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08 JAN 1986

MEMORANDUM FOR: (See Distribution List)

FROM: [Redacted] Chief, Strategic Resources Division Office of Global Issues 25X1

SUBJECT: Afghanistan: A Good 1985 Grain Harvest [Redacted] 25X1

1. The attached study provides a comprehensive look at regional crop conditions in Afghanistan and gives our best estimate of 1985 wheat output, a useful indicator of total food production. The study is based primarily on the analysis of [Redacted] meteorological data acquired during the 1985 crop season. [Redacted] 25X1 25X1

2. Land abandonment, as the result of military combat, continues to slowly increase in Afghanistan. In our estimation, it is not a major problem for the Afghan government. However, as we earlier agreed, we have begun a study to more precisely quantify the amount of this abandonment. We expect to complete it in the spring of 1986. [Redacted] 25X1

3. This assessment was produced by [Redacted] Agricultural Assessments Branch, Strategic Resources Division, Office of Global Issues. Comments and questions may be addressed to the Chief, Agricultural Assessments Branch [Redacted] 25X1 25X1

[Redacted] 25X1

Attachment: Afghanistan: A Good 1985 Grain Harvest [Redacted] 25X1 GI M 85-10328, January 1986 [Redacted] 25X1

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SUBJECT: Afghanistan: A Good 1985 Grain Harvest [redacted]

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OGI/SRD/AAB, [redacted] (8 January 1986)

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Central Intelligence Agency



Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

08 JAN 1985

Afghanistan: A Good 1985 Grain Harvest

Summary

Afghan farmers have harvested a good 1985 grain crop. Based on an analysis of imagery and meteorological data, we estimate that 2.9 million tons of wheat, the staple of the Afghan diet and historically about 60 percent of annual grain output, were produced. Grain imports--typically over half coming from the USSR--will still be required to assure food availability in the rapidly growing urban centers. Assuming that our projection of 1985 wheat imports--400,000 tons--is correct, food supplies should be better than last year. However, localized shortages are likely to continue as the result of military action and transportation problems. [redacted]

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Wheat production rebounded in 1985 despite continuing combat operations. We identified very few incidents of intentional crop destruction this year [redacted] and our analysis continues to indicate that the amount of destruction, whether intentional or caused accidentally by military action, is insignificant compared to total production. Abandonment of agricultural land continues in combat areas, but we estimate that at a maximum it does not exceed 5 percent of total cropland, and it could be considerably less. Furthermore, there is some limited evidence to suggest that the loss of production due to abandonment is being offset by shifting agricultural production from cash to food crops and by bringing new land under cultivation. [redacted]

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This memorandum was prepared by [redacted] Agricultural Assessments Branch, Strategic Resources Division, Office of Global Issues. Comments and questions may be addressed to [redacted] Chief, Strategic Resources Division, OGI [redacted]

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Afghanistan: A Good 1985 Grain HarvestBackground

Agricultural Constraints. Afghanistan is mostly unsuitable for agriculture with mountains, desert, and forest extending across the country. The poorly structured soils, limited water availability, severe climate, and primitive farming practices all limit Afghanistan's agricultural production. The soils are alkaline, high in calcium, and low in organic matter. Precipitation can fluctuate considerably from year to year with most of the country unable to support dryland farming. The agriculture depends heavily on irrigation from the rivers and streams formed from the snow melt in the mountains. The arid continental climate is comprised of hot, dry summers, and wet, usually harsh winters. Agriculture is largely of a subsistence nature. Farming operations are mostly powered by men and draft animals with limited use of chemical fertilizers, pesticides, or new seed varieties. However, the Soviets and the Afghan central government are continuing measures begun prior to the Soviet occupation to bolster agricultural output. These include increasing the availability of fertilizers and improved varieties of seed, importing agricultural machinery, and using agricultural technical advisors.

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Cropping Patterns. The arable land in Afghanistan is estimated at 8 million hectares. However, less than half is cultivated because of the limited availability of water. Irrigated land is estimated at 3.3 million hectares but due to fallowing practices only three-fourths is planted each year. Approximately 85 percent of Afghanistan's agricultural production is from irrigated crops. Dryland crops, mostly located in the foothills of the northern plains are estimated at 900,000 hectares.

