Afghanistan.

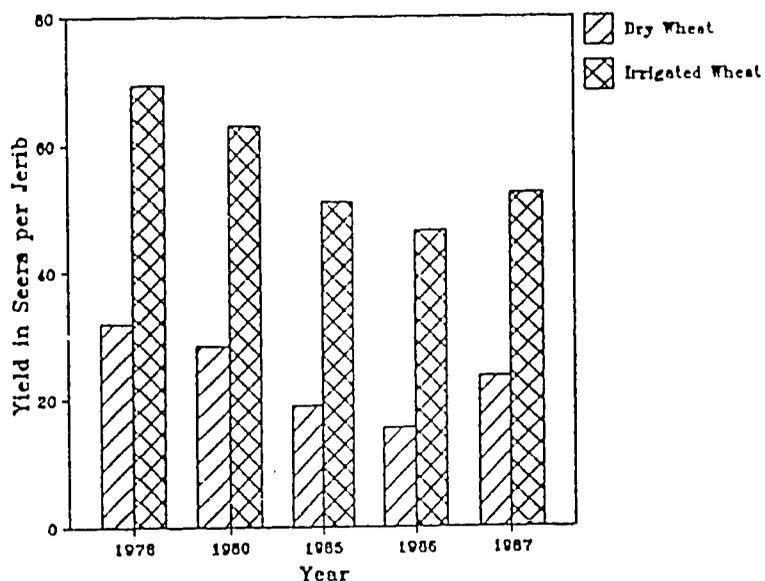
5.6.2. Graph 16 (over) presents the average decline in yields of wheat for the provinces analysed and in Annex 2 the same information is given on an individual province basis.

5.6.3. The graph shows that overall yields between 1978 and 1986 showed a steady decline for dryland wheat of about 50% and about 33% for irrigated wheat. It can also be seen that there was an increase in 1987. This upturn may have been due to the good rainfall in that year, in contrast to several years of drought before that, as well as less severe attacks on agriculture by Afghan and Soviet forces, as shown in Section 5.10.

5.6.4. Although there is great trend consistency in the individual provincial data, caution must be used in using the absolute values given by the individual farmers. Yields appear to the survey staff to be exaggerated, particularly for the early years, although it must be remembered that the farmer was asked for yields, not what is available to eat. In similar agricultural conditions in other countries, for example, post harvest losses have been surveyed to be up to 20% of the gross yield and the farmers have consistently cited

bird and rodent damage to be a major problem.

GRAPH 16. AVERAGE YIELDS OF IRRIGATED WHEAT AND DRYLAND WHEAT



5.7. LIVESTOCK

5.7.1. Some information on livestock ownership has already been given in Section 5.2., to illustrate the differences between those who stayed in Afghanistan and those who became refugees, and the enormous decline in the numbers of all livestock is already apparent. Graphs 17 and 18 below provide further details of this decline, and zonal figures are given in Annex 2.

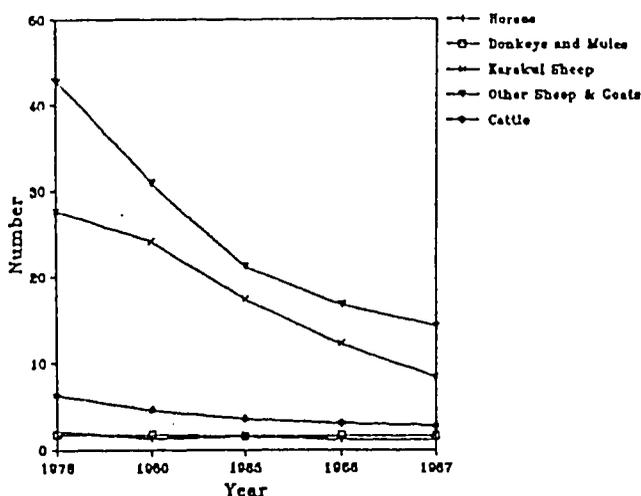
5.7.2. The graphs show that between 1978 and 1987 there has been a decline of 70% and 67% in the numbers of Karakul sheep, and ordinary sheep and goats owned by the average farm family which stayed in Afghanistan, and that for those who left in 1987, the decline was 60% and 56% up to 1986, after which, of course, they lost the whole of their flocks. The reasons for this may not only be the effects of war, but could have also been due, directly and indirectly, to the low rainfall years from 1983 to 1986. The direct result of this may have been that grazing was reduced so that farmers were forced to reduce their flocks to a manageable size. The indirect result may have been that farmers had to sell more livestock to make up the wheat shortage. It is also possible that the severity of the decline is not as bad as these figures show since farmers whose main enterprise is sheep and goats may have taken their flocks to the high hills to escape the effects of war, and were thus not covered by the survey. However, the influence of this, if true, on the overall figures is not thought to be large.

5.7.3. The decline in the number of cattle has been almost as bad as for sheep and goats, with figures of 56% for the farmers in Afghanistan and 50% up to 1986 for those who left in 1987. The decline in the numbers of draught oxen, logically one of the last means of production a farmer is normally willing to give up (though as is discussed below it seems there was one class of livestock that was

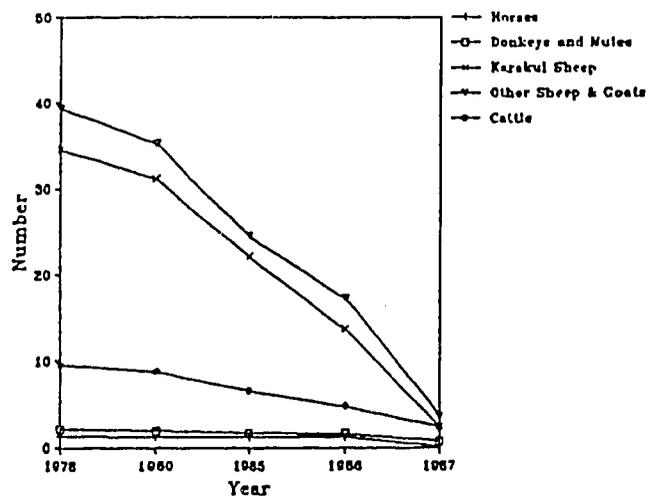
even more important to keep) has already been discussed in Section 5.3. The decline is nearly 40% for farmers in Afghanistan and by over 40% up to 1986 for those who left in 1987.

GRAPHS 17 & 18. AVERAGE NUMBERS OF LIVESTOCK PER FAMILY

Farmers in Afghanistan



Farmers who left in 1987



5.7.4. However, the number of horses, and donkeys and mules, (these last two were put together in the questionnaire) has declined by a lower overall amount - 45% for horses belonging to farmers in Afghanistan, and 8% up to 1986 for those who left, while the equivalent figures for donkeys and mules are 6% and 24%.

5.7.5. Overall, the causes for the decline in livestock were mainly two. The most important was the need to sell livestock in order to buy food, which could not be produced in sufficient quantity; or, finally, to raise money for the journey to a refugee camp outside the country, as well as for living expenses after their arrival; or, for the richer farmers, for investment in some other form of livelihood having become refugees. The apparent reason for the differences in the rate and absolute values of decline among the three main classes of livestock - sheep and goats, cattle, and equines - was as follows. Sheep and goats were like a bank savings account in that they produced an income, even a living, but were not essential to the continuation of most farming systems - in short they were expendable. Cattle, or at least draught oxen, were part of the farming system and provided an essential input without which farming operations would cease. show, when analysed, that the draught oxen were the last to go, even if they themselves did show a substantial decline in all years. Finally, the horses, donkeys and mules (the importance of which in the rugged terrain of Afghanistan cannot be over-emphasised) may have been kept as the final means of flight. Additionally, they would have provided a supplementary cash income for farmers who hired them for transport to mujahedin and refugees (and agricultural

5.7.6. The other reason was the destruction of livestock as a direct effect of war. This had two aspects: the shooting of livestock by Government or Soviet troops or from helicopter gunships, and deaths through exploding mines laid by the same troops or dropped from the air. The number of farmers reporting these incidents is given in Section 5.10., The Direct Effects of War. A further reason may be the effect of animal diseases which are frequently reported by farmers as one of their 'Biggest Farming Problems'. It seems from a manual inspection of the provincial summaries of the answers to this question that the incidence of animal disease has increased since 1978, and this is to be expected with the increased and uncontrolled movement of animals and the almost complete lack of veterinary services. The animal disease situation certainly merits further investigation, both through an analysis of the existing database, and through further focus surveys.

5.7.7. The significance of the decline in cattle numbers has two aspects. First, the buffer of animal ownership has been reduced to almost zero for a large number of farmers and the risk of destitution in the event of crop failure is therefore large. Second, the number of draught oxen, and therefore the ability to cultivate land, is also reduced to a low level in most zones. Graph 9 in Section 5.3. illustrates this.

5.8. PRICES

5.8.1. The survey did not place emphasis on the collection of prices for a number of reasons. First, the anticipated delay between the collection of data and the design of assistance packages and projects meant that such information would be of little practical help. Second, further information required to make the information useful was lacking. This further information would have to include inflation, money supply, elasticities of demand and supply, and other factors. Prices will, however, be useful at a later stage during correlation analysis.

5.8.2. No analysed data are presented here, but the provincial summaries seem to show a large increase in the price of meat and oxen, a lower increase in the prices of staple foods (although that increase was still substantial - wheat went from Afs50/seer in 1978 to Afs250-350/seer in 1987), and almost no increase in the price of fertiliser in 1987 over 1978. There are, however, large price differences for fertiliser and other commodities between the zones.

5.8.3. The low price of fertiliser is partly due to Government manipulation. In 1979 the Taraki Government reduced the price from Afs500 to Afs400 for urea, and from Afs570 to Afs470 for grey fertiliser. In some instances, the initial data for grey fertiliser may be misleading because it was sold in 50kg bags up to 1983, and in 35kg, 45kg and 50kg bags thereafter. Further analysis is necessary. The large variation in prices between provinces is due to the distance from the factory and the distance from a safe road.

5.9. BIGGEST FARMING PROBLEMS AS PERCEIVED BY FARMERS

5.9.1. The survey set out to survey Afghanistan's agriculture and not the Afghan war. Naive this may sound, but it was important to rank the direct and indirect effects of the war against many other factors, such as rainfall, floods, and crop and animal disease, which habitually afflict farming. In the questionnaire it can be seen that communities and individual farmers were asked to prioritise 15 problems for each of the five years. It is difficult to present the results in a condensed form, and the data collected are designed more to produce answers to detailed questions on specific subjects. Thus this information will be useful when designing assistance projects to provide specific inputs in specific areas. Nevertheless, some overall conclusions, on a zonal basis, can be drawn for the purpose of this report.

NORTH-EAST (Baghlan, Takar, Kunduz, Badakshan)

5.9.2. Baghlan was little affected by the war in the early years with rainfall, birds or rats, and seed availability given as the biggest problems. By 1985 95% of farmers identified direct war effects as their biggest problem with only 5% mentioning rainfall and crop disease as most important. Their second biggest problem was the availability of labour, seed and fertiliser, with the problem of birds or rats coming third, a pattern which has remained fairly consistent up to 1987. (The importance of birds and rats is something of a surprise and may be explained as follows. Children who traditionally scare birds from crops are less available. Villages and grain stores have been bombed creating beneficial environments for rats with spilt grain and dead animals available to eat).

5.9.3. The villages surveyed in Takar have consistently reported direct effects of war as the biggest farming problem since 1980. Crop diseases are also a consistent problem. Labour and seed availability also have high scores.

5.9.4. Like Baghlan, the villages surveyed in Kunduz report birds or rats as their biggest problem up to and including 1980. From 1985 the direct effects of war are easily the highest scorer, followed by labour and irrigation water availability. Even in 1987, nearly 40% of villages gave birds or rats as the third biggest problem after labour availability and war effects. The need for seasonal credit also had a high score from 1980 onwards.

5.9.5. Badakshan is not yet analysed.

NORTH (Faryab, Balkh, Samangan, Jowzjan)

5.9.6. In Faryab fertiliser and irrigation water availability were the biggest problems in 1978. In 1980, birds or rats had the highest score. In 1985 and '86 lack of rainfall was perceived as more or less as severe as war effects. In 1987, the score for war effects was double the score of the previous two years, with fertiliser availability, rainfall, labour availability, and crop disease (which had gradually increased its score since 1985) following in that

5.9.7. In Balkh war effects have a very high score from 1980 onwards with an average of over 80% of villages reporting this as the biggest problem each year. Poor rainfall was also a high scorer every year except 1987. Labour availability was consistently the second constraint from 1985 to '87. Irrigation water availability and power for land preparation also had high scores in 1987. Lesser problems in 1987 were crop disease, birds or rats, and fertiliser availability in that order.

5.9.8. Samangan - no data available.

5.9.9. In Jowzjan, war effects and irrigation water availability are seen as more or less equal problems with war effects scoring a bit higher from 1985. Rainfall, obviously linked to irrigation water, is consistently given as the most important problem by some farmers, though by fewer than those who mentioned war effects and irrigation water as the most important. In 1987 most villages reported power for land preparation as the second biggest problem (after war effects), followed by labour availability. Crop disease, never a high scorer in relation to these other factors, is nevertheless consistently reported as a third or fourth problem, as is, to a lesser extent, birds or rats.

