

5.1. 2001-2002 agricultural year

5.1.1. General conditions

Most of the country has an arid to semi-arid climate with rainfall ranging from 100 to 400 mm. The climate is typically continental with temperatures varying from -10 degrees C in winter to 34 degrees C in summer. Precipitation is erratic and often occurs as violent storms. Over half the country receives less than 300 mm of rain / snow. About half the annual precipitation occurs in winter (between January and March), except for the southeastern mountains, which catch the western edge of the summer monsoon. Most precipitation falls as snow in the central mountains. About 30% precipitation falls as rain in the spring between April and June.

In the last three years before the 2001-02 agricultural year, precipitation had been well below normal over much of the country, resulting in the worst drought conditions in living memory. Lack of rain, and more significantly lack of snow over the central mountains, had affected replenishment of water tables and the sources of the rivers. In the northern plains and foothills, which in normal years produce much of the country's rain-fed wheat, it is usual to expect about 250 mm of rain per annum. In 1999-2001 precipitation was negligible in this area and there had been almost total crop failures over much of the range.

The agricultural season commenced with timid rains in the autumn of 2001 after three years of severe drought all over the country, and during the military attacks that drove out the Taliban regime. The rains were more or less sustained in the North, but continued to be scarce in the South. During the 2001-02 season the drought conditions ended in most of the country through increased precipitation in the North and Centre, but persisted in the South. In certain southern areas farmers planted after the first rains, only to see their crops failing to germinate as rainfall completely stopped afterwards.

Though cumulative precipitation was generally well below the pre-1990 ten year mean, late good rains that fell during the cereal flowering and grain filling period in March/April/May 2002 contributed significantly to agricultural production in 2002. This is true particularly in the north and western areas (major cereal crop-production zone) and eastern Afghanistan (secondary crop production zone). The 2001-2002 winter snow pack was considerably less in extent and thickness in some areas than in previous years, and the stage level in rivers (though had risen considerably compared to the previous year), remain well below the level of rock oxidation in some areas. It is perhaps unlikely that rainfall so far this year will meet the aquifer capacitance. This means that although the drought per se in terms of spring harvest yield may have weakened, drought conditions downstream were still experienced during summer, particularly in the West and South of the country.

5.1.2. Areas planted and harvested

5.1.2.1. Cereals

The 2002 Crop and Food Supply Assessment Mission was able to ascertain areas with crops harvested or about to be harvested. It did not directly assess areas planted, since no observation was made at the time of planting. Even if field interviews may have allowed the Mission to find that germination failures or other kinds of complete crop failures had occurred, no attempt was made in the report to distinguish between areas planted and harvested. The present survey adds some additional information in this

regard. In particular, rain-fed land was used more extensively than thought, though many crops failed and the area actually harvested was lower.

Table 33
Area planted with cereals, 2001-2002, in hectares

	All cereals	Irrigated wheat	Rain-fed wheat	Irrigated barley	Rain-fed barley	Maize	Rice	Millet
TOTAL	3,060,202	1,242,425	1,244,305	81,833	197,889	145,572	147,020	1,156
Agro-ecological zone								
Badakhshan mountains	206,177	65,197	106,147	5,824	12,783	5,091	11,135	0
Central mountains	254,576	107,915	132,855	3,519	7,039	3,249	0	0
Eastern mountains	191,163	108,164	3,616	549	100	28,526	50,084	125
Southern mountains	141,210	91,774	33,016	434	9,233	5,907	67	779
Northern mountains	1,465,856	290,971	882,434	33,871	163,408	18,806	76,366	0
Turkistan plains	282,174	186,993	72,025	16,095	2,098	160	4,803	0
Herat-Farah lowlands	209,710	173,798	9,924	20,479	2,313	2,775	168	252
Helmand River valley	309,335	217,614	4,287	1,063	916	81,058	4,397	0
Region								
North	1,006,223	190,179	655,246	21,131	125,115	6,721	7,831	0
Northeast	843,981	337,656	323,462	33,776	48,187	16,947	83,954	0
West	313,713	189,123	91,823	21,362	7,300	3,165	688	252
West Central	188,521	53,230	123,989	2,572	6,903	1,827	0	0
Central	69,283	59,801	777	402	0	7,255	1,047	0
South	132,893	80,633	35,047	367	9,233	6,767	67	779
East	155,175	80,555	3,517	349	100	21,493	49,037	125
Southwest	350,413	251,247	10,446	1,875	1,051	81,396	4,397	0

Regarding irrigated wheat, the 2002 Crop and Food Supply Assessment Mission (CFSAM) estimated an area of 1,045,000 Ha planted, while the present survey estimates 1.24 million hectares, which is some 17% higher. Since more careful area measurements have been made for the Winter Survey, the present survey suggests that it would be possible that the CFSAM has slightly underestimated irrigated wheat area.

On the other hand the 2002 CFSAM reckoned an area of 697,000 Ha with rain-fed wheat, with a production of 576,000 MT. In fact, the survey suggests actual ploughing and sowing of rain-fed wheat occupied a larger area of about 1.24 million hectares, and suggests also that about 0.5 million hectares actually failed completely, and another portion gave extremely low yields which are likely to have been ignored in the CFSAM. The CFSAM estimate concerned only harvested area and did not provide estimates about crop failures or areas planted that failed to get the crop to completion. As a matter of fact, the CFSAM took place in June and July 2002 and thus only saw the successful fields. Fields failing to germinate looked practically barren at that time.

Total land with cereals in 2001-2002 was estimated by the CFSAM at 2.21 million hectares, whilst the present survey estimates 3.06 million hectares were **planted** (not necessarily harvested) with cereals. Since the CFSAM does not distinguish between areas planted and harvested, it should be a mistake to compare the two figures. The right comparison is between the CFSAM estimates and the areas reported as **harvested**. Much of the difference is due to crop failures that prevented harvesting some of the planted cereal crops. Rain-fed wheat area planted and **harvested** in each region was as shown in Table 34 below. As clearly shown in such table, almost all the lost area was in the North, where one third of the planted area was not harvested.

Table 34
Planted and harvested wheat areas, in hectares, 2001-02

	Irrigated wheat		Rain-fed wheat	
	Planted	Harvested	Planted	Harvested
TOTAL	1,242,425	1,196,126	1,244,305	880,787
Agro-ecological zone				
Badakhshan mountains	65,197	65,014	106,147	106,147
Central mountains	107,915	105,005	132,855	130,418
Eastern mountains	108,164	96,716	3,616	3,167
Southern mountains	91,774	89,594	33,016	33,016
Northern mountains	290,971	289,516	882,434	527,825
Turkistan plains	186,993	184,815	72,025	69,159
Herat-Farah lowlands	173,798	159,248	9,924	9,588
Helmand River valley	217,614	206,217	4,287	1,466
Region				
North	190,179	186,858	655,246	302,129
Northeast	337,656	337,317	323,462	321,857
West	189,123	174,418	91,823	88,733
West Central	53,230	52,418	123,989	123,447
Central	59,801	53,136	777	370
South	80,633	79,966	35,047	33,558
East	80,555	74,894	3,517	3,068
Southwest	251,247	237,119	10,446	7,625

The story is similar, though the difference is not so marked, with irrigated wheat. Out of 848,795 farms having planted irrigated wheat, 799,485 did harvest (partially or totally their planted area, while the crop failed completely in the remaining 49,309 farms. Of the total planted area of 1,242,425 hectares, 1,196,126 hectares were totally or partially harvested, while in farms having planted 46,300 hectares the crop failed entirely. Scarcity of water in many irrigation systems was indicated by farmers as a major problem in that season, both to the CFSAM as in the two sample surveys undertaken in mid 2002 and the 2002-03 winter. Many farmers planted only part of their land, but in some cases evidently they planted too much for the water available, and some of the crops failed before reaching maturity. The harvested area of 1.196 million hectares is closer to the 2002 CFSAM estimate of 1.045 million. Though the figures from expanded sample results entail some uncertainty, it may well also be that the CFSAM slightly underestimated also the irrigated areas.

In all other cereals the situation was similar (Table 35). Rain-fed and irrigated barley, as well as maize and rice, had some crop failures where harvest did not occur. Harvested areas estimated from the Winter Survey are quite close to the areas estimated by the 2002 CFSAM. It is important to notice that maize and rice had been planted only recently at the time of the CFSAM, so estimates of area and yield, as the CFSAM explicitly acknowledges, were speculative, whilst in the Winter Survey they refer to accomplished facts.

Table 35
Planted and harvested areas for barley, maize and rice, in hectares, 2001-02

	Irrigated barley		Rain-fed barley		Maize		Rice	
	Planted	Har-vested	Planted	Har-vested	Planted	Har-vested	Planted	Har-vested
TOTAL	81,833	78,122	197,889	161,983	145,572	138,381	147,020	142,120
Agro-ecological zone								
Badakhshan mountains	5,824	5,641	12,783	12,783	5,091	4,945	11,135	11,135
Central mountains	3,519	3,519	7,039	7,039	3,249	3,249	0	0
Eastern mountains	549	449	100	100	28,526	25,538	50,084	46,573
Southern mountains	434	423	9,233	9,233	5,907	5,885	67	67
Northern mountains	33,871	33,871	163,408	127,822	18,806	17,923	76,366	75,275
Turkistan plains	16,095	14,948	2,098	2,029	160	160	4,803	4,505
Herat-Farah lowlands	20,479	18,208	2,313	2,061	2,775	2,775	168	168
Helmand River valley	1,063	1,063	916	916	81,058	77,906	4,397	4,397
Region								
North	21,131	19,984	125,115	90,136	6,721	6,721	7,831	7,169
Northeast	33,776	33,593	48,187	47,771	16,947	15,917	83,954	83,227
West	21,362	19,091	7,300	6,788	3,165	3,165	688	688
West Central	2,572	2,572	6,903	6,903	1,827	1,827	0	0
Central	402	302	0	0	7,255	5,510	1,047	599
South	367	356	9,233	9,233	6,767	6,745	67	67
East	349	349	100	100	21,493	20,251	49,037	45,974
Southwest	1,875	1,875	1,051	1,051	81,396	78,245	4,397	4,397

5.1.2.2. Other crops

The Winter Survey investigated also areas planted with other crops (Table 36). Some of them have a very limited area, and are produced by very few farmers. In those cases the figures obtained from the sample should be regarded with caution since they may be affected by wide sampling errors. Some of the smaller have been consolidated under "Other crops".