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Approximately 90 percent of Afghanistan's crops are grain crops comprised of wheat, corn, rice, barley, and millet. Fruits and vegetables account for approximately 6 percent of the agriculture. Industrial crops, to include cotton, sugar beets, oilseeds, and poppies, account for the rest. Wheat, the staple crop in the Afghan diet, comprises 60 percent of the grain production. Wheat yields in Afghanistan are low by world standards with the irrigated crops averaging 16-17 quintals per hectare and the dryland 5-6 quintals per hectare. Irrigated winter wheat in the area of the Soviet Union adjacent to Afghanistan, averaged 24 quintals per hectare and 10 quintals per hectare on dryland from 1976-80. Despite low yields, Afghanistan's traditional wheat varieties tend to produce stable yields. Grain production does not show wide fluctuations from year to year as does the Soviet grain crops.

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Population Trends. Approximately 3.5 million people, out of a pre-war population estimated at 15.3 million, have fled the country to Pakistan and Iran. Rapid growth since the 1979 invasion, however, brought the population back to roughly 15 million. The exodus occurred primarily from the eastern provinces with estimates of approximately 2.5 million refugees located in refugee camps in Pakistan. Fewer refugees have left the western provinces and fled into Iran. Most of the refugees have been from the agrarian and pastoral sectors, which made up 85 percent of the population prior to the Soviet occupation. In addition, many people have migrated to the cities in order to escape the military conflict in the countryside and to take advantage of better food supplies. For example, according to the State Department, the population of Kabul increased from 800,000 in 1979 to 2.5 million in 1985. [redacted]

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Weather Summary

Although a serious water shortage existed in Afghanistan until the end of March 1985, meteorological and imagery data indicated that the situation improved steadily during the remainder of the year. Total rainfall was sufficient to support crop production nearly everywhere and equally important, the precipitation apparently fell at optimum times for plant development.

- o Winter: [redacted] as a result of insufficient snowfall, secondary rivers and most feeder streams were dry or nearly dry during March, much lower than in March 1984. Irrigation canals were running, but with greatly reduced flow. 25X1
- o Spring: The outlook began to change on 31 March when a deep low pressure area with an associated frontal system moved across the country from west to east dropping unually large amounts of rain. A second system moved across the country during the first week in April contributing more precipitation and encouraging the growth of grain crops. Unseasonable rain in varying amounts also fell over wide areas during the remainder of April, May, and June.
- o Summer: Still more rain fell in the northeast provinces during the normally dry month of July. Rivers and streams that normally dry up as the growing season progresses, continued to flow. Although most grain crops were harvested by mid-summer, additional water provided plenty of moisture for the non-grain crops.
- o Fall: When last observed [redacted] rivers and streams in most areas of the country were still flowing at levels above normal. [redacted] 25X1

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[Redacted]

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The Wheat Estimate

The 1985 Afghanistan wheat crop is estimated at 2.9 million metric tons.¹ This brings production back to the level attained prior to the 1984 drought.² Agricultural output was good in most areas of the country, except where lengthy and intense combat had occurred and forced farmers to abandoned the land. Our analysis indicates that in a few regions such as in Charikar and Kabul, yields were excellent. [Redacted]

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METHODOLOGY

This assessment is based primarily on the analysis of Landsat [Redacted] imagery, supplemented with meteorological data. [Redacted]

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[Redacted]

[Redacted] At least one half of the entire agricultural area of the country was also imaged with the unclassified multi-

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1 The Afghan government has reported that over 2.85 million tons of wheat were produced in 1985. [Redacted]

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2 [Redacted] harvest and procurement activities in neighboring countries, which are generally affected by the same weather patterns as Afghanistan, also support our assessment of above average Afghan crop prospects. The size of the grain harvest in south Uzbek, SSR--which adjoins the Afghan dryland area on the north--was above plan in late June according to Moscow Domestic Radio. Unclassified reporting from Pakistan--to the east of Afghanistan--indicates that grain procurements for the May-July period ran about 10 percent higher this year than last. [Redacted]

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3 Because of the direct relationship between the amount of grain harvested and the amount of straw shocks observed in the fields, a comparative estimate of the difference in grain yields can be made from one year to the next. [Redacted]

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[redacted]

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spectral Landsat system. [redacted]