SOUTH-EAST (Paktia, Ningrehar, Laghman, Kunar)

5.9.10. Paktia villages reported direct war effects as the biggest problem in 1980 (70% of reports) and '85 (31% of reports) only. Fertiliser availability has consistently high scores, and is the highest in 1986 and second highest in 1987. Power for land preparation is a consistently high scorer from 1985. Irrigation water availability is given as the biggest problem by the most villages in 1987, yet floods score highly in 1980, '85 and '86 and are even given as the biggest problem by a small minority of villages in 1987. Power for land preparation is also a high scorer. Crop disease, never a spectacular scorer, is consistently in the background and getting worse every year, as are also, to a lesser extent, birds or rats.

5.9.11. Ningrehar - sample too small.

5.9.12. Laghman was also a small sample, only five villages. Direct war effects were perceived as the greatest problems in 1980 and 1985 only. In 1985 birds or rats were given as the biggest problem by one village. In 1985 two villages gave power for land preparation as their biggest problem, one gave animal disease, one gave irrigation water availability, and one seed availability. As the second problem, also in 1987, direct war effects was highest scorer, with crop disease, flooding, and power for land preparation gaining equal scores.

5.9.13. In Kunar direct war effects are given as the biggest problem every year since 1980 by about two thirds of the villages surveyed. Fertiliser and irrigation water availability are consistently high

scorers. Crop disease, together with the perceived need for crop protection chemicals, are also high scorers. Power for land preparation, birds or rats, and seed availability are also seen as problems.

EAST-CENTRAL (Kabul, Bamyan, Parwan, Logar, Wardak, Kapisa, Ghazni)

5.9.14. Kabul - sample too small.

5.9.15. In Bamyan direct war effects were given as the biggest problem in one year only, 1985. Animal diseases have been severe and are identified as the biggest problem by the second largest group of villages in 1986, '85, '80 and '78. Crop disease is a consistent, if unspectacular problem identified by 5 to 10% of villages in all years, except for 1987 when 82% of villages identify it as their biggest problem. The need for crop protection chemicals is identified by a steadily increasing number of villages in each year, with 58% mentioning the need for them in 1987.

5.9.16. In Parwan nearly 100% of villages identified direct war effects as their biggest problem in 1985 and 1986. In 1987 crop disease was the highest scorer, followed by irrigation water availability and power for land preparation. Nearly 50% of villages gave the need for crop protection chemicals as one of their problems in various orders of importance. Moderate scorers were fertiliser availability, seed availability, and animal disease.

5.9.17. In Logar direct war effects were relatively unimportant in 1980, perceived as of lower importance than crop disease, but was seen as the biggest problem by about 80% of villages for 1985, '86 and '87. In 1987 power for land preparation was the highest scorer after direct war effects, and labour availability and fertiliser availability were also perceived as major constraints.

5.9.18. In Wardak direct war effects were considered the biggest problem in 1980 and 1985 only and had relatively low scores in those years. In 1980, for example, the problem of birds and rats had roughly the same status as war effects, and was also the second highest scorer in 1985 and 1986. In 1987 the biggest constraint perceived by half the villages was irrigation water availability, 15% put credit as the biggest problem, 13% direct war effects, 7% fertiliser availability, 7% other, 4% birds or rats, and 2% crop protection chemicals, and 2% power for land preparation. At the same time, 36% of villages identified crop disease as a problem of various priorities, and 72% of villages did the same for crop protection chemicals. 93% of villages mentioned power for land preparation as a constraint, although only 2% put it at the top of their list.

5.9.19. In Kapisa the direct effects of war are identified as the most serious problem in only one year, 1985, with the availability of seed, fertiliser and irrigation water, and the gradual increase on crop disease, identified as the main problems. In 1987, the availability of fertiliser, closely followed by that of seed, were the biggest problems, with nearly 90% of villages mentioning crop disease, and over 90% mentioning seed. Over half the farmers

priority attached to this problem was less than crop disease or irrigation water availability.

5.9.20. In Ghazni direct war effects have been the most serious problem in all years except 1987 when this factor was overtaken by irrigation water availability, which is identified as major problem in all years. Flooding has also been a problem in most years. In 1987, power for land preparation was mentioned by nearly 80% of villages, though did not rank as high as the problem of low rainfall even though it was mentioned by fewer farmers. The problem of crop disease was mentioned by 75% of villages.

SOUTH-WEST (Paktika, Helmand, Kandahar, Nimroz, Uruzgan)

5.9.21. Direct war effects in Paktika have taken a lower priority than other factors in the last two years surveyed, 1986 and '87. In both these years the availability of fertiliser and irrigation water rank higher, with power for land preparation also identified as an important constraint. The need for crop protection chemicals and the need for extension are both mentioned by more than half the villages for most years.

5.9.22. In all years the direct effects of war are given high priority. Other factors are minor by comparison. In 1986 and '87 the next biggest problem after war effects were power for land preparation, irrigation water availability and fertiliser availability. Crop disease gets a consistent if moderate score.

5.9.23. No information available for this question in Kandahar, Nimroz or Uruzgan.

NORTH-WEST (Herat, Ghor, Badghis, Farah)

5.9.24. Herat has seen some of the bloodiest fighting, and the direct effects of war have high score for all years. The availability of irrigation water is a consistent problem. In 1987 73% of villages gave direct effects of war as the biggest problem, 27% gave fertiliser availability, and 3% irrigation water. Crop disease, labour availability, and seed availability, obviously not such dramatic constraints, were nevertheless mentioned by 78%, 85% and 61% of villages, though these factors were given less than top priority.

5.9.25. Villages in Ghor gave high values for the direct effects of war in 1980 and 1986, but in all years their other problems have been mainly low rainfall, irrigation water, and flooding. In 1987, 47% of villages gave flooding as the main problem, 37% low rainfall, and 16% direct effects of war. Crop disease, the need for extension, and birds or rats are perceived as important problems.

5.9.26. No information available for this question in Badghis or Farah.

5.10. THE DIRECT EFFECTS OF WAR

5.10.1. With the direct effects of war now ranked against the other

farming problems, and in most cases revealed as the biggest constraint, it is worth recording what the nature of the direct effects were. Farmers and village communities were asked to put the effects into seven categories. The results have not yet been fully analysed, nor has any checking correlation been done - for example, with the number of destroyed houses - but these will be done at a later date. In Table 4 below, the answers of individual farmers are summarised on a national basis, and the zonal figures are given in Annex 2.

5.10.2. The national figures also show that those who left in 1987 had borne the brunt of much rougher treatment and this must have been the main reason for their decision to leave.

5.10.3. Livestock were a particular target of the Afghan army and the Soviets, and animals were either shot or killed by exploding mines. Table 4 above shows that in 1985 23% of farmers who stayed in Afghanistan had livestock shot, while the figure was 31% for those who left in 1987. Those who eventually left also had more livestock shot each year compared to those who stayed - 4 compared to 5. In addition to animals shot, 6% of farmers who left in 1987 were losing 5 head a year to mines.

TABLE 4. THE DIRECT EFFECTS OF WAR - NATIONAL AVERAGES

FARMERS IN AFGHANISTAN	1978	1980	1985	1986	1987
Percentage of farmers reporting:					
Destruction of irrign system	0	13	24	20	12
Burning of crop	0	4	11	8	4
Bombing of village	0	23	53	38	22
Destruction of grain store	0	7	13	10	3
Livestock shot	0	9	23	13	6
Livestock killed by mines	0	2	6	5	2
Av.no. of l'stock shot/farmer	1	3	4	2	2
Av.no.of l'stock mined/farmer	0	2	2	1	2
No. of farmers questioned	5158				
FARMERS WHO LEFT IN 1987					
Percentage of farmers reporting:					
Destruction of irrign system	0	12	36	30	0
Burning of crop	0	2	10	9	0
Bombing of village	0	21	65	49	0
Destruction of grain store	0	3	10	6	0
Livestock shot	0	9	31	13	0
Livestock killed by mines	0	2	11	7	0
Av.no. of l'stock shot/farmer	0	5	5	4	0
Av.no.of l'stock mined/farmer	0	3	5	3	0
No. of farmers questioned	4346				.

5.10.4. The figures show that agriculture was very severely affected in 1985 and 1986 but has recovered somewhat since then. It appears that the use of ground-to-air missiles from 1986 was largely responsible for providing a protective umbrella and allowing agricultural operations to continue during daytime. The figures for 1987, however, show that this continuation is still far from normal. Even

1987, down from 53% in 1985, and 12% reported destruction of their irrigation system, half the level of 1985 but still a high figure. Furthermore, in 1987 6% of farmers had livestock shot, on average losing two head a year this way and the same number to mines; and 3% had their grain stores destroyed, down from 13% in 1985.

5.10.5. Finally, what is most shocking is that these are national figures, and although they take into account the areas which have remained relatively unaffected by the war in order to produce the averages, and there are thus areas which suffered much more than the national averages show, the zonal figures in Annex 2 are remarkable in their consistency. We can draw no other conclusion other than that the areas under the control of the mujahedin were the target of a carefully planned and systematic destruction of agriculture.

6. THE CONTINUATION OF THE SURVEY AND THE IDENTIFICATION OF ASSISTANCE PROJECTS FOR AFGHAN AGRICULTURE.

6.1. The survey is now (May, 1988) entering its second summer of operations. The survey staff has been slimmed to 30 Enumerators and four Supervisors under the Survey Director, and is now a well-motivated, experienced and cohesive team. The Computer Office staff has reached a high level of competence although the equipment has to be upgraded to cope with the quantity of data being processed (the inputting of the 1987 data took six men 12 months). The total cost of the survey to date has been about US\$600,000. The information produced by the survey has, fortuitously, come at a time when it can be put to use in the refugee repatriation exercise which may start soon. It is clear, however, that this repatriation and the reconstruction of Afghanistan's agriculture will take several years, and its success or failure will depend on how well informed the planners are, and on how well they continue to be informed. The continuation of the survey would provide such an information service.

6.2. There are several broad areas in which the survey could continue. First is the analysis of the existing data which this report has barely begun. Second is the possibility of add-ons to enhance the usefulness of the existing database; these are the use of satellite imagery, and small surveys to focus on areas or subjects which need further investigation. Third, are pilot development projects, not part of the survey proper, but in areas where the survey is well placed to make a start. Examples of these are seed testing and multiplication, agricultural extension training, and the provision of low-cost farmer inputs. Fourth, there is the provision of general external services concerning information on Afghan agriculture which could be provided in response to specific requests from the public and private sectors. Finally but certainly not least, and of immediate concern to the survey administration, is the cost of the 1988 survey. Each of these are discussed in more detail below under the headings of Rationale, Components and Costs.

FURTHER ANALYSIS OF EXISTING DATA

6.3. Rationale The information presented in this report is a consolidation of only part of the data, and being a brief summary of what is available in the database, probably raises more questions than it answers. There has not yet been any proper statistical analysis carried out. The planning of the repatriation of the refugees, and the rural reconstruction effort which will have to run in parallel with this, can only be successful if it is based on reliable information. Most of the required information is in the database, and requires only time and effort to prepare it in useable form for the planners.

6.4. Components

a) All the data should be consolidated on a provincial basis.

b) Statistical verification tests should be run on the data to determine significance, reliability and correlation between

More powerful computer equipment and software is needed to speed up this exercise (see para. 6.25.)

- 6.5. **Costs** Consultancy days, minimum fourteen man months, depending on depth of analysis required, total cost about US\$230,000.

SATELLITE IMAGERY

- 6.6. **Rationale** In the introduction to this report, it was stated that the survey's aim was to present a representative profile of Afghan farms and farm families. In 1986, during the period when the survey was being designed, it was recommended that this representative profile should, eventually, be put into context through the use of satellite imagery. The pixels of the average farm at provincial or zone level, or even district level if this is required, could then be inserted into the whole picture provided by satellite imagery.

- 6.7. **Components** Depending on the coverage available, although it is assumed that it has been fairly regular since 1978, this would seek to achieve the following tasks:

- define the areas under different crops;
- define fallow land areas;
- define the irrigated and non-irrigated areas.

These would be defined for each of the five years in the survey, and would be divided by district, province and agro-ecological zone.

- 6.8. **Costs** Not yet assessed. Cost estimates should be requested from a specialist firm.

SUBJECT SPECIFIC OR AREA SPECIFIC FOCUS SURVEYS

- 6.9 . **Rationale** Although the database can provide specific information in response to specific interrogation, it may become necessary to carry out further surveys on such specific subjects in order to collect further detail. Case studies for the preparation of development projects will probably have to vary on a valley by valley basis. The material so far analysed can give indications on the broad direction of development or zone and its major components in a particular province; further analysis of the existing database will provide a closer focus and will identify subjects requiring further investigation; the focus surveys can then provide the kind of detail needed for project preparation. As an example of subject specific surveys, it seems clear from the information already in the database, that livestock disease is perceived by farmers as one of their most serious problems, although this varies from province to province. An obvious strategy in the repatriation exercise is to keep alive those animals which are already in the country with easy-to-transport veterinary products rather than import animals from outside. A focus survey on animal diseases, after further analysis of the existing information to identify the most affected areas, seems necessary.