The most extensive of the non-cereal crops is a fodder crop (clover), which along with alfalfa is the main fodder crop in Afghanistan. Clover is grown mostly in the Eastern region. Oilseeds (mainly sesame) and pulses along with potatoes are the main non-cereal food crops grown. While potatoes are grown more extensively in the Highlands, oilseeds and pulses are grown mostly in the North.

In all, annual crops surveyed covered a total area of 3.44 million hectares, of which 3.06 million (nearly 89%) are cereals. It is worth noting that some of these are second crops, grown after the primary harvest (usually wheat). This is especially true of maize, rice, melons, clover and part of the oilseeds. Total area under crops at a given moment never reached 3.44 million, therefore: the maximum area covered should have been about 3.10 million hectares at most.

Table 36
Area planted with non cereals, 2001-2002, in hectares

	Oilseeds	Potatoes	Pulses	Cotton	Clover	Melons	Other crops	Non-cereals
TOTAL	68,787	24,454	69,377	17,509	137,073	25,247	178,700	384,074
Agro-ecological zone								
Badakhshan mountains	6,007	2,124	952	73	696	2,308	3,113	14,578
Central mountains	406	10,727	1,794	0	3,993	812	7,445	21,184
Eastern mountains	0	1,621	1,197	6,310	107,854	2,793	122,734	134,655
Southern mountains	289	3,749	578	0	6,274	1,001	14,906	20,524
Northern mountains	46,677	4,935	40,235	156	338	11,065	3,507	106,575
Turkistan plains	13,779	0	871	1,078	0	2,132	550	18,410
Herat-Farah lowlands	1,556	967	883	5,971	17,662	1,177	25,273	35,828
Helmand River valley	73	330	22,866	3,921	257	3,958	1,173	32,321
Region								
North	38,636	2,753	15,099	1,078	208	3,358	277	61,200
Northeast	24,970	3,735	11,011	73	696	4,927	6,244	50,959
West	4,413	1,539	16,832	6,127	17,791	8,398	25,922	63,231
West Central	203	8,697	440	0	1,489	812	3,519	13,671
Central	0	2,753	1,327	150	1,082	0	1,937	6,167
South	289	2,671	1,143	0	7,889	1,001	17,133	22,238
East	0	150	50	6,160	107,256	2,793	121,886	131,038
Southwest	276	2,157	23,475	3,921	663	3,958	1,782	35,569

(*) Total reflects crops investigated in the survey. Some minor crops may not have been included.

Table 37 below estimates a total 3.44 million hectares **planted** with crops in 2001-02. It is worth noting again that some crops failed to germinate or produce, as seen with rain-fed wheat; besides, some crops may have been underestimated. One example of the latter is the opium poppy, where the illegality of the crop is the main reason for underreporting, but also the fact that it is grown frequently by sharecroppers, and some of these may have been omitted from the survey: the poppy area declared to the Winter Survey was about 13,000 Ha (included above in "Other crops"), whilst the more specific Opium Poppy Survey of 2002, undertaken by the Office for Drugs and Crime of the United Nations, and using field surveys plus high resolution satellite imagery, estimated a total poppy area of nearly 70,000.

The last reliable agricultural statistics for Afghanistan are from 1967-68, and they estimate 84% of cereals in total crop area, which implies a low degree of diversification at that time in the nation's cropping schedule. Many non-cereal crops have declined, like cotton for instance, during the long spell of war and disruption that started in 1978-79. In spite of the omission of some sharecropper crops, Table 31 shows still a limited degree of crop diversification in 2001-02, as about 88% of the arable land area that was cultivated was devoted to cereals. Fruit trees and vineyards had also been badly affected by war and drought. The whole country had retreated into producing basic staple food, disregarding other, less essential crops. In 2000-2001 the situation was probably worse in this regards, as precipitation was minimal whilst in 2001-2002 there were good rains in wide parts of the country. In 2002-2003 the degree of diversification increased significantly, as will be seen below.

Table 37
Area planted with crops, 2001-2002 (Ha)

	Cereals	Non cereals	All crops
TOTAL	3,060,202	384,074	3,444,276
Agro-ecological zone			
Badakhshan mountains	206,177	14,578	220,755
Central mountains	254,576	21,184	275,760
Eastern mountains	191,163	134,655	325,818
Southern mountains	141,210	20,524	161,734
Northern mountains	1,465,856	106,575	1,572,431
Turkistan plains	282,174	18,410	300,585
Herat-Farah lowlands	209,710	35,828	245,538
Helmand River valley	309,335	32,321	341,656
Region			
North	1,006,223	61,200	1,067,423
Northeast	843,981	50,959	894,941
West	313,713	63,231	376,944
West Central	188,521	13,671	202,192
Central	69,283	6,167	75,449
South	132,893	22,238	155,130
East	155,175	131,038	286,214
Southwest	350,413	35,569	385,982

5.1.3. Yields and production

Assessing yields based on farmers' reported output and area is always tricky because farmers universally tend to underreport their performance. In the case of Afghanistan this is compounded by the way crops are measured, mostly not in terms of area but in terms of seed planted and multiplication factors. For these reasons, yields reported in the survey have to be combined with other sources of information to arrive at reasonable results.

In the survey, farmers reported outputs implying an average **gross** yield of 1.33 MT/Ha for irrigated wheat, and 0.39 MT/Ha for rain-fed wheat, **relative to planted area**, and an average **net** yield of 1.38 MT/Ha and 0.56 MT/Ha respectively, **relative to harvested area**. These yields are significantly below the quite conservative yields estimated by the Crop Assessment Mission carried out by FAO and WFP in 2002, which estimated 2.02 MT/Ha for irrigated wheat and 0.80 MT/Ha for rain-fed wheat. As the CFSAM looked at fields undergoing harvest or likely to be harvested soon, the right comparison is with net yields. Reported outputs, consequently, show an under-reporting rate of 32% in irrigated and 30% in rain-fed yield.

However, under-reporting may have been higher, since the yields reported by the 2002 CFSAM were indeed quite conservative. The Swedish Committee Agricultural Survey of 1991 / 1992 estimated average yields of wheat according to six agricultural regions as shown in Table 38.

Table 38
Swedish Committee for Afghanistan yield estimates

38.1. Estimated range of wheat yields 1991-92 (MT/Ha)

	Irrigated	Rain-fed
North-east	1.87 - 3.21	0.54
North	0.98 - 2.98	0.46
South-east	2.01 - 3.17	1.50
East-central	1.85 - 3.56	0.57
South-west	1.77 - 3.31	0.74
North-west	1.47 - 2.89	0.86
Average	1.60 - 3.20	0.80

Source: SCA, 1993a.

38.2. Swedish Committee estimate of average yields of improved and local wheat varieties of irrigated wheat, 1992 and 1993 (MT/Ha)

Region	1992		1993	
	Improved	Local	Improved	Local
North-east	3.26	1.61	3.15	1.68
North	2.77	1.02	3.19	1.09
South-east	3.19	2.10	3.15	2.21
East-central	3.64	2.10	3.47	2.21
South-west	3.22	2.28	3.40	2.38
North-west	2.80	1.47	2.98	1.44

Source: SCA 1993b.

Improved varieties yielded roughly twice the amount of what was expected from local varieties. It is important to notice that these are not experimental or expected yields, but actual observed yields obtained by farmers in the years indicated. It is obvious that the average yield for all wheat would depend on the extent of adoption of improved seeds. From data in the Winter Survey and other evidence available it is estimated that a large proportion of Afghan farmers have adopted improved seeds, thus increasing significantly the average yield of their crops from the pre-war years like 1978, and even from 1991-93. In 2003, an evaluation of the performance of improved seeds distributed by FAO's Agricultural Emergency programme for the 2002-03 autumn season found an average yield of 3.30 MT/Ha among beneficiaries, which were mostly poor small farmers (reported by Mathias Mollet, report on the third phase of the Emergency Program Evaluation).

The quality of improved seeds has itself improved since 1993 with the introduction of new varieties (See annex 4), its impact compounded with increased use of fertiliser. Varieties introduced in the late 1990s have average yields significantly above those identified by the Swedish Committee in 1993. Besides, the increased amount of fertiliser used may have also elicited the potential of seeds to a higher degree in 2002-03, as compared with results obtained a decade ago. Depending on factors such as water supply, fertilizer supply, soil quality and others, the improved seeds more widely used in 2001-2002 and 2002-2003 allow for average yields in the range from 3.00 to 4.00 MT/Ha, with many farmers obtaining much more (5 to 7.5 MT/Ha are not uncommon, and were observed repeatedly by the Crop Assessment Mission in 2002 and predicted from field measurements by the pre-harvest crop assessment of May-June 2003. Assuming an average yield of 1.70 MT/Ha for local varieties, the following table gives

the expected average yield of irrigated wheat for various percentages of adoption of improved seeds and various average yields of improved seeds.