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Intentional Crop Destruction. Refugee reports alleging the intentional destruction of crops and irrigation canals by the military, continued to be received during 1985. However [redacted] direct actions against Afghanistan's agriculture have occurred in only a few locations. Most often when damage to crops and irrigation systems was observed, it appeared to be inadvertent and not the result of deliberate action to disrupt agriculture. [redacted] in Herat, for example, except for some isolated cases, military vehicles almost always cross over irrigation canals at vehicle crossings and avoid driving through active agricultural fields. Furthermore, the occurrence of crop destruction in Afghanistan both intentional and non-intentional is so limited that we believe it has no significant impact on total agricultural production. [redacted]

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Agricultural Abandonment. Abandonment of agricultural land is a more important problem in Afghanistan than crop destruction. We are uncertain of its long-term impact on production levels because thus far we have not measured⁴ the amount of land abandoned, the amount of new land being brought under cultivation and the extent to which land formerly devoted to cash crops has been shifted into food production.⁵ We have seen large scale abandonment caused by military operations, but only in limited areas such as the Panjsher and Konar Valleys and near Jalalabad Airfield. In the worse case, however, we believe that less than five percent of the land that was in production prior to the Soviet invasion has been abandoned. [redacted]

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- o Abandonment occurs primarily in those areas where there is heavy combat, generally within 40 miles of the Pakistan border. There is little if any abandonment, for example, in the northern provinces which account for about 50% of the agricultural land.
- o As much as 25% of agricultural land is left fallow each year, thus not all abandoned land would have been productive in the current year. [redacted]

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⁴ An effort to measure the amount of abandonment and new land being brought into production is underway. [redacted]

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⁵ Total area sown to wheat in Afghanistan is still held at 2.6 million hectares. This is based on historical Foreign Agriculture Service estimates of 1982 and 1983 and current year visual estimates made from imagery. [redacted]

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[redacted]

If 5% of the land has been abandoned, the total sown area would be reduced from 2.6 to 2.5 million hectares. However, [redacted] there is one area near Herat where previously untilled land has been placed in production. It is possible other new fields exist outside the area we have sampled [redacted]. Furthermore, UN/FAO statistics indicate that during the 1980s the production of industrial crops has decreased in Afghanistan while the production of food crops has remained stable. While we do not put great trust in FAO statistics on Afghanistan, it is possible that land is being taken out of cotton and sugar beet production, for example, and used for food production. [redacted]

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Food Distribution and Imports

Afghanistan must import foreign grain each year to supplement the rapidly growing urban centers. Based on past import figures, we estimate grain imports, mostly wheat, will amount to about 400,000 tons this year. Approximately 225,000 tons arrives from the Soviet Union, of which 100,000 tons is purchased and approximately 125,000 tons is provided as grant aid. The remainder arrives through unofficial channels from Pakistan. Since the Soviet occupation, the Afghan government has nearly doubled its imports of foreign grain to alleviate food shortages, especially in urban areas. [redacted]

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As we have indicated in the past, the entire Afghan food supply chain--from the farm to the marketplace--remains fragile. Any escalation in the fighting or a Soviet effort to disrupt the food distribution network could easily upset the tenuous balance, thereby leading to shortages, particularly in the cities. According to [redacted] open source reporting, recent Soviet and insurgent operations have caused some disruptions in food availability. Localized shortages are occurring, particularly in areas of concentrated fighting, from attempts by the Soviets to deny food to insurgents. [redacted]

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A Regional View of Yields

Eastern Valleys and Provinces (Kapisa, Laghman, Konarha, Parvan, Vardak, Ghazni, Paktia, Paktika, Lowgar, Nangarhar, and Kabul).

These 11 provinces surrounding Kabul contain approximately 30 percent of the country's agricultural land. Some of the most fertile and high yielding valleys in Afghanistan are located in these valleys. It is, however, also the area most affected by the Soviet occupation. The major valleys and basins include the Panjsher, Charikar, Nangarhar, Konar, Ghazni, Lowgar, and Khowsht. At least three of these valleys (Panjsher, Konar and Nangarhar) have been the sites of heavy military operations. [redacted]

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The **Panjsher Valley**, located approximately 60 miles northeast of Kabul in Kapisa Province, is of interest since it has been the scene of almost continuous fighting since early

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[REDACTED]

1984. The valley is one of the few locations where deliberate burning of grain fields was identified in 1984. Because of the continued military presence this year, farmers have almost totally abandoned the valley and crops are not being cultivated. However, since this long narrow valley is only a minor grain producer this abandonment does not have a significant impact on Afghanistan's total grain production. [REDACTED]