6.10. **Components** Existing survey staff, including Administration, Enumerators, Supervisors, Computer Operators, and Consultants, would conduct the surveys.

6.10. **Costs** About US\$2,000 day for the full staff. A proportion of the full staff would be sufficient for all but the largest surveys.

SEED TESTING AND MULTIPLICATION

6.12. **Rationale** The survey indicates that there has probably been a genetic decline in wheat which is largely responsible for the fall in wheat yields. Improved varieties that were used in Afghanistan before the war may have degenerated and in most cases may have lost their identity. It seems that the resulting non-descript mixtures of old land races are susceptible to disease and lodging. Although the need for improved seed can be demonstrated with a fair degree of certainty, and a large proportion of farmers perceive the need for it, the way in which seed should be introduced is not easy. Extreme caution has to be used in ensuring that risk of crop failure due to the use of unsuitable seed is minimised. The degenerate seed now used has, at least, the advantage of minimum risk, and, for subsistence farmers, it is not permissible to try for increased yields while also increasing the risk. This means that screening of different improved varieties in different areas is essential (one crop season), followed by distribution to selected farmers for regional testing on their farms (a second crop season), followed by bulking with seed growers at district or village level (a third crop season), followed by general release at the beginning of the fourth season. Only at the end of this fourth season can the grain be used for consumption. It is agronomically possible to shorten this four year cycle by one year by bringing in bulked seed from another source, if that can be identified. The logistical difficulties of doing this are in Afghanistan at present are, however, formidable.

6.13. **Components** The ASA has established 21 trial plots of wheat within Afghanistan in the 1987/88 crop season. Promising varieties will then be tried with leading farmers for the 1988/89 season, and bulking will be during the 1989/90 season. General release is thus scheduled for the 1990/1991 season.

6.14. **Further work** which should be carried out is as follows:

a) Inclusion of crops other than wheat.

b) An analysis of seed related aspects of the database in order to tailor the project on a provincial basis. For example, an analysis of yields of farmers who use only seed, and those who use other inputs, such as fertiliser, by province; an analysis of yields of farmers who use what they suppose to be improved seed, and those who use Government seed; an analysis of villages and farmers which identified seed availability to be a constraint.

6.15. **Costs** Direct costs plus 15% overheads, about US\$100,000 annually.

6.16. Rationale It seems certain that the Afghan farmer will have to be exposed to a range of inputs which may be unfamiliar to him. For example, the use of agro-chemicals may be used to ameliorate the farm power shortage. The survey has also revealed that agro-chemicals were often unavailable to farmers who wanted them, that crop disease was perceived by farmers as an increasingly serious problem in many provinces, and that there was a felt need for extension services by farmers. (All these indications have yet to be analysed in detail).

6.17. Components

a) Training of Enumerators in extension techniques in crop protection.

b) Training in extension of staff of other PVOs in Peshawar.

c) Pilot project in the use of agro-chemicals in Afghanistan in which knapsack sprayers and a limited range of crop protection chemicals are demonstrated by each Enumerator. One Enumerator with one sprayer filled with (still packed) chemical concentrate would visit each province.

6.18. Costs Direct costs plus 15% overheads about US\$200,000.

GENERAL EXTERNAL SERVICES AND FUTURE REPORTS

6.19. Rationale The need to produce further reports based on a more thorough analysis of the database has been mentioned in the text of the report. Some of these subjects could be quite general and have a relatively wide market, such as for example, 'Farm Power'. Others could be specific, such as for example, 'The Regenerative Capacity of the Draught Oxen Herd in Kunduz Province'. As another example, it seems clear that a more detailed report will be necessary on the problem of birds and rats, mentioned as a serious problem by a surprisingly large proportion of farmers interviewed. It is foreseen that the commercial sector would be as keen to finance certain subjects for investigation as the aid organisations.

6.20. Components Dependent on demand. The following report titles are suggestions:

AID ORGANISATIONS:

Farm power for returning refugees.
Input packages for returning refugees.

COMMERCIAL SECTOR:

The market for tractors in Afghanistan.
The market for other farm machinery in Afghanistan.
The market for agro-chemicals in Afghanistan.

6.21. Costs Variable.

THE 1988 AGRICULTURAL SURVEY

- 6.22. **Rationale** The survey would continue with the collection of farm information for the coming year in order to continue the time series, so that changes and trends can be discerned.
- 6.23. **Components** As for 1987, though with half the number of Enumerators, and covering all the provinces. Professional inputs, permanent staff and consultancy. Computer hardware and software upgrading.
- 6.24. **Costs** Direct costs plus 15% overheads about US\$650,000. Total professional costs US\$200,000. Computer software and hardware, US\$20,000. Total US\$870,000.

ANNEX 1. THE SURVEY QUESTIONNAIRES

QUESTIONNAIRE ONE - THE COMMUNITY SURVEY	PAGE 45
QUESTIONNAIRE TWO - INDIVIDUAL FARMER QUESTIONNAIRE	PAGE 47

AGRICULTURE SURVEY OF AFGHANISTAN

QUESTIONNAIRE ONE
FOR USE AT COMMUNITY LEVEL

Enumerator Code _____ . Date of interview _____ .

Operator One _____ .

Operator Two _____ .

Date of Input _____ .

Village name _____ . District _____ . Province _____ .

Name of nearest town _____ . Distance from village _____ . Bearing _____ .

POPULATION AND OCCUPATION 1987 1986 1985 1980 1978

Number of houses in village _____

Number of families in village

How does the proportion of unoccupied houses compare with three neighbouring villages?

a. Village name _____ . Bearing _____ . Distance _____ .
Is it: The same ____ . More ____ . Much more ____ . Fewer ____ . Much fewer ____ .

b. Village name _____ . Bearing _____ . Distance _____ .
Is it: The same ____ . More ____ . Much more ____ . Fewer ____ . Much fewer ____ .

c. Village name _____ . Bearing _____ . Distance _____ .
Is it: The same ____ . More ____ . Much more ____ . Fewer ____ . Much fewer ____ .

LAND TENURE 1987 1986 1985 1980 1978

How many owner-occupiers? _____

How many sharecroppers? _____

Number of farms abandoned? _____

Number taken over by others? _____

FARM POWER 1987 1986 1985 1980 1978

Pairs of trained oxen in the village? _____

Number of tractors in the village? _____

How many tractors are working? _____

LIVESTOCK 1987 1986 1985 1980 1978

Cattle _____

Horses _____

Donkeys and Mules _____

Karakul Sheep _____

Other Sheep and Goats _____

BIGGEST FARMING PROBLEMS

1. Irrigation Water Availability _____

2. Water Shortage as bad as now	_____	_____	_____	_____	_____
3. Rainfall	_____	_____	_____	_____	_____
4. This Year Compared to 71/72:					
	Much better: _____	Better: _____	Same: _____		
	Worse: _____	Much Worse: _____			
5. Power for Land Preparation	_____	_____	_____	_____	_____
6. Fertilizer Availability	_____	_____	_____	_____	_____
7. Direct War Effects	_____	_____	_____	_____	_____
8. Credit	_____	_____	_____	_____	_____
9. Improved Seed Availability	_____	_____	_____	_____	_____
10. Crop Protection Chemicals	_____	_____	_____	_____	_____
11. Labour Availability	_____	_____	_____	_____	_____
12. Flood	_____	_____	_____	_____	_____
13. Crop Diseases	_____	_____	_____	_____	_____
14. Animal Diseases	_____	_____	_____	_____	_____
15. Birds or Rats	_____	_____	_____	_____	_____
16. Extension	_____	_____	_____	_____	_____
17. Other	_____	_____	_____	_____	_____

DIRECT EFFECTS OF THE WAR

Destruction of Irrigation systems	_____	_____	_____	_____	_____
Burning of Crops	_____	_____	_____	_____	_____
Bombing of Villages	_____	_____	_____	_____	_____
Number of Livestock shot?	_____	_____	_____	_____	_____
Killed by mines?	_____	_____	_____	_____	_____
Destruction of Grain Stores(Y,N)	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

SELLING 'RICES

Wheat	_____	_____	_____	_____	_____
Maize	_____	_____	_____	_____	_____
Rice	_____	_____	_____	_____	_____
Potatoes	_____	_____	_____	_____	_____
Oil	_____	_____	_____	_____	_____
Mutton	_____	_____	_____	_____	_____
Beef	_____	_____	_____	_____	_____
Oxan (pair)	_____	_____	_____	_____	_____
Fertilizer (white)	_____	_____	_____	_____	_____
Fertilizer (grey)	_____	_____	_____	_____	_____

STANDARD MULTIPLIERS

What are the seed rates for: Wheat _____ Maize _____ Rice _____ Other _____
Name of other crop: _____
Number of Jeribs a pair of oxen can cultivate _____
Cropping rotation used in the area _____
Normal Sowing date of principle crops _____
How much is one Seer? e.g. 10 lb _____ or 16 lb _____

AGRICULTURE SURVEY OF AFGHANISTAN

QUESTIONNAIRE TWO

FOR USE WITH FARMERS IN AFGHANISTAN, AND REFUGEE FARMERS IN PAKISTAN

Enumerator Code _____ Date of interview _____.

Operator One _____.

Operator Two _____.

Date of Input _____.

LOCATION OF FARM

Province _____ District _____ Village _____

Present residence in Afghanistan _____ Pakistan _____ Alternating _____

NUMBER OF PEOPLE FED IN HOUSEHOLD

Adults _____ Children <15 _____ Children >15 _____ Total in Family _____

LAND TENURE

Owner occupier _____ Sharecropper _____ Caretaker _____ Total _____

Year abandoned _____

Irrigation Source:

Offtake Canal _____ Karez _____ Well _____ Spring _____ None _____

	1987	1986	1985	1980	1978
Total area farmed	_____	_____	_____	_____	_____
Area irrigated	_____	_____	_____	_____	_____
Area dry cropped	_____	_____	_____	_____	_____

CROP ONE

	1987	1986	1985	1980	1978
Area sown	_____	_____	_____	_____	_____
Date sown _____					

SEED

	1987	1986	1985	1980	1978
Improved Seed (Y/N)	_____	_____	_____	_____	_____
Own Seed	_____	_____	_____	_____	_____
Local grower	_____	_____	_____	_____	_____
Government	_____	_____	_____	_____	_____
Seed rate	_____	_____	_____	_____	_____

LAND PREPARATION

	1987	1986	1985	1980	1978
Own pair of oxen?	_____	_____	_____	_____	_____

Shared oxen?	_____	_____	_____	_____	_____
Hired oxen?	_____	_____	_____	_____	_____
Own tractor?	_____	_____	_____	_____	_____
Hired tractor?	_____	_____	_____	_____	_____
By hand?	_____	_____	_____	_____	_____
Other means?	_____	_____	_____	_____	_____

WHITE FERTILIZER

Amount applied (bags/J)	_____	_____	_____	_____	_____
Price (Afs/bag)	_____	_____	_____	_____	_____
Was not available?	_____	_____	_____	_____	_____

CROP PROTECTION

Herbicide (Y/N/NA)	_____	_____	_____	_____	_____
Fungicide (Y/N/NA)	_____	_____	_____	_____	_____
Insecticide(Y/N/NA)	_____	_____	_____	_____	_____

Gross yield for total area (seers/jerib)	_____	_____	_____	_____	_____
---	-------	-------	-------	-------	-------

BIGGEST PROBLEMS WITH CROP

Irrigation Water	_____	_____	_____	_____	_____
Rainfall	_____	_____	_____	_____	_____
Power for land preparation	_____	_____	_____	_____	_____
Fertilizer	_____	_____	_____	_____	_____
Direct War Effects	_____	_____	_____	_____	_____
Credit	_____	_____	_____	_____	_____
Improved seed	_____	_____	_____	_____	_____
Crop protection chemicals	_____	_____	_____	_____	_____
Labour	_____	_____	_____	_____	_____
Flood	_____	_____	_____	_____	_____
Crop Diseases	_____	_____	_____	_____	_____
Animal Diseases	_____	_____	_____	_____	_____
Birds	_____	_____	_____	_____	_____
Rats/Mice	_____	_____	_____	_____	_____
Extension	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

CROP TWO

	1987	1986	1985	1980	1978
--	-------------	-------------	-------------	-------------	-------------

Area sown	_____	_____	_____	_____	_____
Date sown _____					

SEED

Improved Seed (Y/N)	_____	_____	_____	_____	_____
Own Seed	_____	_____	_____	_____	_____
Local grower	_____	_____	_____	_____	_____

Government	_____	_____	_____	_____	_____
Seed rate	_____	_____	_____	_____	_____

LAND PREPARATION

Own pair of oxen?	_____	_____	_____	_____	_____
Shared oxen?	_____	_____	_____	_____	_____
Hired oxen?	_____	_____	_____	_____	_____
Own tractor?	_____	_____	_____	_____	_____
Hired tractor?	_____	_____	_____	_____	_____
By hand?	_____	_____	_____	_____	_____
Other means?	_____	_____	_____	_____	_____