Table 39
Expected average yield of irrigated wheat under various conditions

Average yield of improved seed	A. Assuming local varieties yield 1.70 MT/Ha				
	Percentage of area planted with improved seeds				
	30%	40%	50%	60%	70%
3.00 MT/Ha	2.09	2.22	2.35	2.48	2.61
3.50 MT/Ha	2.17	2.36	2.55	2.74	2.93
4.00 MT/Ha	2.32	2.56	2.80	3.04	3.28

Average yield of improved seed	B. Assuming local varieties yield 2.00 MT/Ha				
	Percentage of area planted with improved seeds				
	30%	40%	50%	60%	70%
3.00 MT/Ha	2.30	2.40	2.50	2.60	2.70
3.50 MT/Ha	2.45	2.60	2.75	2.90	3.05
4.00 MT/Ha	2.60	2.80	3.00	3.20	3.40

Assumes 1.70 MT/Ha for local varieties.

According to the above demonstrative table, and considering that in 2001-2002 improved seeds were planted on 53% of the irrigated wheat area, and possibly on a higher proportion in 2002-03, the average yield should have been between the values in the 50% and 60% columns. Local varieties, according to the SCA survey, may yield from slightly more than one ton in some areas, up to 2.2 MT/Ha in others. Table 39 examines two possible yields for local varieties and three for improved varieties, with different proportions of each in the seed pool.

If local varieties are assumed to yield 1.70 MT/Ha (section A of Table 39) the range could be from 2.35 to 3.07 MT/Ha depending on the actual average yield of improved varieties. If local varieties are assumed to yield 2 MT/Ha (section B) the range for the average yield of irrigated wheat would be from 2.40 to 3.20 MT/Ha. The actual average within this range should be slightly higher in 2002-03 than in 2001-02, since the percentage of land planted with improved seed has probably increased since the year before.

Since the late 1990s FAO and WFP have conducted annual Crop and Food Supply Assessment Missions in Afghanistan. Average wheat yields estimated by those missions are as follows.

Table 40
Joint FAO/WFP Crop and Food Supply Assessment Missions
Estimated wheat yields in MT per Ha

	1997	1998	1999	2000	2001	2002	2003
Wheat	1.33	1.30	1.23	0.72	0.90	1.54	1.90
Irrigated	1.72	1.64	1.66	1.12	1.31	2.02	2.85
Rain-fed	0.70	0.86	0.62	0.17	0.13	0.83	1.09

These missions have the purpose of planning food assistance and ensuring adequate food supply during the year following the harvest assessed at mid-year. This mandates a conservative outlook on supply to be on the safe side as regards expected food assistance needs. This has reflected on **rather conservative estimates for the past years**. For instance, in the good years before the drought (1997-98) estimated irrigated yields were close to the **minimum** bound of the range established in Table

38, i.e. about 1.60 MT/Ha, and close to the yields expected from **local** varieties only. There are no precise data on the extent of adoption of improved seeds in the years previous to the drought, but surveys taken in 2002 and 2003, especially the presently reported Winter Survey, show that the use of improved seeds is more widely spread, and has probably been so even since the late 1990s. Therefore it is likely that the previous CFSAM reports up to 2002 somewhat **under-estimated yields**, at least for irrigated wheat.⁷

On the other hand, yields or production reported by farmers may not be reliable. They systematically underreport the actual yield by a wide margin, especially in irrigated crops. In this report, as in the report from the 2002 Crop and Food Supply Survey, yield estimates are not based on farmers' reports but on field studies.

The production of major crops in 2001-2002 may be re-estimated by combining the findings of the 2002 CFSAM and those of the Winter Survey. For this exercise the areas coming from the Winter Survey are used. The yields are in principle those in the 2002 CFSAM. Table 41 shows the results of combining the CFSAM yields (shown in Table 40) with the Winter Survey **harvested** areas shown before at Tables 33 and 34.

Table 41
Estimation of 2001-02 cereal production
41.1. Estimated yields by region (MT/Ha) from CFSAM 2002*

Region	Wheat		Barley**		Maize	Rice
	Irrigated	Rain-fed	Irrigated	Rain-fed		
North	1.70	0.70	1.40	0.60	2.90	3.00
Northeast	2.20	1.00	1.50	0.70	3.00	2.80
West	2.10	0.90	1.40	0.60	3.00	2.80
West Central	1.70	0.90	1.40	0.70	2.50	0.00
Central	2.40	0.00	1.60	-	3.00	3.00
South	2.00	0.00	1.40	0.60	0.00	0.00
East	2.20	0.00	1.80	0.60	3.00	3.00
Southwest	2.00	0.80	1.60	0.60	3.00	3.00

(*) Average yields reported by the 2002 CFSAM are regarded as very conservative, and possibly below the true average yields in some areas (see precedent section).

(**) Yields for barley in the CFSAM do not distinguish irrigated and rain-fed. They have been considered as for irrigated barley, and the rain-fed yield have been estimated based on the irrigated/rain-fed ratio for wheat yields. This is a conservative decision, for the reported CFSAM yields should be the average, not the yield for irrigated barley only. Were they taken as the average, re-estimated barley production and total cereal output at Sub-table 37.2 should be higher. Rain-fed barley yields for the South and East were not estimated by the CFSAM because they estimated no rain-fed barley cultivation there. However, some areas were found in the Winter Survey, and the average yield (0.60) was applied. No correction has been applied to the yields estimated by CFSAM 2002, though there are grounds to believe some of them are underestimated.

⁷ The 2003 CFSAM found an average yield of 2.85 MT/Ha for irrigated wheat and 1.09 MT/Ha for rain-fed wheat. If some under-estimation was present in the 2002 CFSAM report, the true yields in 2001-02 may have been however somewhat lower than in 2002-03, due to better rainfall in 2002-03. The actual yield in 2001-02 was probably between the figures obtained for 2003 and the ones reported by the 2002 CFSAM, which are now widely recognized as very conservative.

41.2. Re-estimation of cereal production in 2001-2002 (MT)

Region	Wheat		Barley		Maize	Rice	All cereals
	Irrigated	Rain-fed	Irrigated	Rain-fed			
North	317,659	211,490	27,978	54,082	19,492	21,507	652,208
Northeast	742,098	321,857	50,389	33,440	47,751	233,035	1,428,569
West	366,277	79,860	26,728	4,073	9,495	1,926	488,358
West Central	89,110	111,103	3,601	4,832	4,568	0	213,214
Central	127,525	0	483	0	16,529	1,796	146,333
South	159,931	0	498	5,540	0	0	165,970
East	164,767	0	628	60	60,753	137,922	364,130
Southwest	474,239	6,100	3,000	631	234,734	13,192	731,895
TOTAL	2,441,607	730,409	113,305	102,657	393,323	409,377	4,190,678

Based on areas harvested according to the Winter Survey (Tables 29 and 30) and 2002 CFSAM yields.

The re-estimated figures for production, namely 3.17 million MT of wheat and 4.19 million MT for all cereals, are respectively 18% and 16.7% higher than the corresponding estimates offered by the CFSAM in July 2002 (i.e. 2.686 million MT for wheat, and 3.589 million MT for all cereals). This re-estimation is based only on adjustments in **area harvested**. It has not altered the yields obtained by the 2002 mission, even if we feel that they are somewhat on the low side, especially for irrigated wheat.

5.1.4. Constraints

During the 2001-2002 agricultural year farmers faced various constraints. The main one was **lack of sufficient water**. Rains were more or less adequate in the North and at the central mountains, though not regular, and along the Southern belt they remained insufficient (and in some locations non existent).

Another important constraint was the political situation. The terrorist attacks on September 11, 2001 happened just before the land started being prepared for the coming autumn planting season. When the winter crops were planted in the autumn of 2001, Afghanistan was at the highest point of the war between the Northern Alliance and the Taliban regime, and in the midst of the coalition bombardment campaign to remove the regime. The crops germinated and grew in the chaotic days after the Taliban were gone, with a weak provisional government, poor or non-existing communication structures, enormous currency fluctuations (including a large appreciation of the Afghani after its deep depreciation during the last months of the war), massive influx of returnees and large movements of internally displaced persons.

On top of that, farmers had had three years of severe drought, and most did not have any seed reserve in store. There had been also a large increase in household indebtedness, making difficult for farmers to extend ever more their credit to buy inputs for the coming season. The mere fact that production increased as much as 82% (according to CFSAM estimates) is astonishing in view of all these constraints.⁸

⁸ The rate of growth (82%) comes from comparing the 2002 and 2001 CFSAM reports, with no adjustments. This report on the Winter Survey has re-estimated production for the 2001-02 agricultural year, but these revised estimates cannot be compared to previous years because a similar adjustment has not been made on previous CFSAM reports. The proper comparison to do is between the CFSAM reports because they were largely based on the same set of assumptions and hypotheses (established since the 1997 CFSAM).

Asked for reasons for not cultivating part of their land, about two thirds blamed the **lack of sufficient water**. A distant second, but still important factor with more than a fifth of the responses was the **scarcity of seed** (Table A.18 in the Statistical Appendix).