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The **Charikar Basin** is a fertile valley located approximately 40 miles north of Kabul at the base of the Panjsher Valley. This area shows little fluctuation in grain production from year to year and these high yielding irrigated fields traditionally produce surplus grain for the Kabul region. Harvest occurred on schedule in June this year and yields across the basin were excellent. The irrigation canals were in good repair with adequate water and unlike most years the river level increased through the growing season. With the exception of some fields that had been burned near the entrance to the Panjsher Valley, the only destruction observed in the area was caused by armored vehicles crossing some fields. The minor destruction observed would have no significant effect on total grain production for this valley. [REDACTED]

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In the **Nangarhar Valley** surrounding Jalalabad, 40 miles east of Kabul, and the adjacent **Konar Valley**, harvest occurred on schedule in May. Yields were in the good to excellent range in the Nangarhar area and fair to good in the Konar Valley. However, this region is showing the effects of continued military activity. Some destruction, due to vehicles driving through the fields and burning of crops, was observed in both the Nangarhar and Konar Valleys. Some of the burned fields in the Konar Valley appeared to have been intentionally destroyed. But the factor most affecting agricultural production in these valleys is the steady decline in population and abandonment of land since the Soviet invasion in 1979. It appears that in the Konar Valley the abandonment was mostly caused from continued military operations. In the Nangarhar area much of the abandonment, in addition to the military operations, is apparently an attempt to secure large defensive zones around military installations. For example, a large agricultural area adjacent to Jalalabad Airfield is almost totally uncultivated this year [REDACTED] [REDACTED]

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[redacted]

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Crop yields in **Ghazni** province this year looked good with lodging observed in many of the fields.⁶ Unlike last year, water was still flowing in the canals in late July. [redacted]

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[redacted] The crops looked good early in the season [redacted]

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The **Kabul** (Shomali) region, located around Kabul city, had good to excellent yields this year with heavy lodging in many of the fields. The irrigation canals were flowing with a few indications of minor damage near military installations from excessive military vehicle traffic. There is very little abandonment in this region. [redacted]

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Crop yields in **Lowgar** Province historically are lower than in the provinces to the north. However, yields were good this year for this area and better than yields in 1984 since water availability was not a problem. [redacted]

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Grain yields are good in both **Paktia** and **Paktika** Provinces. Yields in these two provinces have not fluctuated in the last two years since water availability has not been a problem. Military activity continues in this area adjacent to the Afghan-Pakistan border. However, only minor damage from vehicle tracks through agricultural fields was observed in Paktia Province. Although its population was never large, abandonment in the Khowst Valley in Paktia is the greatest we have seen in Afghanistan. Total production in Paktia as a whole is probably slowly decreasing as abandonment of cropland continues. [redacted]

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Northern Provinces (Badghis, Faryab, Jowzjan, Balkh, Samangan, Konduz, Takhar, Badakhshan, and Baghlan).

These nine northern provinces, bordering the Soviet Union, include all of Afghanistan's Northern Plains. This region contains irrigated crops in the river basins and almost all of Afghanistan's dryland crops in the foothills. It is referred to as the "bread basket" of Afghanistan, and accounts for approximately fifty percent of the country's agricultural land. [redacted]

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Geographic features and agricultural practices are similar across the region, but climatic conditions and soils vary. These variations produce differences in both irrigated and dryland crop yields. The western provinces of **Badghis, Faryab, and Jowzjan,**

⁶ Lodging is a condition that occurs when grain stalks bend or break and the crop forms a flattened or tangled mass. Generally, lodging results when the weight of the mature head cannot be supported by the stalk, and in these circumstances it can indicate good yields. However, wind, rain or hail also can cause the condition. [redacted]

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adjacent to the Karakum Desert, are hot and arid and the soils appear poor. The lowest yields in dryland and irrigated crops are found in these three provinces. The river near Meymaneh in Faryab Province was dry and remained dry throughout the season. However, adequate moisture must have been available earlier in the season since yields for the irrigated and dryland crops, although not as good as 1983, were better than in 1984. The other rivers observed in these provinces continued to flow, harvest was on schedule, and yields were consistently better than last year. [redacted]

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The provinces in the central area, **Balkh, Samanyan, Konduz, and Baghlan**, have the highest yields in the region and they show little change between years. Drought conditions in 1984 had little effect on this area. This year, the harvest occurred on schedule in mid-June and July and yields were as good as or slightly better than in 1984 [redacted]

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The summer crops in **Baghlan Province**, including rice, were observed in October and yields were excellent [redacted] Dryland and irrigated crop yields in the two eastern provinces of Takhar and Badakhshan were good. Unlike most years, the level of the Kowkcheh River in western Badakhshan Province increased from mid-May through late June of this year [redacted] As observed in most other areas, yields in Takhar and Badakhshan are better than in 1984 and not quite as good as 1983. The yields in these two provinces this year, as in most years, are better than the yields in the three western provinces but not as good as the higher-yielding four central provinces. [redacted]

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Central Mountain Provinces (Bamian, Ghowr, and Oruzgan).