WHITE FERTILIZER

Amount applied (bogs/J)	_____	_____	_____	_____	_____
Price (Afs/bag)	_____	_____	_____	_____	_____
Was not available?	_____	_____	_____	_____	_____

CROP PROTECTION

Herbicide (Y/N/NA)	_____	_____	_____	_____	_____
Fungicide (Y/N/NA)	_____	_____	_____	_____	_____
Insecticide(Y/N/NA)	_____	_____	_____	_____	_____

Gross yield for total area (seers/jerib)	_____	_____	_____	_____	_____
---	-------	-------	-------	-------	-------

BIGGEST PROBLEMS WITH CROP

Irrigation Water	_____	_____	_____	_____	_____
Rainfall	_____	_____	_____	_____	_____
Power for land preparation	_____	_____	_____	_____	_____
Fertilizer	_____	_____	_____	_____	_____
Direct War Effects	_____	_____	_____	_____	_____
Credit	_____	_____	_____	_____	_____
Improved seed	_____	_____	_____	_____	_____
Crop protection chemicals	_____	_____	_____	_____	_____
Labour	_____	_____	_____	_____	_____
Flood	_____	_____	_____	_____	_____
Crop Diseases	_____	_____	_____	_____	_____
Animal Diseases	_____	_____	_____	_____	_____
Birds	_____	_____	_____	_____	_____
Rats/Mice	_____	_____	_____	_____	_____
Extension	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

CROP THREE

	1987	1986	1985	1980	1978
Area sown	_____	_____	_____	_____	_____
Date sown_____					

SEED

Improved Seed (Y/N)	_____	_____	_____	_____	_____
Own Seed	_____	_____	_____	_____	_____
Local grower	_____	_____	_____	_____	_____
Government	_____	_____	_____	_____	_____
Seed rate	_____	_____	_____	_____	_____

LAND PREPARATION

Own pair of oxen?	_____	_____	_____	_____	_____
Shared oxen?	_____	_____	_____	_____	_____
Hired oxen?	_____	_____	_____	_____	_____
Own tractor?	_____	_____	_____	_____	_____
Hired tractor?	_____	_____	_____	_____	_____
By hand?	_____	_____	_____	_____	_____
Other means?	_____	_____	_____	_____	_____

WHITE FERTILIZER

Amount applied (bags/J)	_____	_____	_____	_____	_____
Price (Afs/bag)	_____	_____	_____	_____	_____
Was not available?	_____	_____	_____	_____	_____

CROP PROTECTION

Herbicide (Y/N/NA)	_____	_____	_____	_____	_____
Fungicide (Y/N/NA)	_____	_____	_____	_____	_____
Insecticide(Y/N/NA)	_____	_____	_____	_____	_____
Crass yield for total area (seers/gerib)	_____	_____	_____	_____	_____

BIGGEST PROBLEMS WITH CROP

Irrigation Water	_____	_____	_____	_____	_____
Rainfall	_____	_____	_____	_____	_____
Power for land preparation	_____	_____	_____	_____	_____
Fertilizer	_____	_____	_____	_____	_____
Direct War Effects	_____	_____	_____	_____	_____
Credit	_____	_____	_____	_____	_____
Improved seed	_____	_____	_____	_____	_____
Crop protection chemicals	_____	_____	_____	_____	_____
Labour	_____	_____	_____	_____	_____
Flood	_____	_____	_____	_____	_____
Crop Diseases	_____	_____	_____	_____	_____
Animal Diseases	_____	_____	_____	_____	_____
Birds	_____	_____	_____	_____	_____
Rats/Mice	_____	_____	_____	_____	_____
Extension	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

OTHER CROPS AND FALLOW

	1987	1986	1985	1980	1978
Crop Four(4) _____					
Crop Five(5) _____					
Fallow (area grown)	---	---	---	---	---

CREDIT

Does the farmer use credit?	---	---	---	---	---
Was/is source ADBA?	---	---	---	---	---
Was/is Cooperatives?	---	---	---	---	---
Was/is source Mujahideen?	---	---	---	---	---

LIVESTOCK

Cattle < 1 year	---	---	---	---	---
Cattle < 2 years	---	---	---	---	---
Cattle > 2 years (female)	---	---	---	---	---
Cattle > 2 years (male)	---	---	---	---	---
untrained					
Trained oxen	---	---	---	---	---
Horses	---	---	---	---	---
Donkeys and Mules	---	---	---	---	---
Camels	---	---	---	---	---
Karakul Sheep	---	---	---	---	---
Other Sheep and Goats	---	---	---	---	---

LABOUR

Family Labour	---	---	---	---	---
Hired Labour	---	---	---	---	---

DIRECT EFFECTS OF THE WAR

Destruction of Irrigation System	---	---	---	---	---
Burning of Crops	---	---	---	---	---
Bombing of Villoges	---	---	---	---	---
Number of Livestock shot?	---	---	---	---	---
Livestock killed by mines?	---	---	---	---	---
Destruction of grain stores (Y/N)	---	---	---	---	---
Other	---	---	---	---	---
Describe other _____					
Assistance _____					

ANNEX 2. STATISTICAL ANNEX

TABLE 1	AVERAGE AREA CROPPED
TABLE 2	LIVESTOCK OWNERSHIP
TABLE 3	AVERAGE FAMILY SIZE
TABLE 4	LAND TENURE
TABLE 5	FAMILY AND HIRED LABOUR
TABLE 6	FAMILY OWNED OXEN
TABLE 7	FARM POWER
TABLE 8	FERTILIZER USE
TABLE 9	AREAS OF CROPS GROWN
TABLE 10	AVERAGE YIELDS OF WHEAT
TABLE 11	EFFECTS OF THE WAR - NUMBERS
TABLE 12	EFFECTS OF THE WAR - PERCENTAGES

TABLE 1. CONSOLIDATED AVERAGE AREAS FARMED FOR FARMERS IN AFGHANISTAN AND FARMERS WHO LEFT IN 1987 - BY FARMING ZONE AND NATIONALLY

A. NORTH-EAST

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	624	824	823	813	805
Average total areas farmed	40.7	38.5	48.7	38.8	34.8
Average area irrigated	17.9	17.8	17.5	18.8	13.8
Average area dry cropped	23.0	20.9	18.4	18.9	21.1
FARMERS WHO LEFT IN 1987					
Total Number of Farmers	1034	1000	1022	893	1
Average total areas farmed	44.8	41.8	37.3	34.8	30.0
Average area irrigated	24.4	22.8	20.8	19.4	30.0
Average area dry cropped	20.8	18.8	15.8	15.0	.0

B. NORTH

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	489	427	489	488	409
Average total areas farmed	83.3	82.0	48.8	43.8	42.3
Average area irrigated	25.1	25.8	19.2	17.2	12.3
Average area dry cropped	37.8	35.7	29.5	28.3	29.9
FARMERS WHO LEFT IN 1987					
Total Number of Farmers	583	515	562	477	5
Average total areas farmed	59.2	58.0	50.0	48.8	20.0
Average area irrigated	26.9	28.3	22.4	19.9	16.2
Average area dry cropped	32.3	27.7	28.0	27.4	12.6

C. SOUTH-EAST

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	1105	1038	1054	1101	1098
Average total areas farmed	8.0	8.0	5.8	5.8	5.8
Average area irrigated	5.4	5.7	5.5	5.4	5.4
Average area dry cropped	.6	.4	.3	.4	.4
FARMERS WHO LEFT IN 1987					
Total Number of Farmers	838	831	817	852	47
Average total areas farmed	13.8	13.2	11.7	10.5	9.8
Average area irrigated	11.4	11.0	10.0	9.1	9.1
Average area dry cropped	2.4	2.2	1.8	1.4	.8

D. EAST-CENTRAL

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	1433	1434	1428	1427	1429
Average total areas farmed	14.3	13.5	12.4	11.8	11.8
Average area irrigated	13.4	12.7	11.7	11.1	10.7
Average area dry cropped	1.0	.8	.7	.7	.9
FARMERS WHO LEFT IN 1987					
Total Number of Farmers	738	727	728	585	17
Average total areas farmed	18.3	18.5	14.3	13.5	8.7
Average area irrigated	15.8	14.8	13.0	12.2	7.7
Average area dry cropped	2.4	1.8	1.3	1.0	1.0

E. SOUTH-WEST

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	1,102	1,072	1,102	1,077	877
Average total areas farmed	21.7	18.7	14.5	12.7	10.8
Average area irrigated	18.8	16.1	13.4	11.8	10.0
Average area dry cropped	2.8	2.5	1.1	.9	.8
FARMERS WHO LEFT IN 1987					
Total Number of Farmers	1,101	1,091	1,098	999	9
Average total areas farmed	37.0	32.5	28.4	22.1	9.2
Average area irrigated	35.5	31.0	25.2	21.2	9.2
Average area dry cropped	1.6	1.5	1.2	.8	.0

F. NORTH-WEST

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	527	524	489	468	445
Average total areas farmed	28.2	24.1	20.8	20.5	18.5
Average area irrigated	25.4	21.3	18.4	18.1	16.1
Average area dry cropped	2.8	2.7	2.4	2.4	2.8
FARMERS WHO LEFT IN 1987					
Total Number of Farmers	187	167	182	143	8
Average total areas farmed	35.7	33.0	30.1	29.1	29.8
Average area irrigated	27.1	25.1	23.3	22.4	28.5
Average area dry cropped	8.7	7.9	8.9	6.8	3.3

NATIONAL AVERAGES

	Year	1978	1980	1985	1988	1987
TOTAL NUMBER OF FARMERS - AFGHANISTAN		5200	5119	5143	5170	4863
AVERAGE TOTAL AREA FARMED		23.2	21.1	18.9	17.4	18.3
AVERAGE AREA IRRIGATED		15.7	14.5	12.8	11.9	10.4
AVERAGE AREA DRY CROPPED		7.5	6.6	5.9	5.5	5.9
TOTAL NUMBER OF FARMERS - FARMERS WHO LEFT IN 1987		4441	4331	4379	3749	85
AVERAGE TOTAL AREA FARMED		34.1	31.1	27.4	25.1	12.3
AVERAGE AREA IRRIGATED		23.8	21.8	18.9	17.1	10.7
AVERAGE AREA DRY CROPPED		10.5	9.0	8.4	8.0	1.8