Out of all villages with irrigated land, in 4% of them farmers were not able to plant any irrigated crop at all; in 58% of them farmers could plant less than half the irrigated land available. Only in 9% of the villages farmers were able to plant the entire irrigated land in their possession (Table A.19).

As reported to the Winter Survey at the end of 2002 or beginning of 2003, half the farmers had left part of their land uncultivated in the previous 2001-2002 agricultural years (Table 42). The problem was especially severe in the South: it affected as much as 81% of farmers in the Southern Mountains agro-ecological zone, and 94% in the provinces that form the South Region.

Table 42
Farms leaving part of their arable land uncultivated,
2001-02

	Total farms	Farms affected	% farms affected
TOTAL	1,065,523	522,605	49.0%
Agro-ecological zone			
Badakhshan mountains	35,346	17,032	48.2%
Central mountains	167,168	96,105	57.5%
Eastern mountains	177,322	52,373	29.5%
Southern mountains	79,426	64,298	81.0%
Northern mountains	281,308	113,770	40.4%
Turkistan plains	74,857	42,988	57.4%
Herat-Farah lowlands	146,759	79,056	53.9%
Helmand River valley	103,338	56,982	55.1%
Region			
North	177,764	72,881	41.0%
Northeast	164,134	65,583	40.0%
West	196,371	114,382	58.2%
West Central	75,463	26,057	34.5%
Central	104,796	45,145	43.1%
South	72,871	68,514	94.0%
East	127,941	36,412	28.5%
Southwest	146,183	93,630	64.0%

Among all 516 villages investigated, 458 had with some kind of irrigation (which represents a vast majority, even in rain-fed areas). Among them, 409 reported insufficient irrigation water (Table A.20). Besides this widespread problem, village collective interviews also reported on the **disrepair of many irrigation systems**. Silting of canals was reported in 172 villages, and damaged infrastructure in 202. Salinity appears to be seen as a problem in only 18 villages, a tiny minority (and they were located in various parts of the country, not concentrated in any specific area).

There were also complaints about **poor water management** and disputes over **irrigation rights**. These euphemisms usually refer to the abusive behaviour of some farmers, normally located at the head of the watershed, keeping for themselves more than their share of water, thus leaving farmers downstream with insufficient supply. Some of these farmers are local commanders or their kin, using their military clout to

abuse their neighbours' water rights. Out of the 107 villages reporting this problem, 60 were located along the Northern belt (40 in the Northern Mountains and Foothills and 20 in the Turkistan Plains). Another important cluster with this problem is in the East, where another 29 villages reported the same problem. This matter still persists: in 2003, even with abundant rains and full rivers, many villages at the tail of irrigation systems could not plant anything because water was not reaching their farms. Restoration of law and order in the country, disarmament of local militia, better law enforcement, and improved management of irrigation systems are the key factors to reduce the incidence of this problem.⁹

Rainfall and irrigation water supply were insufficient all along the crop cycle (Table A.21). Regarding rainfall insufficiency reported by 364 villages, one half reported insufficiency in autumn and winter, and more than 80% indicated insufficiency of **spring** rains. This agrees with satellite evidence on the probability of precipitation that suggests dry spells during the spring even in regions where rainfall had been enough during the planting and growing seasons.

Among 450 villages reporting insufficient irrigation water, most indicated also that the problem occurred mostly in spring (231 villages) and summer (362 villages). Scarcity at the beginning of the season may have reduced the area planted. Scarcity afterwards affected the growth of crops and therefore reduced yields, and caused some crops to fail outright.

Looking at this in a different way (Table A.22), among 475 villages reporting water shortages that affected the crops, most (300 villages) indicated that crops were affected during the crucial stage of flowering. A large but somewhat lower number of villages reported water shortages affecting stemming (190 villages) and grain formation (202 villages). In contrast, only 59 villages reported problems with planting, and 79 with germination.

This widespread water scarcity is a very important factor, as indicated before, to evaluate the accuracy of yields estimated by the CFSAM. The mission made a very conservative estimate because of the impact of water shortages it observed in the field. The resulting estimates are still probably too low, but it cannot be assumed that the yields of improved or local seeds were at their normal level. For these reasons, the re-estimation of cereal output based on the Winter Survey affects only the areas harvested, and not the yields estimated by the CFSAM, though some evidence exists that they were a bit too conservative.

Pests and diseases played a significant role in 2001-02. Regarding wheat, Table 43 below shows the percentage of farms and area affected by the main pests and diseases. Tables A.23 and A.24 (Statistical Appendix) give the regional breakdown. In almost all the cases, the percentage of the area affected was lower than the percentage of farms, indicating that the pests hit harder on smaller farms, possibly because they are less able to fight the pests and diseases in their crops.

⁹ It is worth noting that grazing rights in the North were granted to Pashtun nomads, by the King Abdul Rahman at the end of the 19th Century, and local tribes of a different ethnic background may have been waiting for an opportunity to encroach on those lands if law enforcement and central government are weak. See DeWeijer 2002 and the excellent study on land property rights by Liz Alden Willy (2003).

Table 43
Wheat pests and diseases, 2001-2002: Percent affected

% farms affected:	Smut	Rust	Locust	Other
Irrigated winter wheat	60.17%	55.33%	13.97%	11.58%
Irrigated spring wheat	46.41%	46.52%	9.57%	36.75%
Rain-fed wheat	59.89%	45.86%	21.24%	17.76%
% area in affected farms:				
Irrigated winter wheat	43.43%	38.50%	9.31%	8.75%
Irrigated spring wheat	34.23%	32.92%	5.33%	27.52%
Rain-fed wheat	39.95%	26.04%	22.38%	11.63%

5.2. 2002-03 agricultural year

5.2.1. General conditions

Rainfall along the 2002-03 crop year were generally good and well distributed. In the rain-fed areas of the North, there had been rains in the autumn, then there was an unusual cold spell (with abundant snowfall) in early December 2002, and rain that started at that point continued all along the season up to May 2003. There was also a sharp increase in snowfall and snow cover in the mountains during the winter, relative to the previous season, thus creating conditions for increased river discharge in the spring. Some areas that have received not so much precipitation would anyway have good irrigation, as for example the areas irrigated by the River Helmand.

According to satellite imagery taken along the season and evidence from the MAAH/FAO network of meteorological instruments, practically no section of the country had received precipitation below 60% of historical average, except for a small part of Southern Kandahar. Most parts of the country had an accumulated rainfall above 80% of the average, and large sections of the East and North were above average. Most of the country was between 80% and 120% of the historical average.

The historical average taken as a reference is not, however, extremely reliable. Rainfall data collection has been interrupted in most parts of Afghanistan for over ten years, and data from before came only from some scattered rain gauges, not from a dense network, and had frequently blank months in the series.¹⁰ There might also be some change in rainfall regime due to global climate change, as the existing series suggest a decreasing long-term trend. If the country, as is widely believed, is becoming dryer, with a tendency towards lower average rainfall, then the historical average may over-estimate expected rainfall: 80 or 90% of the historical average might be close to normal nowadays.

Some areas in the western parts of the Central Mountains and the medium and lower Helmand River system had relatively low rainfall (60-80% of the historical average), but they do not have much rain-fed agriculture and depend mostly on river discharge. As the latter feeds on the snow cover at the centre of the country, which this year was thick and extensive, the somewhat reduced level of precipitation in that area is

¹⁰ FAO is conducting a revival of the agro-meteorological service, lending assistance for this purpose to the National Meteorological Service (Ministry of Civil Aviation) and the Research Department at the Ministry of Agriculture. Besides installing a new network of instruments, to which also ICARDA, the French cooperation and other organizations are contributing FAO is also helping the country to recover and systematize the historical record and putting it in computer files, and building capacity to run a crop forecasting service based on agro-meteorological models. These ongoing activities may lead to a better understanding of rainfall and climatic change in Afghanistan.

expected to have some adverse effect on crops and vegetation but overall is not a major concern. Other areas in the South with precipitation below average, occupying northern Kandahar, all Zabul and parts of Uruzgan, do not have the same luck. River irrigation in that region is far less abundant than in the North and West, and irrigation in these areas is frequently dependent on *karez*, the ancient shallow tunnel system that feeds on the water table. The water table in the region is still too low after four years of drought, though coming up gradually with the increased precipitation this year. Many *karez* in the area are still dry. The low level of rainfall in that zone has been then a real and serious constraint for agriculture during the 2002-2003 crop year.

The good level of precipitation that was to be experienced in most of the country during the late winter and spring was not necessarily taken for granted at the time of the winter survey. By the end of 2002, some places in the South had experienced some worrying dry spells in late autumn, and farmers there justifiably feared just another dry season (the fifth in a row, had it materialized). Fortunately rainfall resumed soon and continued in a sustained manner all through the winter and spring, with regional differences shown above. This permitted an unhindered growth of crops in most of the country. By late May 2003, the vegetation index was better or much better than the same period in 2002 in all the lowlands and foothills.