This steep mountain area, known as the Hazarehjat Region, contains less than 5% of Afghanistan's agriculture in some small narrow valleys. The available imagery of this area is limited except for the Bamian Valley. [redacted] this intensely cultivated valley indicated good yields for this area. Harvest occurs late here since the crops are grown at elevations greater than 2,500 meters and the cooler temperatures cause them to mature slower. [redacted]

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Western Border Provinces (Herat, Farah, and Nimruz).

The three western provinces bordering Iran contain approximately ten percent of Afghanistan's agriculture. The Khash Desert, centered between the two southern provinces of Farah and Nimruz, limits the amount of arable land in this area. The most agriculturally productive area in this region is along the Harirud River in **Herat**. Harvest was on schedule in this area in late May and most of June with heavy lodging in many fields and good yields evident. Irrigation canals were flowing with adequate water and there was no evidence of military operations to destroy or disrupt this fragile system [redacted] Intense military activity around Herat in 1985 had little impact

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[redacted]

on agricultural production. Bombing of some areas in Herat destroyed a few fields, and other surrounding fields were burned, but it is difficult to determine if any of the fields were burned intentionally or caught fire as a result of the military activity [redacted] In either case, most of the fields had been harvested prior to the surge of military activity in late June and July.

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[redacted]

[redacted] Around Shindand, in Farah Province, significant military activity was evident. However, the fragile kareses (underground water tunnels) continue to flow providing much of the irrigation water for this area. Harvest was on schedule in June with good yields. Abandonment in this area, perhaps due to the persistent military presence, appears to increase each year, although its impact on total production is still minor. [redacted]

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Southern Provinces (Helmand, Qandahar, and Zabol Provinces).

Agriculture in the vast desert areas of these provinces consists mostly of bands of irrigated crops along branches of the Helmand and Arghandab rivers. It amounts to approximately ten percent of Afghanistan's total cultivated land. The poor sandy soils and severe desert environment here cause the yields of crops to be consistently less than in most other irrigated areas of Afghanistan. [redacted]

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Harvest occurred on schedule in this area in late May and early June and yields were good for these provinces. Military activity was extensive around Qandahar City and in the valleys around Lashkar Gah in Helmand Province. Numerous villages surrounding Qandahar City have been bombed in past years and continued to be bombed this year. Although it appears that the villages are the major targets, some irrigation ditches had been inadvertently hit. However, despite the bomb damage, the main irrigation canals continue to flow. Individual fields have been burned around Qandahar near bombed villages and in numerous locations near Lashkar Gah [redacted] Some of the burned fields may have been the indirect result of the high military activity, but armored vehicle tracks leading into a few fields suggest that some of the burning may have been intentional. There is some noticeable increase in the amount of abandonment around the bombed villages near Qandahar. However, despite all this heavy military activity, a large majority of the agricultural activity continues. [redacted]

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Provinces in Afghanistan



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Photos A and B
Afghanistan: Increased Abandonment in Jalalabad and
Konar Valley From 1979 to 1985