TABLE 2. AVERAGE NUMBER OF LIVESTOCK PER FARM HOUSEHOLD BY ZONE

<u>NORTH-EAST</u>							<u>SOUTH-WEST</u>						
<u>AFGHANISTAN</u>							<u>AFGHANISTAN</u>						
	1978	1980	1985	1988	1987	Percent. Decrease(1)		1978	1980	1985	1988	1987	Percent. Decrease
Av.no.of horses	1.40	1.39	1.38	1.31	1.31	6.44	Av.no.of horses	.80	1.28	1.25	1.23	1.18	-45.85
Av.no.of donkeys & mules	2.11	1.98	1.62	1.92	1.83	8.18	Av.no.of donkeys & mules	1.58	1.48	1.35	1.34	1.35	13.53
Av.no.of Karakul sheep	83.21	80.18	48.71	31.49	18.92	73.24	Av.no.of Karakul sheep	28.71	20.01	8.81	3.52	3.29	87.80
Av.no.of other sheep & goats	38.83	31.98	24.31	19.03	13.59	83.11	Av.no.of other sheep & goats	44.87	5.79	3.61	3.19	3.20	82.84
Av.no.of cattle	7.59	8.75	5.52	4.21	3.61	52.42	Av.no.of cattle	5.39	4.57	3.42	2.92	2.43	54.91
<u>FARMERS WHO LEFT IN 1987</u>							<u>FARMERS WHO LEFT IN 1987</u>						
Av.no.of horses	1.52	1.39	1.33	1.35	.00	11.48	Av.no.of horses	1.30	1.24	1.17	1.17	.00	10.44
Av.no.of donkeys & mules	2.47	2.23	1.87	1.78	.00	27.85	Av.no.of donkeys & mules	2.04	1.80	1.48	1.42	.59	30.24
Av.no.of Karakul sheep	59.05	52.39	40.78	25.03	.00	57.81	Av.no.of Karakul sheep	6.52	5.38	2.50	.00	.00	100.00
Av.no.of other sheep & goats	44.43	40.49	27.34	19.88	.00	55.71	Av.no.of other sheep & goats	32.72	27.42	18.33	14.33	2.32	58.22
Av.no.of cattle	8.77	7.80	5.88	4.08	.01	53.48	Av.no.of cattle	5.58	4.55	2.68	1.59	.04	71.49
<u>NORTH</u>							<u>NORTH-WEST</u>						
<u>AFGHANISTAN</u>							<u>AFGHANISTAN</u>						
	1978	1980	1985	1988	1987	Percent. Decrease		1978	1980	1985	1988	1987	Percent. Decrease
Av.no.of horses	1.11	1.50	1.14	1.28	1.29	-18.38	Av.no.of horses	.84	1.10	.96	1.09	1.13	-77.05
Av.no.of donkeys & mules	2.52	2.59	2.7	2.01	1.89	24.80	Av.no.of donkeys & mules	2.00	1.88	1.79	1.71	1.84	18.12
Av.no.of Karakul sheep	128.18	115.07	88.83	83.51	51.17	80.08	Av.no.of Karakul sheep	5.49	8.02	2.10	3.38	3.48	37.07
Av.no.of other sheep & goats	60.41	68.58	40.87	30.44	23.51	81.08	Av.no.of other sheep & goats	28.17	28.81	21.88	18.78	17.91	31.57
Av.no.of cattle	7.79	8.82	5.94	5.08	3.65	53.08	Av.no.of cattle	6.57	5.87	3.88	3.43	2.99	48.29
<u>FARMERS WHO LEFT IN 1987</u>							<u>FARMERS WHO LEFT IN 1987</u>						
Av.no.of horses	1.89	1.91	1.42	1.40	.87	17.14	Av.no.of horses	1.22	1.17	1.20	1.23	.81	-1.27
Av.no.of donkeys & mules	2.90	2.68	2.29	2.13	1.71	28.82	Av.no.of donkeys & mules	2.31	2.25	2.04	1.99	.51	13.80
Av.no.of Karakul sheep	129.98	122.41	73.93	52.08	19.25	59.94	Av.no.of Karakul sheep	18.22	17.58	18.54	11.09	.00	39.14
Av.no.of other sheep & goats	53.11	48.12	35.48	29.23	1.20	44.97	Av.no.of other sheep & goats	89.43	84.82	48.32	37.25	7.25	48.34
Av.no.of cattle	7.81	8.57	5.58	3.92	.04	49.82	Av.no.of cattle	8.81	8.85	5.14	3.95	.12	42.08
<u>SOUTH-EAST</u>							<u>NATIONAL AVERAGES</u>						
<u>AFGHANISTAN</u>							<u>AFGHANISTAN</u>						
	1978	1980	1985	1988	1987	Percent. Decrease		1978	1980	1985	1988	1987	Percent. Decrease
Av.no.of horses	2.82	1.14	1.88	1.12	1.15	59.14	Av.no.of horses	2.17	1.28	1.55	1.19	1.19	44.94
Av.no.of donkeys & mules	1.30	1.38	1.53	1.72	1.78	-37.48	Av.no.of donkeys & mules	1.74	1.71	1.81	1.62	1.62	8.48
Av.no.of Karakul sheep	8.53	3.50	3.03	2.93	2.00	89.44	Av.no.of Karakul sheep	27.84	24.09	17.43	12.27	8.41	89.57
Av.no.of other sheep & goats	83.45	49.03	33.18	24.74	22.71	84.20	Av.no.of other sheep & goats	42.81	30.92	21.23	18.81	14.33	89.53
Av.no.of cattle	8.75	5.59	4.54	4.18	4.18	38.14	Av.no.of cattle	8.25	5.51	4.27	3.68	3.27	47.85
<u>FARMERS WHO LEFT IN 1987</u>							<u>FARMERS WHO LEFT IN 1987</u>						
Av.no.of horses	.88	.95	1.08	.98	.00	-11.28	Av.no.of horses	1.31	1.24	1.21	1.20	.14	8.00
Av.no.of donkeys & mules	1.82	1.58	1.42	1.48	1.35	8.81	Av.no.of donkeys & mules	2.12	1.95	1.87	1.82	.78	23.77
Av.no.of Karakul sheep	8.81	4.29	8.24	3.97	.48	40.00	Av.no.of Karakul sheep	34.53	31.15	22.12	13.71	2.45	80.29
Av.no.of other sheep & goats	40.41	37.17	23.82	10.81	8.59	73.25	Av.no.of other sheep & goats	39.39	35.31	24.52	17.25	3.84	58.19
Av.no.of cattle	20.50	20.42	15.58	12.47	12.70	39.17	Av.no.of cattle	8.53	8.75	8.52	4.78	2.43	50.08
<u>EAST-CENTRAL</u>							<u>[1] A minus figure denotes an increase</u>						
<u>AFGHANISTAN</u>													
	1978	1980	1985	1988	1987	Percent. Decrease							
Av.no.of horses	3.99	1.27	2.15	1.18	1.18	70.29							
Av.no.of donkeys & mules	1.89	1.83	1.47	1.45	1.48	12.19							
Av.no.of Karakul sheep	2.90	2.90	3.80	3.80	.81	72.04							
Av.no.of other sheep & goats	28.12	24.53	17.48	14.85	12.30	58.28							
Av.no.of cattle	5.84	5.12	3.78	3.20	3.04	48.08							
<u>FARMERS WHO LEFT IN 1987</u>													
Av.no.of horses	1.22	1.08	1.09	1.14	.03	8.70							
Av.no.of donkeys & mules	1.71	1.81	1.43	1.39	.88	18.44							
Av.no.of Karakul sheep	8.32	7.32	5.00	2.30	.00	72.29							
Av.no.of other sheep & goats	24.28	21.88	17.93	12.18	8.23	49.87							
Av.no.of cattle	8.09	5.51	4.00	2.80	.09	57.32							

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TABLE 7. METHODS OF LAND PREPARATION
ZONAL AVERAGES

NORTH-EAST AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	529	528	524	515	510
Percentage of Farmers who used shared Oxen	2.28	5.48	11.85	18.92	18.85
Percentage of Farmers who used own Oxen	98.40	93.21	85.13	88.78	85.12
Percentage of Farmers who used hired Oxen	.00	.00	.58	.87	.61
Percentage of Farmers who used own Tractor	1.15	1.14	.95	1.55	.79
Percentage of Farmers who used hired Tractor	2.48	2.47	6.48	27.38	28.20
Percentage of Farmers who used Other Means	.00	.00	.00	.00	.00

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	919	891	807	774	1
Percentage of Farmers who used shared Oxen	2.08	3.02	3.86	4.39	.00
Percentage of Farmers who used own Oxen	42.48	41.47	37.85	35.17	.00
Percentage of Farmers who used hired Oxen	.98	1.02	1.98	3.50	.00
Percentage of Farmers who used own Tractor	1.21	1.23	1.10	.38	.00
Percentage of Farmers who used hired Tractor	5.58	5.50	8.61	5.94	.00
Percentage of Farmers who used Other Means	1.07	1.18	1.09	1.15	.00

NORTH AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	271	251	271	289	195
Percentage of Farmers who used shared Oxen	1.82	3.98	7.39	8.55	13.35
Percentage of Farmers who used own Oxen	89.31	87.28	78.23	75.11	84.59
Percentage of Farmers who used hired Oxen	.71	.37	2.59	4.08	0.22
Percentage of Farmers who used own Tractor	7.04	7.97	7.39	7.44	5.14
Percentage of Farmers who used hired Tractor	1.47	1.59	8.24	7.03	10.78
Percentage of Farmers who used Other Means	1.12	1.20	1.12	1.12	1.55

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	445	409	440	381	2
Percentage of Farmers who used shared Oxen	3.81	5.13	8.17	8.18	.00
Percentage of Farmers who used own Oxen	85.82	88.29	58.41	54.58	.00
Percentage of Farmers who used hired Oxen	2.70	.90	7.05	8.94	.00
Percentage of Farmers who used own Tractor	2.70	2.91	2.50	2.52	.00
Percentage of Farmers who used hired Tractor	8.53	9.29	8.88	8.33	.00
Percentage of Farmers who used Other Means	4.03	4.18	3.89	4.19	.00

SOUTH-EAST AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	900	882	888	888	892
Percentage of Farmers who used shared Oxen	31.11	30.82	32.29	38.30	37.22
Percentage of Farmers who used own Oxen	55.79	54.18	48.50	41.99	40.88
Percentage of Farmers who used hired Oxen	8.88	7.35	8.99	9.01	9.08
Percentage of Farmers who used own Tractor	.44	.45	.57	.68	.91
Percentage of Farmers who used hired Tractor	4.23	5.88	8.29	9.38	9.54
Percentage of Farmers who used Other Means	1.81	1.81	2.55	2.94	3.04

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	797	789	774	612	39
Percentage of Farmers who used shared Oxen	7.14	7.98	13.21	13.89	18.71
Percentage of Farmers who used own Oxen	77.29	73.83	38.34	59.47	52.80
Percentage of Farmers who used hired Oxen	4.50	5.97	10.11	13.52	11.11
Percentage of Farmers who used own Tractor	.83	.83	.78	.49	.00
Percentage of Farmers who used hired Tractor	2.75	3.41	3.38	2.92	.00
Percentage of Farmers who used Other Means	1.75	1.88	1.89	3.34	.00

EAST-CENTRAL AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	1311	1309	1299	1295	1297
Percentage of Farmers who used shared Oxen	35.20	38.51	38.30	38.82	38.34
Percentage of Farmers who used own Oxen	53.89	48.71	31.20	25.80	24.54
Percentage of Farmers who used hired Oxen	8.49	9.28	14.71	20.09	21.27
Percentage of Farmers who used own Tractor	1.21	1.23	1.39	1.53	1.54
Percentage of Farmers who used hired Tractor	3.20	4.52	14.47	18.14	18.50
Percentage of Farmers who used Other Means	.23	.24	.39	.55	.55

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	718	701	881	518	8
Percentage of Farmers who used shared Oxen	18.88	20.58	25.80	28.59	112.51
Percentage of Farmers who used own Oxen	60.84	58.58	44.58	40.12	.00
Percentage of Farmers who used hired Oxen	7.03	8.33	11.81	13.58	24.88
Percentage of Farmers who used own Tractor	1.54	1.58	1.29	1.47	.00
Percentage of Farmers who used hired Tractor	2.88	4.50	7.80	8.38	.00
Percentage of Farmers who used Other Means	1.91	2.00	2.43	3.21	.00

SOUTH-WEST AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	1303	854	969	954	788
Percentage of Farmers who used shared Oxen	22.73	24.75	27.35	25.50	25.25
Percentage of Farmers who used own Oxen	48.18	40.88	21.15	14.38	12.01
Percentage of Farmers who used hired Oxen	12.98	15.51	18.85	19.72	17.55
Percentage of Farmers who used own Tractor	5.47	5.43	5.25	5.35	5.08
Percentage of Farmers who used hired Tractor	8.90	12.57	28.41	33.89	38.92
Percentage of Farmers who used Other Means	.92	.98	.84	1.57	1.53

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	1027	994	852	787	0
Percentage of Farmers who used shared Oxen	9.18	9.83	10.38	9.84	-
Percentage of Farmers who used own Oxen	35.81	32.14	24.24	17.35	-
Percentage of Farmers who used hired Oxen	3.15	4.24	8.51	8.94	-
Percentage of Farmers who used own Tractor	5.87	5.84	3.87	3.82	-
Percentage of Farmers who used hired Tractor	10.87	13.03	21.15	21.48	-
Percentage of Farmers who used Other Means	1.09	1.10	1.48	1.72	-

NORTH-WEST AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	495	497	439	430	405
Percentage of Farmers who used shared Oxen	21.24	22.98	24.78	28.47	27.42
Percentage of Farmers who used own Oxen	48.49	48.54	37.82	35.59	31.37
Percentage of Farmers who used hired Oxen	17.21	17.27	21.32	24.42	24.83
Percentage of Farmers who used own Tractor	8.85	8.51	5.29	4.15	3.95
Percentage of Farmers who used hired Tractor	7.30	7.71	12.38	13.94	13.57
Percentage of Farmers who used Other Means	.20	.20	.23	.23	.23

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	150	150	148	120	0
Percentage of Farmers who used shared Oxen	8.68	9.37	8.92	9.17	-
Percentage of Farmers who used own Oxen	54.01	52.01	45.19	44.17	-
Percentage of Farmers who used hired Oxen	10.88	11.34	13.03	13.34	-
Percentage of Farmers who used own Tractor	4.00	4.00	3.42	3.33	-
Percentage of Farmers who used hired Tractor	8.66	7.33	13.03	12.51	-
Percentage of Farmers who used Other Means	1.36	1.38	1.35	1.65	-

NATIONAL AVERAGES

AFGHANISTAN					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	4500	4418	4387	4351	4067
Percentage of Farmers who used shared Oxen	24.21	25.78	29.20	29.08	29.98
Percentage of Farmers who used own Oxen	59.55	55.38	42.44	35.11	33.40
Percentage of Farmers who used hired Oxen	9.08	9.51	12.68	14.92	15.09
Percentage of Farmers who used own Tractor	2.95	2.94	2.79	2.82	2.39
Percentage of Farmers who used hired Tractor	5.18	6.43	14.22	19.19	20.11
Percentage of Farmers who used Other Means	.72	.73	.90	1.20	1.23

FARMERS WHO LEFT IN 1987					
	1978	1980	1985	1988	1987
Number of Farmers Questioned	4054	3934	3900	3170	47
Percentage of Farmers who used shared Oxen	8.27	9.34	11.58	11.57	-
Percentage of Farmers who used own Oxen	53.82	51.24	39.35	38.79	-
Percentage of Farmers who used hired Oxen	3.84	4.51	7.40	8.89	-
Percentage of Farmers who used own Tractor	2.55	2.58	1.89	1.74	-
Percentage of Farmers who used hired Tractor	8.21	7.27	10.16	10.23	-
Percentage of Farmers who used Other Means	1.89	1.77	1.88	2.42	-