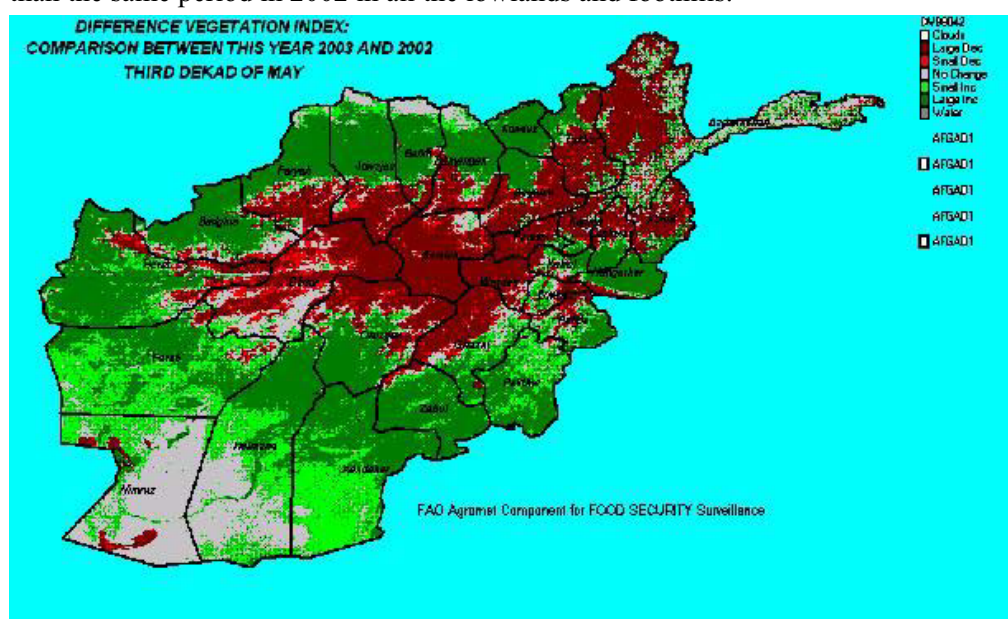


Figure 8 Normalized difference vegetation index for third dekad of May 2002-2003

Vegetation was slightly worse than 2002 in the Highlands, as shown in the large reddish area at the centre of the country, most of it rangelands. This is probably due to the particularly cold spring and later vegetation growth this year as compared to 2002.

However, good snow cover caused irrigation water to be sufficient in most places, and therefore spring crops were planted extensively, as verified during the National Crop Output Assessment in May-June 2003. There were also some areas with little vegetation. Even being better than the previous year (that was for them a year of drought), the provinces of Zabul and Uruzgan and neighbouring northern parts of Kandahar had very little rain all through the season. In several sectors no planting took place in the autumn, and little in the spring.

5.2.2. Areas planted with major crops

The Winter Survey asked farmers about areas they had already planted or they intended to plant later, for every major crop. Therefore, the areas reported do not represent the full extent of the areas effectively cropped this year. In particular, rain-fed crops were extended much beyond the original plans of farmers. When farmers had already planted their autumn rain-fed crops (chiefly wheat and barley) and found that rainfall was so good and sustained, they continued planting in additional rain-fed land. Since most rain-fed land had not been under crops for three or four years, there was little concern about rotation or fallow: the land could afford the crops well. Planting activities continued through the winter and even in the spring. During the May-June 2003 crop assessment some rain-fed lands were still being planted, especially with melons and watermelons intercropped with sesame.

After planting all the wheat they needed or wanted to plant within their land availability, farmers took advantage of this possibility of extending their rain-fed crops by planting cash crops, mainly melons, watermelons, sesame, flax, mung beans, chickpeas and other pulses, and some more. One case of such late planting is shown in the figure, illustrating also the use of the *mala* for levelling the soil after planting.



Figure 9 Late planting in rain-fed areas

Passing the *mala* after planting rain-fed melons and sesame. Baghdis, 22 May 2003.

This extended planting season allowed rain-fed land to be planted in a much larger proportion than usual, and cultivation expanded also over grasslands in a significant extent. Because of the opportunistic nature of the activity, there was also much more crop diversification than usual in Afghan rain-fed agriculture. Wheat and barley represented only slightly more than one half of the whole rain-fed cultivation. The rest where cash crops as mentioned before.

The extended season for planting included also an increase in double cropping on land that had been already cultivated in the autumn season. Since the amount of irrigated land is limited in systems that work in good conditions, there was not much expansion in total irrigated land under cultivation, but a higher proportion than usual was

double-cropped. After the harvest of irrigated wheat and barley and some other first crops, many farmers took advantage of increased amount of water in the irrigation system to plant a second short-cycle crop such as rice, maize, watermelon, and various vegetables (tomato, carrot, cucumber, okra and others).

Table 44 shows the area farmers **intended to plant** by the time of the Winter Survey. Rain-fed wheat and barley were already partially planted, but irrigated crops were still only a hope or an expectation. These areas **should not be seen as areas actually planted**. The National Crop Output Assessment undertaken in May-June (for autumn crops) and in August-September 2003 (for spring crops in the Highlands and second crops in the Lowlands) verified different actual areas for several crops. In particular, irrigated wheat area was apparently a bit lower than expected initially by farmers, mainly because some irrigation systems proved still having insufficient water.

Table 44
Areas planted or intended to plant with major staple crops for 2002-03, in hectares

	Wheat		Barley		Maize	Rice	Potatoes	Pulses
	Irrigated	Rain-fed	Irrigated	Rain-fed				
Total	1,296,693	1,207,604	101,765	228,902	259,049	163,975	45,049	110,043
Agro-ecological zone								
Badakhshan mountains	54,117	79,226	9,963	19,120	7,069	13,955	2,619	1,245
Central mountains	95,834	88,322	9,001	29,576	65,243	609	12,961	15,228
Eastern mountains	99,627	3,068	349	150	26,975	50,927	2,170	1,247
Southern mountains	114,623	40,892	712	17,621	40,948	156	9,244	12,837
Northern mountains	302,555	875,613	25,975	154,862	16,234	90,315	14,208	52,859
Turkistan plains	235,529	108,388	27,783	5,961	1,513	5,468	1,444	1,479
Herat-Farah lowlands	171,443	7,149	27,249	1,430	2,859	1,556	1,304	2,355
Helmand River valley	222,964	4,947	733	183	98,208	989	1,099	22,793
Region								
North	243,235	679,489	36,489	110,951	7,023	11,176	12,873	26,830
Northeast	329,356	261,889	26,556	56,264	16,287	97,886	4,229	6,960
West	191,054	128,997	27,925	14,157	4,366	2,231	2,472	24,148
West Central	54,617	82,569	7,309	29,305	1,895	0	10,321	14,348
Central	57,437	1,338	559	100	8,292	948	4,530	1,315
South	112,395	42,878	1,435	17,621	18,662	156	6,641	6,391
East	72,293	2,519	150	50	19,543	49,979	200	0
Southwest	236,307	7,925	1,342	454	182,981	1,599	3,782	30,051

The table reflects areas reported by farmers in December 2002 and January 2003. They represent areas already planted (most of rain-fed crops and a large portion of irrigated wheat and barley) or intended to plant (some rain-fed and some irrigated wheat and barley, and all maize, rice, potatoes and pulses)

At the time of the Winter Survey, the autumn planting was over, and some winter planting remained to be done. This concerns the two rain-fed crops (wheat and barley), most of which were however already planted. Thus the area declared in principle represents almost all the rain-fed wheat and barley that was planted in the year (though some farmers planted rain-fed wheat even later). Concerning irrigated wheat and barley, much of which is planted in spring, the area cannot change by much since there is limited irrigated land available. However, problems with water management and water rights enforcement, no water in many *karez* systems, limited irrigation water in some parts of the Highlands, and other unforeseen problems may have reduced the irrigated area actually planted with wheat and barley. The crop assessment conducted in May 2003 estimated only 1.06 million hectares of irrigated wheat instead of the 1.29 million envisaged by farmers as stated in the precedent table. The difference may also be due to a tendency, reported in some places, on the part of farmers to “simplify” the survey interview by declaring a single crop, say wheat, when in fact they intended to plant some other complementary crops. This may

have caused a tendency to overstate the intended area for wheat in 2002-03. The “simplification” may have been also performed by some surveyors with the aim of abbreviating the interviews. Rain-fed wheat and barley were, instead, estimated to cover an area slightly greater than the one in the table. Rain-fed area was finally estimated at 1.235 million hectares for wheat and 276,000 for barley (2003 Crop and Food Supply Assessment Mission Report, Table 1). This increase of rain-fed cultivation over and above initial farmers’ intentions reflects the unexpectedly good and sustained rainfall which allowed farmers to plant some more land with wheat and barley, and especially with other crops such as melons, oilseeds and others. The other two cereals, maize and rice, are planted usually as a second crop after wheat or barley on irrigated land, if the water supply is enough.

The acreage planted in 2001-02 was **larger** in some areas than the area intended for 2002-03, though the **harvested** area was probably larger in 2002-03 even in those same areas, because less crop failures occurred in the latter year. Tables A.25 and A.26 show areas planted in both years and Table A.27 shows the difference. Two outstanding cases of decrease in area were in the acreage planted with rain-fed wheat in Badakhshan, which decreased by 56,000 hectares or about one quarter from one year to the next. Another example is the rain-fed area in the Central Mountains, which decreases by one third. These two cases alone, not fully compensated by increases elsewhere, explain the global decrease of 10,000 hectares in rain-fed wheat acreage. However, this comparison should be interpreted with caution, for it is not a comparison of analogous things. The area in 2001-02 is the area actually planted (much of which failed to yield any output), while the area for 2002-03 is in part an intention to plant on the part of the farmers. At the time of the Winter Survey farmers intended to plant 3.4 million hectares with major staple crops (cereals, potato and pulses), of which 1.4 million with rain-fed cereals, 1.8 million with irrigated cereals, and the rest with potato and pulses. Other major crops like melon/watermelon or oilseeds are not normally supposed to occupy more than a little more, amounting (as in 2001-02) to less than 5% of total acreage.