Photo A, Jalalabad and Konar Valley, 22 March 1979

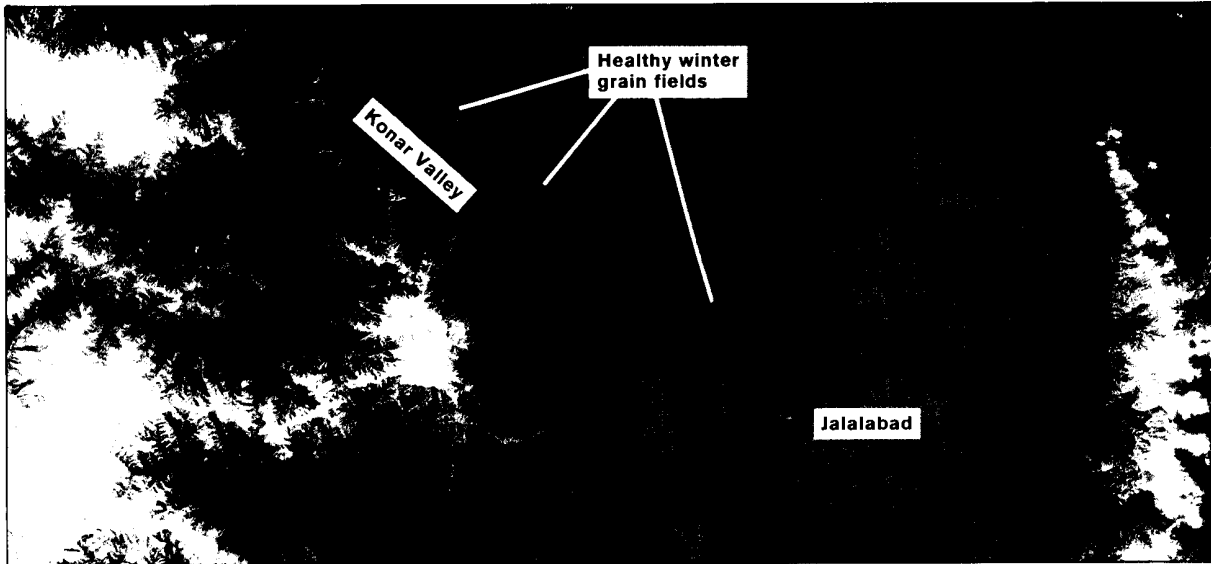
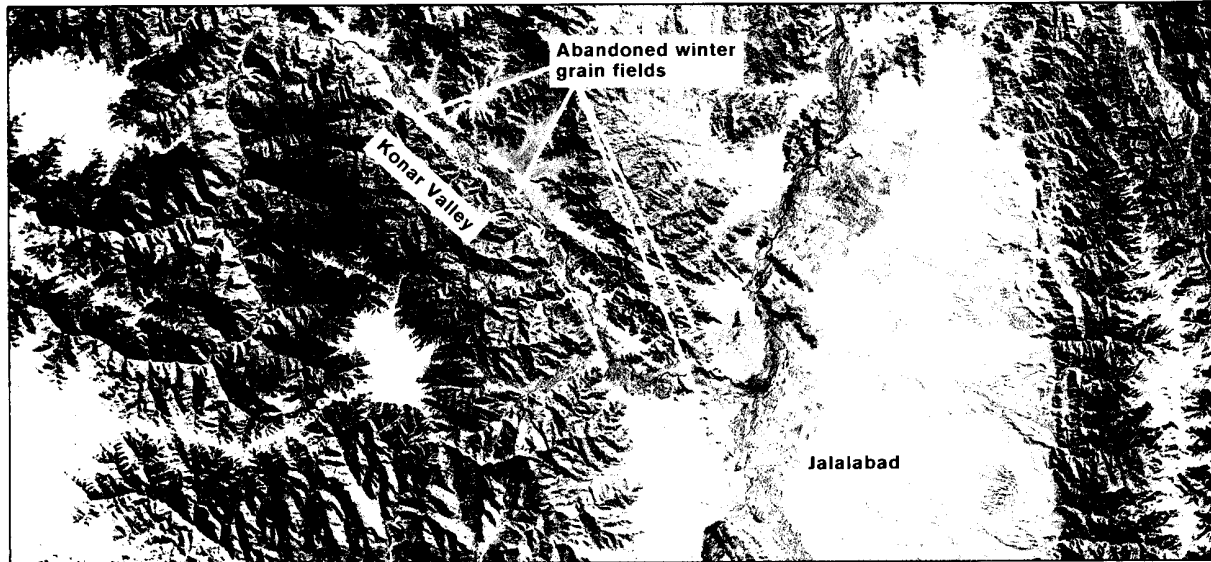


Photo B, Jalalabad and Konar Valley, 7 March 1985



Comparative Landsat imagery of Jalalabad and the Konar Valley on the 22nd of March 1979 prior to the Soviet invasion and the 7th of March 1985 indicates how abandonment has impacted this region. The winter grain fields have come out of dormancy by these imaging dates and the bright red areas indicates areas that have been sown in winter wheat.

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