TABLE 8. FERTILIZER USE BY ZONE

AVERAGES - NORTH-EAST

AFGHANISTAN	1978	1980	1985	1988	1987
Number of Farmers who used White Fertilizer	487	401	413	301	425
Average use of White Fertilizer (Bags per Jerib)	.73	.68	.68	.47	.57
Number of Farmers reporting non availability of White Fertilizer	0	0	2	8	8
Number of Farmers who used Grey Fertilizer	404	479	388	348	418
Average use of Grey Fertilizer (Bags per Jerib)	.79	.72	.50	.47	.50
Number of Farmers reporting non availability of Grey Fertilizer	0	0	4	11	13
Number of Farmers who grew Crop	529	528	524	515	510

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	795	729	618	481	1
Average use of White Fertilizer (Bags per Jerib)	.83	.81	.80	.79	.58
Number of Farmers reporting non availability of White Fertilizer	3	11	91	99	0
Number of Farmers who used Grey Fertilizer	335	563	589	588	0
Average use of Grey Fertilizer (Bags per Jerib)	.68	.84	.84	.83	.00
Number of Farmers reporting non availability of Grey Fertilizer	4	18	89	101	1
Number of Farmers who grew Crop	918	891	807	774	1

AVERAGES - NORTH

AFGHANISTAN	1978	1980	1985	1988	1987
Number of Farmers who used White Fertilizer	157	147	122	111	84
Average use of White Fertilizer (Bags per Jerib)	.72	.72	.70	.70	.73
Number of Farmers reporting non availability of White Fertilizer	0	0	1	1	1
Number of Farmers who used Grey Fertilizer	72	71	83	70	75
Average use of Grey Fertilizer (Bags per Jerib)	.55	.68	.54	.55	.58
Number of Farmers reporting non availability of Grey Fertilizer	1	0	1	1	1
Number of Farmers who grew Crop	271	251	271	289	195

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	235	191	138	87	1
Average use of White Fertilizer (Bags per Jerib)	.79	.79	.88	.71	.14
Number of Farmers reporting non availability of White Fertilizer	14	24	68	70	0
Number of Farmers who used Grey Fertilizer	105	178	119	78	1
Average use of Grey Fertilizer (Bags per Jerib)	.81	.60	.55	.53	.14
Number of Farmers reporting non availability of Grey Fertilizer	18	28	71	74	0
Number of Farmers who grew Crop	445	409	440	381	2

AVERAGES - SOUTH-EAST

AFGHANISTAN	1978	1980	1985	1988	1987
Number of Farmers who used White Fertilizer	781	643	425	415	478
Average use of White Fertilizer (Bags per Jerib)	.59	.55	.65	.58	.57
Number of Farmers reporting non availability of White Fertilizer	1	71	284	295	240
Number of Farmers who used Grey Fertilizer	563	433	260	237	208
Average use of Grey Fertilizer (Bags per Jerib)	.50	.52	.55	.55	.56
Number of Farmers reporting non availability of Grey Fertilizer	5	108	258	298	286
Number of Farmers who grew Crop	000	882	868	888	892

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	725	652	504	320	5
Average use of White Fertilizer (Bags per Jerib)	.68	.67	.68	.85	.65
Number of Farmers reporting non availability of White Fertilizer	3	39	107	128	17
Number of Farmers who used Grey Fertilizer	848	577	442	882	8
Average use of Grey Fertilizer (Bags per Jerib)	.54	.83	.54	.54	.80
Number of Farmers reporting non availability of Grey Fertilizer	5	45	89	111	11
Number of Farmers who grew Crop	757	789	774	812	38

(cont'd over)

AVERAGES - EAST-CENTRAL

AFGHANISTAN	1978	1980	1985	1988	1987
Number of Farmers who used White Fertilizer	1,114	1,070	884	821	791
Average use of White Fertilizer (Bags per Jerib)	.82	.79	.74	.75	.74
Number of Farmers reporting non availability of White Fertilizer	1	12	52	38	81
Number of Farmers who used Grey Fertilizer	812	888	685	821	413
Average use of Grey Fertilizer (Bags per Jerib)	.85	.62	.62	.61	.64
Number of Farmers reporting non availability of Grey Fertilizer	1	12	51	41	187
Number of Farmers who grew Crop	1,310	1,308	1,298	1,234	1,296

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	815	583	469	323	4
Average use of White Fertilizer (Bags per Jerib)	.79	.77	.72	.71	.45
Number of Farmers reporting non availability of White Fertilizer	4	4	4	4	1
Number of Farmers who used Grey Fertilizer	527	450	401	272	5
Average use of Grey Fertilizer (Bags per Jerib)	.88	.84	.59	.57	.41
Number of Farmers reporting non availability of Grey Fertilizer	3	21	58	80	0
Number of Farmers who grew Crop	709	694	677	513	8

AVERAGES - SOUTH-WEST

AFGHANISTAN	1978	1980	1985	1988	1987
Number of Farmers who used White Fertilizer	598	532	454	419	344
Average use of White Fertilizer (Bags per Jerib)	.92	.80	.83	.81	.88
Number of Farmers reporting non availability of White Fertilizer	3	8	28	28	25
Number of Farmers who used Grey Fertilizer	338	290	189	154	125
Average use of Grey Fertilizer (Bags per Jerib)	.75	.64	.84	.85	.83
Number of Farmers reporting non availability of Grey Fertilizer	227	243	224	159	34
Number of Farmers who grew Crop	1,003	954	869	854	768

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	790	678	505	377	0
Average use of White Fertilizer (Bags per Jerib)	.98	.94	.84	.82	.00
Number of Farmers reporting non availability of White Fertilizer	5	80	175	149	0
Number of Farmers who used Grey Fertilizer	823	550	408	294	0
Average use of Grey Fertilizer (Bags per Jerib)	1.21	1.01	1.19	.88	.00
Number of Farmers reporting non availability of Grey Fertilizer	14	64	155	137	0
Number of Farmers who grew Crop	1,028	894	852	787	0

AVERAGES - NORTH-WEST

AFGHANISTAN	1978	1980	1985	1988	1987
Number of Farmers who used White Fertilizer	134	118	68	30	34
Average use of White Fertilizer (Bags per Jerib)	.86	.85	.78	.75	.71
Number of Farmers reporting non availability of White Fertilizer	0	2	33	81	88
Number of Farmers who used Grey Fertilizer	129	117	65	21	19
Average use of Grey Fertilizer (Bags per Jerib)	.82	.78	.69	.69	.72
Number of Farmers reporting non availability of Grey Fertilizer	0	2	31	81	84
Number of Farmers who grew Crop	495	492	438	430	405

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	3	15	31	40	0
Average use of White Fertilizer (Bags per Jerib)	.68	5.08	8.25	7.40	.00
Number of Farmers reporting non availability of White Fertilizer	4	3	2	2	0
Number of Farmers who used Grey Fertilizer	1	13	30	39	0
Average use of Grey Fertilizer (Bags per Jerib)	.30	4.22	6.00	5.75	.00
Number of Farmers reporting non availability of Grey Fertilizer	150	150	148	120	0
Number of Farmers who grew Crop	0	0	0	0	0

TABLE 8. FERTILIZER USE BY ZONE (cont'd)

NATIONAL AVERAGES

<u>AFGHANISTAN</u>	<u>1978</u>	<u>1980</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Number of Farmers who used White Fertilizer	3,249	2,931	2,376	2,177	2,154
Average use of White Fertilizer (Bags per Jerib)	.77	.73	.71	.67	.69
Number of Farmers reporting non availability of White Fertilizer	5	93	380	449	441
Number of Farmers who used Grey Fertilizer	2,518	2,254	1,654	1,451	1,336
Average use of Grey Fertilizer (Bags per Jerib)	.66	.63	.58	.57	.58
Number of Farmers reporting non availability of Grey Fertilizer	234	363	569	589	585
Number of Farmers who grew Crop	4,508	4,415	4,366	4,350	4,066

FARMERS WHO LEFT IN 1987

Number of Farmers who used White Fertilizer	3,163	2,858	2,261	1,808	11
Average use of White Fertilizer (Bags per Jerib)	.82	.82	.86	.91	.00
Number of Farmers reporting non availability of White Fertilizer	33	163	444	448	18
Number of Farmers who used Grey Fertilizer	2,239	2,375	1,987	1,551	11
Average use of Grey Fertilizer (Bags per Jerib)	.78	.71	.79	.74	.00
Number of Farmers reporting non availability of Grey Fertilizer	192	326	626	603	12
Number of Farmers who grew Crop	3,098	3,777	3,750	3,047	47

PERCENTAGE OF FARMERS USING FERTILIZER (farmers who used it)

Number of Farmers who grew Crop	8,406	8,192	8,118	7,397	4,113
Number of Farmers who used White Fertilizer	6,412	5,849	4,637	3,785	2,165
Percentage of Farmers who used White Fertilizer	76.3	71.4	57.1	51.2	52.6
Average use of White Fertilizer (Bags per Jerib)	.79	.78	.78	.78	-(1)
Number of Farmers reporting non availability of White Fertilizer	38	256	824	897	459
Number of Farmers who used Grey Fertilizer	4,757	4,629	3,641	3,002	1,347
Percentage of Farmers who used Grey Fertilizer	56.6	56.5	44.9	40.6	32.7
Average use of Grey Fertilizer (Bags per Jerib)	.72	.67	.69	.64	-(1)
Number of Farmers reporting non availability of Grey Fertilizer	426	689	1,195	1,192	597

(1) Inaccurate figure due to combining farmers still in Afghanistan with those who left in 1987.

TABLE 9. AVERAGE AREAS OF CROPS GROWN BY ZONE

AVERAGES - NORTH-EAST

AFGHANISTAN	1978	1980	1985	1988	1987
No. who grew Wheat	529	528	524	515	510
No. who grew Dry Wheat	158	158	152	154	154
No. who grew Rice	342	341	338	321	320
No. who grew Maize	125	129	121	107	103
No. who left Fallow	164	198	228	258	243
Area of Wheat	15.88	15.35	15.03	15.55	13.18
Area of Dry Wheat	42.78	37.59	34.91	34.79	38.99
Area of Rice	18.15	15.92	15.42	15.20	12.49
Area of Maize	5.31	5.33	5.12	5.33	5.44
Area of Fallow	35.08	38.71	37.38	34.05	33.17

FARMERS WHO LEFT IN 1987

No. who grew Wheat	919	891	907	774	1
No. who grew Dry Wheat	218	197	205	166	1
No. who grew Rice	429	412	419	372	0
No. who grew Maize	225	229	220	184	1
No. who left Fallow	320	427	530	522	5
Area of Wheat	18.84	17.22	15.90	15.43	21.00
Area of Dry Wheat	44.53	41.29	34.05	34.28	50.00
Area of Rice	18.68	15.85	14.88	14.48	-
Area of Maize	8.44	8.23	5.98	5.87	7.00
Area of Fallow	24.58	23.81	27.70	32.87	48.04

AVERAGES - NORTH

AFGHANISTAN	1978	1980	1985	1988	1987
No. who grew Wheat	271	251	271	269	195
No. who grew Dry Wheat	274	247	274	271	268
No. who grew Rice	25	25	25	24	24
No. who grew Maize	38	33	34	35	30
No. who left Fallow	272	298	379	378	297
Area of Wheat	27.84	27.83	22.21	20.18	18.45
Area of Dry Wheat	39.53	39.78	28.93	25.81	25.53
Area of Rice	17.20	17.30	18.50	18.90	18.80
Area of Maize	9.28	9.88	8.35	7.81	8.38
Area of Fallow	27.50	33.33	38.68	45.25	50.42

FARMERS WHO LEFT IN 1987

No. who grew Wheat	445	399	440	381	2
No. who grew Dry Wheat	203	172	200	187	1
No. who grew Rice	32	32	35	32	0
No. who grew Maize	87	84	82	80	0
No. who left Fallow	284	313	393	355	0
Area of Wheat	25.89	23.81	21.04	19.82	10.00
Area of Dry Wheat	39.03	33.73	31.38	27.83	30.00
Area of Rice	22.84	21.80	22.10	24.18	-
Area of Maize	7.15	7.09	8.78	7.58	-
Area of Fallow	42.31	41.68	44.98	50.87	-

AVERAGES - SOUTH-EAST

AFGHANISTAN	1978	1980	1985	1988	1987
No. who grew Wheat	800	882	868	888	802
No. who grew Dry Wheat	88	55	43	49	51
No. who grew Rice	335	333	318	333	333
No. who grew Maize	753	885	731	759	748
No. who left Fallow	198	287	308	280	251
Area of Wheat	4.41	4.43	4.40	4.38	4.48
Area of Dry Wheat	4.94	4.31	3.50	3.02	3.02
Area of Rice	3.81	3.61	3.84	3.68	3.73
Area of Maize	3.12	3.28	3.32	3.23	3.27
Area of Fallow	8.88	7.88	7.93	8.40	8.87

FARMERS WHO LEFT IN 1987

No. who grew Wheat	797	789	774	812	38
No. who grew Dry Wheat	124	118	77	81	4
No. who grew Rice	255	251	227	188	1
No. who grew Maize	704	898	888	519	0
No. who left Fallow	88	139	298	290	4
Area of Wheat	8.44	8.12	7.22	8.53	7.80
Area of Dry Wheat	12.04	8.91	8.47	8.58	9.00
Area of Rice	5.84	5.19	4.72	4.02	4.00
Area of Maize	5.53	5.35	4.80	4.45	-
Area of Fallow	13.80	11.88	8.97	10.88	10.25