Actual planting was encouraged beyond initial farmers’ intentions by good and sustained rainfall well into the spring of 2003. Some farmers were planting rain-fed crops even in May or early June, an unusual sight as remarked before. However, this did not mean that **cereal** acreage was proportionally increased. Rain-fed wheat and barley acreage remained (according to the Nationwide Crop Output Assessment carried out by MAAH and FAO in May-June 2003) within a tolerable margin relative to original intentions. What actually increased were the other rain-fed crops such as melons and oilseeds, and also pulses that are usually inter-cropped with them. This made for a higher diversification of rain-fed cultivation in 2002-03, but this may not be sustained in subsequent years as part of the rain-fed land thus put under crops will have to be rotated out into fallow. Total rain-fed cultivation, estimated by the NCOA in about 2.5 million hectares in 2002-03, would probably shrink to a more manageable acreage of 1.2-1.4 million hectares (if good rainfall is available). In drought years rain-fed cultivation is reduced to a minimum, e.g. in 2001 when it was less than 100,000 hectares.

Growing wheat is the main agricultural activity of Afghan farmers, and most farms grow wheat. There are farms growing only irrigated wheat, or only rain-fed, or both. Just a small proportion of the farms do not grow any wheat. In 2001-02, out of 1,065,523 farms, only 68,214 (6.4%) abstained from planting wheat. In 2002-03 the number of non-wheat farms had grown to 117,904 or 11% of all farms. Table 42

shows the changes between these two consecutive years in terms of the number of farms and in terms of the wheat area involved. It is easy to see that out of 2.5 million hectares of wheat, about a third are in farms growing **both** irrigated and rain-fed wheat. About one million is in farms growing only irrigated wheat, and more than half a million in farms growing only rain-fed wheat. Table 43 shows also changes in wheat growing patterns from one year to the next.

Table 45
Changes in wheat growing pattern, 2001-02 to 2002-03

45.1. Farms

Wheat growing pattern 2001-02	TOTAL	Wheat growing pattern in 2002-03			
		Farms with irrigated wheat only	Farms with rain-fed wheat only	Farms with irrigated and rain-fed wheat	Farms with no wheat grown
Total	1,065,523	615,634	150,272	181,713	117,904
Farms with irrigated wheat only	634,092	562,020	855	15,942	55,274
Farms with rain-fed wheat only	148,515	1,884	131,540	4,082	11,008
Farms with both irrigated and rain-fed wheat	214,703	37,783	10,923	160,091	5,905
Farms with no wheat grown	68,214	13,947	6,954	1,597	45,717

45.2. Total wheat planted area, 2001-02

Wheat growing pattern 2001-02	TOTAL	Wheat growing pattern in 2002-03			
		Farms with irrigated wheat only	Farms with rain-fed wheat only	Farms with irrigated and rain-fed wheat	Farms with no wheat grown
Total	2,486,731	999,415	525,289	866,853	95,174
Farms with irrigated wheat only	940,613	866,194	1,471	22,518	50,430
Farms with rain-fed wheat only	513,781	6,954	470,535	10,718	25,574
Farms with both irrigated and rain-fed wheat	1,032,337	126,267	53,283	833,616	19,170
Farms with no wheat grown	0	0	0	0	0

45.3. Total wheat planted area, 2002-03

Wheat growing pattern 2001-02	TOTAL	Wheat growing pattern in 2002-03			
		Farms with irrigated wheat only	Farms with rain-fed wheat only	Farms with irrigated and rain-fed wheat	Farms with no wheat grown
Total	2,504,297	990,186	563,095	951,016	0
Farms with irrigated wheat only	980,012	914,494	1,604	63,915	0
Farms with rain-fed wheat only	530,187	7,562	507,063	15,563	0
Farms with both irrigated and rain-fed wheat	966,164	56,903	40,237	869,023	0
Farms with no wheat grown	27,934	11,228	14,191	2,515	0

45.4. Changes in wheat planted area from 2001-02 to 2002-03

Wheat growing pattern 2001-02	TOTAL	Wheat growing pattern in 2002-03			
		Farms with irrigated wheat only	Farms with rain-fed wheat only	Farms with irrigated and rain-fed wheat	Farms with no wheat grown
Total	+17,566	-9,229	+37,807	+84,163	-95,174
Farms with irrigated wheat only	+39,399	+48,300	+133	+41,396	-50,430
Farms with rain-fed wheat only	+16,406	+607	+36,528	+4,845	-25,574
Farms with both irrigated and rain-fed wheat	-66,173	-69,364	-13,046	+35,407	-19,170
Farms with no wheat grown	+27,934	+11,228	+14,191	+2,515	0

Area planted in 2002-03 includes areas not yet planted, but intended to be planted, at the time of the winter survey.

The last section of Table 45 indicates the amount of land involved in the changes of wheat growing pattern between the two agricultural years considered. In total, there was **an increase of 17,566 hectares in wheat area**. But this is the net effect of **changes of opposite directions** in the various wheat growing patterns. Farms growing both irrigated and rain-fed wheat in 2001-02 reduced their wheat area by 66,173 hectares, while farms growing only one or the other increased by 39,399 hectares of irrigated wheat, and 16,406 hectares of rain-fed wheat. About 23,000

farms that did not grow any wheat in 2001-02 shifted to cultivating some wheat, to add a total of 27,934 hectares to total wheat area. This suggests that farms reducing their wheat area were mostly in **mixed** areas where both irrigated and rain-fed land coexist in the same farm. Specialized farms tended to increase their wheat area, and there were some new growers too. Those “mixed” farms are usually at the boundaries between irrigated and rain-fed areas, or were planting rain-fed wheat during 2001-02 on otherwise irrigated land, just because no irrigation water was available in the previous year.

There are a significant number of farms that planted irrigated wheat in 2001-02 but did not grow any wheat in 2002-03, to an extent of 50,430 hectares. Another similar area was reduced by farms growing only rain-fed or both irrigated and rain-fed wheat. This is somewhat surprising since water was generally more abundant in 2002-03, and was probably due to water rights and irrigation management problems.

5.2.3. Expected yields and output

Farmers were asked about the expected output of their major crops, in particular wheat. The question took two different forms. On the one hand, farmers were directly asked about the output they expected from the crop. On the other hand, they were asked about the seed multiplication factor they expected, which combined with the amount of seed provides another estimate of the (implicit) expected output.

Table A.29 in the Statistical Appendix provides the results from these questions. As usual, farmers tend to under-estimate their yields and output. Besides, the degree of under-estimation varied little with the method used. In general, the multiplication factor method obtained higher yields per hectare and higher total output than the direct question. Table 47 gives the estimated expected yield given by farmers for the 2003 wheat harvest, obtained by two different approaches in the winter survey, with a correction for under-reporting based on the rate of under-reporting observed in 2002.

Table 47
Expected wheat yields, 2002-03

	Expected yield reported for 2002-03	% under-reported for 2001-02	Adjusted estimate of expected yield	2003 CFSAM estimate
Based on seed multiplication factor				
Irrigated wheat	1.71	32%	2.50	2.85
Rain-fed wheat	0.88	31%	1.25	1.09
Based on direct question				
Irrigated wheat	1.70	32%	2.49	2.85
Rain-fed wheat	0.83	31%	1.18	1.09

Source: Table A.29, Statistical Appendix. Expected yields reported represent ratio of total expected production to total area planted or intended to be planted. Expected production obtained by two methods. Correction based on nationwide yield under-reporting rate in 2001-02 (Maletta 2002a), relative to 2002 CFSAM. If correction were based on under-reporting rates **per region**, the corrected average expected yields would be slightly higher, but no significant change in conclusions would arise.

The rate of under-reporting does not need to be exactly the same in the two years, but it is evident that farmers are rather consistent in this regard. The farmers’ expected yields for 2003 are quite close to the yields estimated by the CFSAM, once under-reporting is corrected for. By this account, farmers’ expectations were a bit over-optimistic with rain-fed wheat but a shade timid with irrigated wheat, as compared with

the effective yields observed or estimated by the 2003 CFSAM at the time of harvest or shortly before.

5.2.4. Estimated output

The National Crop Output Assessment (NCOA) carried out in May and June 2003 assessed areas, yields and output for irrigated and rain-fed wheat at region and province levels, and also for barley at region level. The summary results are given in Table 48, and the details can be found in the NCOA report (Favre, Fitzherbert and Escobedo, 2003).

Table 48
Estimated wheat and barley production, 2002-03

48.1. Wheat

Region	Total irrigated wheat area	Average irrigated wheat yield	Total Irrigated wheat production	Total rain-fed wheat area	Average rain-fed wheat yield	Total rain-fed wheat production	Total wheat production
Province	Ha	MT/Ha	MT	Ha	MT/Ha	MT	MT
CENTRAL	107,162	3.60	385,413	4,940	0.72	3,542	388,955
KABUL	19,539	2.99	58,421	1,025	0.40	410	58,831
KAPISA	8,978	3.16	28,371	0	0.00	0	28,371
LOGAR	23,486	3.97	93,239	0	0.00	0	93,239
PARWAN	30,934	3.64	112,599	3,914	0.80	3,131	115,730
WARDAK	24,225	3.83	92,784	0	0.00	0	92,784
EAST	62,878	2.24	141,133	180	0.80	144	141,277
KUNAR	8,032	1.94	15,581	180	0.80	144	15,726
LAGHMAN	14,226	2.71	38,553	0	0.00	0	38,553
NANGARHAR	39,501	2.15	84,928	0	0.00	0	84,928
NURISTAN	1,119	1.85	2,070	0	0.00	0	2,070
NORTH	217,360	2.52	547,547	669,614	0.91	608,489	1,156,036
BALKH	79,092	3.12	246,768	171,629	0.93	159,615	406,383
FARYAB	59,390	1.54	91,461	163,942	0.89	145,908	237,369
JAWZJAN	40,756	2.76	112,485	86,209	1.02	87,933	200,418
SAMANGAN	12,235	3.45	42,211	133,627	0.84	112,246	154,457
SARI PUL	25,887	2.11	54,622	114,208	0.90	102,787	157,409
NORTH-EAST	224,363	3.26	731,463	313,516	1.54	482,065	1,213,528
BADAKHSAN	24,773	2.75	68,125	84,323	1.38	116,366	184,490
BAGHLAN	51,686	3.74	193,305	72,932	2.09	152,428	345,733
KUNDUZ	99,758	3.37	336,186	11,580	2.05	23,739	359,925
TAKHAR	48,147	2.78	133,848	144,681	1.31	189,532	323,380
SOUTH	103,016	3.12	321,122	1,415	0.80	1,138	322,260
GHAZNI	56,209	3.22	180,992	1,363	0.80	1,091	182,083
PAKTIKA	16,300	3.22	52,486	52	0.90	47	52,533
PAKTYA	17,712	3.07	54,375	0	0.00	0	54,375
KHOST	12,796	2.60	33,269	0	0.00	0	33,269
SOUTH-WEST	169,809	2.77	470,241	2,568	0.00	0	470,241
HELMAND	74,426	2.83	210,627	153	0.00	0	210,627
KANDAHAR	39,427	2.89	113,944	2,215	0.00	0	113,944
NIMROZ	13,249	2.62	34,713	0	0.00	0	34,713
URUZGAN	31,538	2.64	83,260	0	0.00	0	83,260
ZABUL	11,168	2.48	27,697	200	0.00	0	27,697
WEST	139,363	2.55	355,450	203,529	1.14	231,739	587,189
BADGHIS	24,953	2.62	65,378	99,985	1.22	121,982	187,359
FARAH	23,374	2.79	65,214	0	0.00	0	65,214
HERAT	91,036	2.47	224,859	103,544	1.06	109,757	334,616
WEST-CENTRAL	35,355	1.82	64,213	39,343	0.45	17,574	81,786
BAMYAN	17,305	2.00	34,610	4,480	0.81	3,629	38,239
GHOR	18,050	1.64	29,602	34,863	0.40	13,945	43,548
GRAN TOTAL	1,059,307	2.85	3,016,581	1,235,106	1.09	1,344,690	4,361,271

Table 48
Estimated wheat and barley production, 2002-03
48.2. Barley

REGION	Total irrigated barley area	Average irrigated barley yield	Total irrigated barley production	Total rain-fed barley area	Average rain-fed barley yield	Total rain-fed barley production	Total barley production
	1000 Ha	MT/ha	1000 MT	1000 Ha	MT/Ha	1000 MT	1000 MT
CENTRAL	1	3.51	3	0	0.70	0	3
EAST	0	2.19	0	0	0.79	0	0
NORTH	35	2.46	86	97	0.89	87	173
NORTH-EAST	13	3.19	40	64	1.47	94	135
SOUTH	1	3.05	3	1	0.79	0	3
SOUTH-WEST	1	2.70	3	0	0.00	0	3
WEST	22	2.49	54	22	1.12	25	79
WEST-CENTRAL	5	1.77	8	14	0.44	6	15
GRAND TOTAL	77	2.57	197	199	1.07	213	410

Source: National Crop Output Assessment 2003 (Favre, Fitzherbert & Escobedo, 2003, Tables 4 and 6.

Yields and production of maize and rice were not ascertained in the first phase of the National Crop Output Assessment, carried out in May-June, but in the second phase in September-October 2003. The 2003 is considered the best harvest on record, well above the previous recorded maximum attained in 1978.

6. Livestock

6.1. Livestock holdings

6.1.1. Overview

The long drought that started in 1999 decimated the livestock throughout Afghanistan. The nomadic pastoralists were hit hardest: about a third of them lost their entire flocks, and are at various large camps receiving food assistance, while the rest subsist in their pastoral existence with reduced numbers of animals. The livestock in possession of the settled rural population also suffered a substantial decrease, especially the rain-fed farmers for which livestock is essential in their livelihood. A field report from the WFP VAM Unit, "Afghanistan Food Security Studies. Badghis Rain-fed Areas", February 2000, showed that for all wealth groups, sale of livestock and livestock products generate almost 50% of the income. Rain-fed farmers were the hardest hit and were the ones filling IDP camps in Herat and other nearby areas.

The Crop Assessment Survey carried out in mid 2002 reported: "The proportion of farms possessing livestock fell significantly between 2001 and 2002. Cattle owners fell from 80% to 70%; sheep owners from 51% to 40%. Lower but still significant reductions occurred in the proportion of owners of other animals. The average number of animals per farm also declined sharply: from 3 cattle head to 2, from 10 sheep to 4, from 5.5 goats to 3.6." (Maletta, 2002a, p.18). These reductions were in just the last year of drought, between mid-2001 and mid-2002; previous reductions had already occurred between 1998 and mid-2001.

The Winter Survey asked the same question at the end of 2002, and obtained somewhat more encouraging results. Half a year had passed, and comparison was made between the winter of 2003 and the winter of 2002. Overall, livestock had still experienced a decline over this period, but the decline was not as sharp as the one observed by mid-year. The good rains in the first half of 2002, permitting a huge increase in crop production, improved also the grasslands and provided more fodder. In some areas, especially the Highlands, a recovery of stocks was underway, as shown

in Table 46. In some areas (Badakhshan Mountains and the Central Mountains) livestock had actually increased during 2002. Especially in the former, sheep staged a recovery of 34% and goats 38%, with a more modest 22% increase in cattle. In the Central Highlands the increases were very limited: 14% for cattle and 8% for sheep, with a slight decrease in goats. All other areas suffered losses, especially heavy in the Northern Mountains, the Helmand Valley and the Herat-Farah Lowlands.

6.1.2. Total and average holdings

Table 49 summarizes major livestock holdings (cattle, sheep and goat) in possession of settled farms by region and zone. Holdings of horses, donkeys and camels (far less numerous) are shown in the Statistical Appendix (Table A.30).

Table 49
Livestock holdings in settled farms

	Number of animals		% change	Per farm household*		Per owner farm household**	
	Now	Year ago		Now	Year ago	Now	Year ago
Cattle	2,423,618	2,462,903	-1.6%	2.27	2.31	3.24	3.36
Sheep	6,362,525	7,665,161	-17.0%	5.97	7.19	12.83	15.55
Goats	2,425,774	3,116,456	-22.2%	2.28	2.92	6.85	8.86
Donkeys	988,324	989,043	-0.1%	0.93	0.93	1.49	1.60
Horses	118,274	127,850	-7.5%	0.11	0.12	1.34	1.42
Camels	46,717	53,979	-13.5%	0.04	0.05	2.81	3.08

(*) Total animals divided total number of farm households.

(**) Total animals divided number of farm households owning each kind of livestock.

The recent Livestock census carried out by the Ministry of Agriculture with FAO assistance (and Italian funding) did (partially at least) cover the Kuchis, and found a total of 3.7 million head of cattle, 8.8 million sheep and 7.3 million goats (preliminary data released by MAAH and FAO). The difference between the Winter Survey and the Livestock Census is mostly attributable to the Kuchi inclusion or exclusion, but it may also result from the fact that the Winter Survey figures may be affected by errors implicit in its expansion model, which is based on arable land (see Annex 1). Farms with little arable land and much livestock thereby receive lower weight than other farms with more arable land and less livestock. This problem in general may have led to an underestimation of livestock in the Winter Survey, and overstatement of the difference between the two sources. On the other hand, preliminary data in the Livestock Survey come from Level 1 data collected at village level, while more detailed Level 2 data, collected in a wide sample of households, may lead to changes in the figures when they are processed. Once the Livestock census is fully analyzed, a reconciliation of figures with the Winter Survey may be attempted. In particular, weights for the Winter Survey as regards livestock may have to be different from weights based in arable land.

The average number of these major kinds of livestock per household (including all households, even those without animals) is about 2.2 head of cattle, about 6 sheep and 2.2 goats. But not all farm households own animals. Almost three quarters of all farm households possess cattle, about half own sheep, and just a third own goats. When only owner households are considered, it is found that the average cattle owner possesses 3.2 head of cattle; the average sheep owner possesses 13.4 sheep, and the average goat owner has nearly 7 goats.