AVERAGES - EAST-CENTRAL

AFGHANISTAN	1978	1980	1985	1988	1987
No. who grew Wheat	1311	1309	1299	1295	1297
No. who grew Dry Wheat	190	181	177	188	178
No. who grew Rice	145	143	133	134	128
No. who grew Maize	475	474	453	430	412
No. who left Fallow	480	532	818	858	839
Area of Wheat	7.81	7.28	8.84	8.23	8.01
Area of Dry Wheat	8.98	8.35	5.45	5.48	6.45
Area of Rice	2.52	2.62	2.87	2.61	2.84
Area of Maize	4.01	4.04	3.87	3.99	4.05
Area of Fallow	17.48	18.19	18.25	18.51	19.34

FARMERS WHO LEFT IN 1987

No. who grew Wheat	718	701	881	518	8
No. who grew Dry Wheat	88	78	88	41	1
No. who grew Rice	48	45	46	42	0
No. who grew Maize	408	404	380	262	1
No. who left Fallow	204	283	307	362	3
Area of Wheat	9.04	8.24	7.14	6.73	4.70
Area of Dry Wheat	18.75	12.92	11.37	10.67	5.00
Area of Rice	3.03	3.18	3.17	2.91	-
Area of Maize	3.80	3.53	3.10	3.13	2.00
Area of Fallow	23.34	21.72	19.39	22.50	8.37

AVERAGES - SOUTH-WEST

AFGHANISTAN	1978	1980	1985	1988	1987
No. who grew Wheat	1003	854	989	854	788
No. who grew Dry Wheat	114	113	94	78	50
No. who grew Rice	50	45	44	41	20
No. who grew Maize	672	821	817	598	514
No. who left Fallow	825	804	868	898	694
Area of Wheat	13.07	10.99	8.31	7.09	8.40
Area of Dry Wheat	22.27	18.07	11.89	12.07	12.89
Area of Rice	3.89	3.52	2.45	2.40	1.39
Area of Maize	4.28	3.73	3.23	2.88	2.87
Area of Fallow	22.90	23.20	28.37	28.78	19.38

FARMERS WHO LEFT IN 1987

No. who grew Wheat	1027	994	852	787	0
No. who grew Dry Wheat	58	58	51	41	0
No. who grew Rice	18	17	18	15	0
No. who grew Maize	587	568	544	454	0
No. who left Fallow	533	739	888	884	0
Area of Wheat	23.08	19.75	15.81	13.68	-
Area of Dry Wheat	23.01	22.87	19.01	15.84	-
Area of Rice	7.44	7.35	8.01	8.07	-
Area of Maize	8.58	8.52	7.12	6.27	-
Area of Fallow	34.02	31.78	33.99	35.17	-

AVERAGES - NORTH-WEST

AFGHANISTAN	1978	1980	1985	1988	1987
No. who grew Wheat	495	492	438	430	405
No. who grew Dry Wheat	98	98	80	93	92
No. who grew Rice	57	57	57	57	53
No. who grew Maize	185	184	189	160	181
No. who left Fallow	357	407	439	439	444
Area of Wheat	15.37	12.24	11.48	11.39	10.35
Area of Dry Wheat	11.59	11.23	8.71	9.40	8.58
Area of Rice	9.91	8.74	7.88	7.99	7.65
Area of Maize	8.79	5.59	5.84	5.77	5.68
Area of Fallow	30.54	31.89	38.02	38.41	37.08

FARMERS WHO LEFT IN 1987

No. who grew Wheat	150	150	148	120	0
No. who grew Dry Wheat	47	48	43	41	0
No. who grew Rice	3	3	3	3	0
No. who grew Maize	58	54	52	45	0
No. who left Fallow	74	98	117	130	0
Area of Wheat	20.28	18.28	18.38	18.25	-
Area of Dry Wheat	12.78	10.87	8.49	8.84	-
Area of Rice	3.87	3.33	3.33	3.33	-
Area of Maize	10.18	8.27	8.70	8.18	-
Area of Fallow	28.38	28.18	28.81	28.80	-

NATIONAL AVERAGES

AFGHANISTAN	1978	1980	1985	1988	1987
Total Number of Farmers	5280	5119	5143	5170	4863
No. who grew Wheat	4509	4418	4387	4351	4067
No. who grew Dry Wheat	902	820	830	809	793
No. who grew Rice	954	944	813	910	878
No. who grew Maize	2248	2128	2125	2107	1968
No. who left Fallow	2094	2474	2834	2877	2568
Percent who grew Wheat	85.40	88.27	84.91	84.16	83.63
Percent who grew Dry Wheat	17.08	18.02	18.14	15.85	18.31
Percent who grew Rice	18.07	18.44	17.75	17.60	18.05
Percent who grew Maize	42.54	41.53	41.32	40.75	40.43
Percent who left Fallow	39.68	48.33	55.10	55.85	52.81
Area of Wheat	11.28	10.18	9.02	8.51	7.87
Area of Dry Wheat	25.42	23.41	19.69	18.79	19.37
Area of Rice	8.69	8.57	8.33	8.14	7.30
Area of Maize	4.17	4.01	3.78	3.88	3.68
Area of Fallow	23.18	24.08	28.64	28.38	28.29

FARMERS WHO LEFT IN 1987

Total Number of Farmers	4441	4331	4379	3749	85
No. who grew Wheat	4054	3934	3900	3170	47
No. who grew Dry Wheat	738	885	842	517	7
No. who grew Rice	783	780	748	332	1
No. who grew Maize	2087	2035	1944	1524	2
No. who left Fallow	1481	1977	2811	2523	12
Percent who grew Wheat	91.29	90.83	89.08	84.58	55.29
Percent who grew Dry Wheat	18.57	15.35	14.88	13.79	8.24
Percent who grew Rice	17.83	17.55	17.08	18.68	1.18
Percent who grew Maize	48.54	48.99	44.39	40.85	2.35
Percent who left Fallow	33.35	45.85	59.63	67.30	14.12
Area of Wheat	18.80	15.20	13.30	12.47	-
Area of Dry Wheat	30.49	26.83	25.10	23.79	-
Area of Rice	12.25	11.59	11.15	11.15	-
Area of Maize	8.83	8.15	5.47	5.20	-
Area of Fallow	30.91	28.58	29.18	33.30	-

TABLE 10. AVERAGE YIELDS OF DRY WHEAT AND IRRIGATED WHEAT

DRY WHEAT

PROVINCE	1978	1980	1985	1986	1987					
	NO OF FARMERS	YIELD								
BALKH	102	26.61	99	20.25	96	11.71	83	10.19	64	24.59
FARYAB	100	29.49	45	29.16	88	15.97	79	14.70	61	17.80
JOWZJAN	209	30.48	200	27.73	204	17.13	187	13.60	126	19.48
BAGHLAN	146	32.74	137	29.66	132	21.30	112	17.32	44	33.50
KUNDUZ	78	36.87	73	32.64	73	24.64	48	23.00	14	32.07
TAKAR	121	35.60	119	31.74	118	23.25	106	16.29	79	26.18
HELMAND	0	.00	0	.00	0	.00	0	.00	0	.00
KANDAHAR	6	38.50	6	30.17	5	25.00	5	22.60	0	.00
ZABUL	36	32.69	34	27.65	32	21.00	23	18.98	3	21.67
FARAH	8	35.63	8	31.50	8	26.38	8	26.75	5	31.40
AVERAGE YIELD		31.87		28.38		19.03		15.49		23.55

(1) Average Yield is a weighted average

(2) Yield in Seers per Jarib

IRRIGATED WHEAT

PROVINCE	1978	1980	1985	1986	1987					
	NO OF FARMERS	YIELD								
BALKH	351	65.84	348	59.72	343	46.81	307	44.17	115	48.00
FARYAB	80	50.83	55	47.62	74	36.55	72	32.26	20	37.30
JOWZJAN	190	57.22	179	51.28	181	38.20	144	32.52	53	36.32
BAGHLAN	505	69.67	494	65.11	461	51.96	378	44.75	197	45.90
KUNDUZ	727	79.68	709	73.21	683	61.12	618	55.43	224	63.11
TAKAR	182	72.65	180	63.53	178	51.37	158	43.97	64	51.41
HELMAND	390	84.33	375	75.00	326	60.86	302	54.17	126	54.66
KANDAHAR	253	61.87	239	54.05	206	46.01	195	38.77	0	.00
ZABUL	550	59.73	535	52.21	522	46.36	454	42.37	153	54.27
FARAH	333	62.69	331	60.79	263	43.27	219	47.95	184	51.97
AVERAGE YIELD		69.26		63.04		51.10		46.48		52.30

(1) Average Yield is a weighted average

(2) Yield in Seers per Jarib

TABLE 11. ZONAL AVERAGES - WAR EFFECTS

	1978	1980	1985	1986	1987		1978	1980	1985	1986	1987
NORTH-EAST						EAST-CENTRAL					
FARMERS IN AFGHANISTAN						FARMERS IN AFGHANISTAN					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	1	8	107	129	70	Destruction of irrign system	8	78	317	204	154
Burning of crop	0	3	87	77	39	Burning of crop	0	47	172	97	84
Bombing of village	1	18	458	293	188	Bombing of village	1	292	803	571	389
Destruction of grain store	2	2	29	27	13	Destruction of grain store	3	43	208	159	51
Livestock shot	0	1	282	171	54	Livestock shot	0	123	325	131	58
Livestock killed by mines	0	1	28	23	14	Livestock killed by mines	0	17	84	83	28
Av.no. of l'stock shot/farmer	0	2	18	22	18	Av.no. of l'stock shot/farmer	0	44	41	41	21
Av.no.of l'stock mined/farmer	0	4	13	8	42	Av.no.of l'stock mined/farmer	0	8	13	14	13
No. of farmers questioned	824					No. of farmers questioned	1319				
FARMERS WHO LEFT IN 1987						FARMERS WHO LEFT IN 1987					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	5	79	282	281	0	Destruction of irrign system	3	87	248	178	2
Burning of crop	1	15	130	153	0	Burning of crop	1	19	51	48	0
Bombing of village	2	134	648	515	0	Bombing of village	1	147	450	303	4
Destruction of grain store	1	17	118	95	0	Destruction of grain store	1	13	63	23	0
Livestock shot	0	85	381	215	0	Livestock shot	0	82	222	81	0
Livestock killed by mines	0	18	131	95	0	Livestock killed by mines	0	14	73	55	0
Av.no. of l'stock shot/farmer	0	31	35	22	0	Av.no. of l'stock shot/farmer	0	45	40	21	0
Av.no.of l'stock mined/farmer	0	18	22	30	0	Av.no.of l'stock mined/farmer	0	20	20	14	0
No. of farmers questioned	1001					No. of farmers questioned	723				
NORTH						SOUTH-WEST					
FARMERS IN AFGHANISTAN						FARMERS IN AFGHANISTAN					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	0	39	111	100	85	Destruction of irrign system	12	300	377	301	108
Burning of crop	0	7	70	68	46	Burning of crop	0	28	48	33	15
Bombing of village	1	87	309	288	149	Bombing of village	2	324	587	348	206
Destruction of grain store	2	35	42	52	8	Destruction of grain store	1	41	58	30	24
Livestock shot	0	8	94	89	41	Livestock shot	0	50	87	41	18
Livestock killed by mines	0	4	21	22	21	Livestock killed by mines	0	5	28	14	11
Av.no. of l'stock shot/farmer	0	39	27	15	17	Av.no. of l'stock shot/farmer	0	40	55	17	11
Av.no.of l'stock mined/farmer	0	15	13	7	8	Av.no.of l'stock mined/farmer	0	30	24	20	12
No. of farmers questioned	487					No. of farmers questioned	1100				
FARMERS WHO LEFT IN 1987						FARMERS WHO LEFT IN 1987					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	8	38	138	118	4	Destruction of irrign system	2	258	671	587	2
Burning of crop	0	13	65	50	1	Burning of crop	0	25	108	80	0
Bombing of village	2	85	299	232	2	Bombing of village	2	302	817	698	1
Destruction of grain store	0	17	82	71	0	Destruction of grain store	4	41	78	44	0
Livestock shot	0	37	188	85	0	Livestock shot	1	118	253	81	0
Livestock killed by mines	0	8	73	57	0	Livestock killed by mines	0	22	87	40	1
Av.no. of l'stock shot/farmer	0	17	37	43	0	Av.no. of l'stock shot/farmer	2	35	28	30	0
Av.no.of l'stock mined/farmer	0	13	51	25	0	Av.no.of l'stock mined/farmer	0	34	68	28	8
No. of farmers questioned	833					No. of farmers questioned	1100				

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TABLE 11. (CONT'D)

<u>SOUTH-EAST</u>						<u>NORTH-WEST</u>					
	<u>1978</u>	<u>1980</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>		<u>1978</u>	<u>1980</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
<u>FARMERS IN AFGHANISTAN</u>						<u>FARMERS IN AFGHANISTAN</u>					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	3	222	189	150	50	Destruction of irrign system	0	31	144	151	83
Burning of crop	2	108	197	114	27	Burning of crop	0	3	31	45	18
Bombing of village	7	377	382	239	123	Bombing of village	0	82	204	222	120
Destruction of grain store	2	213	333	204	29	Destruction of grain store	0	8	29	52	15
Livestock shot	2	262	276	152	109	Livestock shot	0	44	101	88	38
Livestock killed by mines	4	84	142	82	28	Livestock killed by mines	0	8	18	35	8
Av.no. of l'stock shot/farmer	30	21	38	19	13	Av.no. of l'stock shot/farmer	0	10	11	12	15
Av.no.of l'stock mined/farmer	8	18	16	17	7	Av.no.of l'stock mined/farmer	0	10	21	7	5
No. of farmers questioned	1101					No. of farmers questioned	527				
<u>FARMERS WHO LEFT IN 1987</u>						<u>FARMERS WHO LEFT IN 1987</u>					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	4	88	202	114	2	Destruction of irrign system	0	5	35	34	1
Burning of crop	0	18	62	57	0	Burning of crop	0	2	5	14	0
Bombing of village	4	254	532	325	6	Bombing of village	1	18	98	70	1
Destruction of grain store	0	31	84	39	0	Destruction of grain store	0	2	14	8	0
Livestock shot	0	82	247	92	1	Livestock shot	0	8	57	22	2
Livestock killed by mines	0	30	82	35	0	Livestock killed by mines	0	8	19	22	0
Av.no. of l'stock shot/farmer	0	33	28	40	3	Av.no. of l'stock shot/farmer	0	50	58	22	5
Av.no.of l'stock mined/farmer	0	31	25	19	0	Av.no.of l'stock mined/farmer	0	14	10	18	0
No. of farmers questioned	820					No. of farmers questioned	169				
<u>NATIONAL TOTAL</u>											
<u>FARMERS IN AFGHANISTAN</u>						<u>FARMERS IN AFGHANISTAN</u>					
	<u>1978</u>	<u>1980</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>						
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	22	879	1255	1035	5997	Destruction of irrign system					
Burning of crop	2	194	583	434	207	Burning of crop					
Bombing of village	12	1178	2741	1981	1135	Bombing of village					
Destruction of grain store	10	343	890	524	140	Destruction of grain store					
Livestock shot	2	488	1165	682	314	Livestock shot					
Livestock killed by mines	4	97	331	259	110	Livestock killed by mines					
Av.no. of l'stock shot/farmer	30	158	187	125	92	Av.no. of l'stock shot/farmer					
Av.no.of l'stock mined/farmer	8	83	102	71	88	Av.no.of l'stock mined/farmer					
No. of farmers questioned	5158					No. of farmers questioned					
<u>FARMERS WHO LEFT IN 1987</u>						<u>FARMERS WHO LEFT IN 1987</u>					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	20	533	1572	1288	11	Destruction of irrign system					
Burning of crop	2	90	419	402	1	Burning of crop					
Bombing of village	12	920	2840	2143	14	Bombing of village					
Destruction of grain store	8	121	445	280	0	Destruction of grain store					
Livestock shot	1	400	1346	588	3	Livestock shot					
Livestock killed by mines	0	98	481	304	1	Livestock killed by mines					
Av.no. of l'stock shot/farmer	2	211	224	178	8	Av.no. of l'stock shot/farmer					
Av.no.of l'stock mined/farmer	0	127	198	133	6	Av.no.of l'stock mined/farmer					
No. of farmers questioned	4348					No. of farmers questioned					

TABLE 12. DIRECT EFFECTS OF THE WAR EXPRESSED AS PERCENTAGE OF FARMERS REPORTING

	1978	1980	1985	1986	1987		1978	1980	1985	1986	1987
<u>NORTH-EAST</u>						<u>EAST-CENTRAL</u>					
<u>FARMERS IN AFGHANISTAN</u>						<u>FARMERS IN AFGHANISTAN</u>					
Percent of farmers reporting:						Percent of farmers reporting:					
Destruction of irrign system	0	1	17	21	13	Destruction of irrign system	0	6	24	15	12
Burning of crop	0	0	11	12	8	Burning of crop	0	4	12	7	5
Bombing of village	0	3	73	47	27	Bombing of village	0	22	61	43	28
Destruction of grain store	0	0	5	4	2	Destruction of grain store	0	3	18	12	4
Livestock shot	0	0	45	27	9	Livestock shot	0	9	25	10	4
Livestock killed by mines	0	0	4	4	2	Livestock killed by mines	0	1	7	8	2
No. of farmers questioned	624					No. of farmers questioned	1319				
<u>FARMERS WHO LEFT IN 1987</u>						<u>FARMERS WHO LEFT IN 1987</u>					
Percent of farmers reporting:						Percent of farmers reporting:					
Destruction of irrign system	0	8	28	26	0	Destruction of irrign system	0	12	34	24	0
Burning of crop	0	1	13	15	0	Burning of crop	0	3	7	7	0
Bombing of village	0	13	65	51	0	Bombing of village	0	20	62	42	1
Destruction of grain store	0	2	12	9	0	Destruction of grain store	0	2	3	3	0
Livestock shot	0	8	38	21	0	Livestock shot	0	9	31	11	0
Livestock killed by mines	0	2	13	9	0	Livestock killed by mines	0	2	11	8	0
No. of farmers questioned	1001					No. of farmers questioned	723				
=====						=====					
<u>NORTH</u>						<u>SOUTH-WEST</u>					
<u>FARMERS IN AFGHANISTAN</u>						<u>FARMERS IN AFGHANISTAN</u>					
Percent of farmers reporting:						Percent of farmers reporting:					
Destruction of irrign system	0	8	23	21	13	Destruction of irrign system	1	27	34	27	17
Burning of crop	0	1	14	14	8	Burning of crop	0	2	4	3	1
Bombing of village	0	18	63	59	31	Bombing of village	0	29	63	32	19
Destruction of grain store	0	7	9	11	2	Destruction of grain store	0	4	5	3	2
Livestock shot	0	2	19	20	8	Livestock shot	0	5	8	4	2
Livestock killed by mines	0	1	4	5	4	Livestock killed by mines	0	0	3	1	1
No. of farmers questioned	487					No. of farmers questioned	1100				
<u>FARMERS WHO LEFT IN 1987</u>						<u>FARMERS WHO LEFT IN 1987</u>					
Percent of farmers reporting:						Percent of farmers reporting:					
Destruction of irrign system	1	7	28	22	1	Destruction of irrign system	0	23	61	53	0
Burning of crop	0	2	12	9	0	Burning of crop	0	2	10	7	0
Bombing of village	0	12	58	44	0	Bombing of village	0	27	74	63	0
Destruction of grain store	0	3	17	13	0	Destruction of grain store	0	4	7	4	0
Livestock shot	0	7	35	18	0	Livestock shot	0	11	23	8	0
Livestock killed by mines	0	1	14	11	0	Livestock killed by mines	0	2	8	4	0
No. of farmers questioned	533					No. of farmers questioned	1100				

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TABLE 12. (CONT'D)

<u>SOUTH-EAST</u>						<u>NORTH-WEST</u>					
<u>FARMERS IN AFGHANISTAN</u>						<u>FARMERS IN AFGHANISTAN</u>					
Percent of farmers reporting:						Percent of farmers reporting:					
Destruction of irrign system	0	20	18	14	5	Destruction of irrign system	0	8	27	29	12
Burning of crop	0	10	18	10	2	Burning of crop	0	1	8	9	3
Bombing of village	1	34	35	22	11	Bombing of village	0	18	39	42	23
Destruction of grain store	0	19	30	19	3	Destruction of grain store	0	2	5	10	3
Livestock shot	0	24	25	14	10	Livestock shot	0	8	19	17	7
Livestock killed by mines	0	8	13	7	3	Livestock killed by mines	0	1	3	7	2
No. of farmers questioned	1101					No of farmers questioned	527				
<u>FARMERS WHO LEFT IN 1987</u>						<u>FARMERS WHO LEFT IN 1987</u>					
Percent of farmers reporting:						Percent of farmers reporting:					
Destruction of irrign system	0	8	25	14	0	Destruction of irrign system	0	3	21	20	1
Burning of crop	0	2	8	7	0	Burning of crop	0	1	3	8	0
Bombing of village	0	31	65	40	1	Bombing of village	1	11	57	41	1
Destruction of grain store	0	4	10	5	0	Destruction of grain store	0	1	8	5	0
Livestock shot	0	11	30	11	0	Livestock shot	0	4	34	13	1
Livestock killed by mines	0	4	10	4	0	Livestock killed by mines	0	5	11	13	0
No. of farmers questioned	820					No. of farmers questioned	189				
=====											
<u>NATIONAL AVERAGES</u>											
<u>FARMERS IN AFGHANISTAN</u>						<u>FARMERS IN AFGHANISTAN</u>					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	0	13	24	20	12	Destruction of irrign system	0	12	38	30	0
Burning of crop	0	4	11	8	4	Burning of crop	0	2	10	9	0
Bombing of village	0	23	53	38	22	Bombing of village	0	21	85	49	0
Destruction of grain store	0	7	13	10	3	Destruction of grain store	0	3	10	8	0
Livestock shot	0	9	23	13	8	Livestock shot	0	9	31	13	0
Livestock killed by mines	0	2	8	5	2	Livestock killed by mines	0	2	11	7	0
Av.no. of l'stock shot/farmer	1	3	4	2	2	Av.no. of l'stock shot/farmer	0	3	5	4	0
Av.no.of l'stock mined/farmer	0	2	2	1	2	Av.no.of l'stock mined/farmer	0	3	5	3	0
No. of farmers questioned	5158					No. of farmers questioned	4348				
<u>FARMERS WHO LEFT IN 1987</u>						<u>FARMERS WHO LEFT IN 1987</u>					
Numbers of farmers reporting:						Numbers of farmers reporting:					
Destruction of irrign system	0	12	38	30	0	Destruction of irrign system	0	12	38	30	0
Burning of crop	0	2	10	9	0	Burning of crop	0	2	10	9	0
Bombing of village	0	21	85	49	0	Bombing of village	0	21	85	49	0
Destruction of grain store	0	3	10	8	0	Destruction of grain store	0	3	10	8	0
Livestock shot	0	9	31	13	0	Livestock shot	0	9	31	13	0
Livestock killed by mines	0	2	11	7	0	Livestock killed by mines	0	2	11	7	0
Av.no. of l'stock shot/farmer	0	3	5	4	0	Av.no. of l'stock shot/farmer	0	3	5	4	0
Av.no.of l'stock mined/farmer	0	3	5	3	0	Av.no.of l'stock mined/farmer	0	3	5	3	0
No. of farmers questioned	4348					No. of farmers questioned	4348				

ANNEX 3 A NOTE ABOUT THE AUTHORS

PROFESSOR AZAM GUL, the Director of the Agricultural Survey of Afghanistan, was formerly Professor of Agriculture at the University of Kabul.

He was born in Jalalabad on September 25th, 1933 and was educated at the Agricultural Vocational High School, Kabul, the University of Wyoming, and Washington State University where he was awarded a Ph.D. in Agronomy in 1970.

From 1959 to 1962 he was a teacher at the Agricultural Vocational High School in Kabul, becoming its Director in 1962. In 1964 he was appointed Assistant Dean of the College of Agriculture, Kabul, a post which he held until he resumed his own studies in 1967. On returning from Washington State University in 1970 he became Assistant Professor at the Department of Agronomy, Kabul University, and in 1975 Associate Professor and Chairman of the Department of Agronomy. Meanwhile, in 1974 he was appointed Visiting Professor of Agriculture at Washington State University and Davis University, California. Then in 1976 he became Professor of Agronomy and Chairman of the Department at Kabul University, a post which he held until 1982 when he became a refugee in Pakistan.

Between September 1983 and June 1984, Azam Gul was a Research Associate at the Department of Agronomy, University of Nebraska, and between July 1984 and December 1986 he was Manager of Agronomic Research, ARCO Seed Company, USA.

AGRISYSTEMS is a group of consultancy companies specialising in agricultural and rural development, mainly in developing countries. The company started in Rome in 1979 with Agrisystems Srl., and now has its main office, Agrisystems (Overseas) Ltd., in Aylesbury, England. Agrisystems (Nordic) AB is based in Stockholm.

In 1987 Agrisystems was employed by 25 different organisations in the public and private sectors and worked in 29 different countries using 40 permanent and specialised contract staff.

Originally specialising in agricultural engineering and agricultural mechanisation, the group now offers a wider range of expertise including economics, agricultural economics, agronomy, land use planning, crop storage and processing, seed production, livestock development, agricultural credit, rural communications and extension, marketing, local manufacturing of tools and equipment, and rural structures.

For the Agricultural Survey of Afghanistan, two main fields of expertise were used: agricultural survey design and methodology; and computer processing techniques. Tom Morrison assisted the Director in the overall design of the survey, and Lawrence Clarke and Liam Maguire were responsible for the development of the database, installation of hardware, the training of computer operators, and the analysis of data.