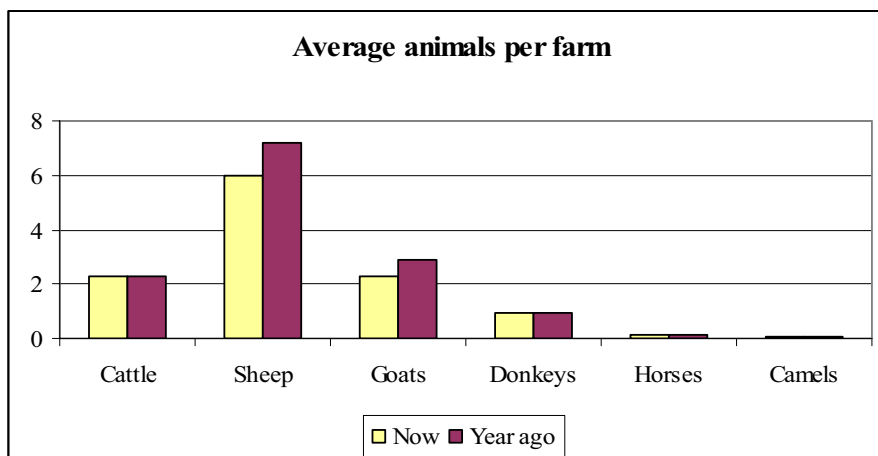


Figure 10 Livestock per farm

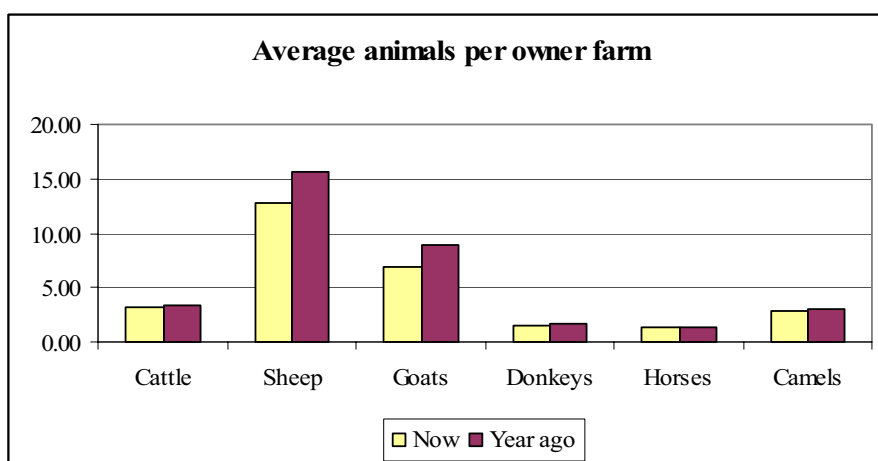


Figure 11 Average livestock per owner farm

During 2002, according to these results, cattle decreased very slightly (-1.6%), while sheep and goats suffered a marked fall in numbers (-17% and -22% respectively). Donkeys decreased by 1.2%, horses by 11%, camels by 13%. However, also in these animals the Badakhshan and Southern Mountains zones showed a recovery.

The most widely diffused kind of livestock is evidently cattle: seventy percent of all farmers own some. Next is donkeys (see Statistical Appendix, Table A.30), kept by 62%. Sheep is present in 46.6% of the farms, and goats are owned by a third of farmers. Average donkey holdings are about one animal per farm, and more than 62% of the farms own some of them. Holdings of horses are much smaller (about one animal for every eight farms) and camels are still rarer (one for every 12 households). Practically all farmers own cattle in Badakhshan, but in the Central Mountains and the Turkistan Plains it is only one half. Regarding sheep, they are held by nearly two thirds of farmers in the Central Mountains and the areas covered by the Helmand River agro-ecological zone, but they are kept only by a minority of 24% in the Eastern Mountains. Goats are most diffused in the Badakhshan zone (66%) and least in the Helmand River Valley (17.9%).

6.1.3. Livestock holdings size

Individual settled farmers do not hold large amounts of cattle (though some exceptions exist, especially for sheep). For **cattle** most holdings consists of only one or two animals, most often a single ox or a pair for use as draught animals. Table 50 shows cattle by size of the cattle herd, along with the age-sex composition. The latter is only approximate. In these tables, “grown” males or females generally means animals over one year of age, and offspring means animals below one year of age at the time of the survey. Some of them (especially in cattle) may be not yet of reproductive age.

Table 50
Livestock ownership by size of herd and age-sex composition
50.1. Cattle

Size of herd	Farms owning				Head of cattle owned			
	Cattle	Grown males	Grown females	Calves	Total cattle	Grown males	Grown females	Calves
TOTAL	747,262	520,332	501,913	280,711	2,423,618	910,264	1,026,381	486,974
One head	174,295	85,221	64,748	24,326	174,295	85,221	64,748	24,326
Two head	217,577	134,548	121,411	67,067	435,154	190,320	159,256	85,578
3 or 4 head	220,923	175,330	188,306	123,295	750,123	274,972	292,449	182,702
5 to 9 head	106,502	98,081	100,264	52,366	661,726	233,773	303,588	124,365
10 head or more	27,966	27,152	27,183	13,657	402,320	125,978	206,339	70,003

50.2. Sheep

Size of herd	Farms owning				Head of sheep owned			
	Sheep	Grown males	Grown females	Lambs	Total sheep	Grown males	Grown females	Lambs
TOTAL	496,040	366,964	341,819	144,972	6,362,525	1,437,842	3,947,769	976,913
1 to 4 head	257,043	176,689	128,876	61,611	601,844	275,751	218,763	107,331
3 to 9 head	105,766	79,264	85,399	30,602	651,016	200,069	357,090	93,857
10 to 24 head	92,001	74,764	87,763	32,033	1,288,569	308,008	807,142	173,419
25 to 74 head	31,295	26,428	29,961	14,758	1,282,836	289,525	807,239	186,073
75 head or more	9,935	9,820	9,820	5,969	2,538,260	364,490	1,757,536	416,234

50.3. Goats

Size of herd	Farms owning				Head of goats owned			
	Goats	Grown males	Grown females	Lambs	Total goats	Grown males	Grown females	Kids
TOTAL	353,935	220,796	298,583	108,758	2,425,774	517,733	1,488,374	419,667
1 to 4 head	190,823	100,126	144,323	53,599	466,362	131,051	254,806	80,505
3 to 9 head	80,182	55,387	74,314	23,409	501,517	123,414	310,944	67,159
10 to 19 head	57,951	43,857	55,488	19,617	686,217	128,178	457,394	100,646
20 to 49 head	21,403	17,849	20,881	9,718	555,218	91,265	352,381	111,572
50 head or more	3,577	3,577	3,577	2,416	216,460	43,826	112,848	59,786

“Grown” = Over one year old.

In the case of cattle, more than one half of the owners have only one or two animals, accounting for only a quarter of all cattle. Only 13% of the farms have more than 5 head of cattle, and they hold just less than a half of all cattle. In the case of sheep, one half of the owners (about 25% of all farms) possess less than 5 sheep, holding among them only 3% of all sheep; on the other extreme, about 1% of all farms (and 2% of all sheep owners) own 45% of all sheep. The story for goats is very similar, though the degree of concentration is less than in sheep. Some 2.5% of all farms (or 7% of all goat owners) possess about one third of all goats.

Since the herds are so small, the number of grown males kept is unusually high. In the case of cattle more than one half of all grown animals are male. This may be understandable since they are used as draught animals, but this reason cannot explain that also in sheep and goat about 40% of all grown animals are male. Adequate management should suggest selling most males right when they attain marketable age (normally before one year in the case of sheep and goats). Since this is not happening, it is clear that keeping livestock is not primarily for the market, but as a store of value (a “savings account”).

6.2. Total livestock in sheep equivalent units

One way of looking at total livestock holdings is converting all kinds of livestock to a common unit. This can be done in economic terms, adding the monetary value of animals, or in livestock management terms, applying conversion coefficients based on fodder requirements. We have converted all mammal livestock (poultry excluded) to sheep equivalent, based on approximate fodder requirement. With this approach, the total stock would be equivalent to 35 million sheep, of which cattle accounts for 19 million sheep equivalent units, sheep and goats for nearly 9 million, and equines and camels the equivalent of 7 million sheep. This measure of total livestock experienced a reduction of 2.7 million units along 2002. The average holding (including those with no livestock) was 33 units at the time of the survey, and 35.6 units one year before. If only livestock owners are considered in each year, the average livestock holding was 36 sheep units at the time of the survey, and 40 one year before.

Table 51
Total livestock by size of herd, sheep equivalent

51.1. Livestock owned now, sheep equivalent				
	Farms	% farms	Livestock	% livestock
TOTAL	1,065,523	100.0%	35,545,389	100.0%
None	92,091	8.6%	0	0.0%
1 to 9	171,200	16.1%	950,283	2.7%
10 to 19	203,049	19.1%	2,979,042	8.4%
20 to 49	407,952	38.3%	12,895,440	36.3%
50 to 99	144,149	13.5%	9,661,237	27.2%
100+	47,082	4.4%	9,059,387	25.5%
51.2. Livestock owned one year ago, sheep equivalent				
	Farms	% farms	Livestock	% livestock
TOTAL	1,065,523	100.0%	38,001,579	100.0%
None	117,282	11.0%	0	0.0%
1 to 9	156,843	14.7%	917,074	2.4%
10 to 19	192,174	18.0%	2,820,742	7.4%
20 to 49	388,400	36.5%	12,281,937	32.3%
50 to 99	151,408	14.2%	10,208,483	26.9%
100+	59,416	5.6%	11,773,343	31.0%

Livestock have been converted to sheep equivalent units in terms of fodder requirements, using the following conversion coefficients: Cattle=8, sheep=1, goats=1, horses=9, donkeys=6 and camels=8.

As shown in Table 50 and 51, most livestock holdings are quite small. Only 17.4% of farmers at the time of the survey had more than the equivalent of 50 sheep. However, a few relatively large owners possess a large proportion of the livestock: the top 4.4% possess 25% of all livestock, and the top 17.9% own nearly 53% of the livestock.

6.3. Start of recovery?

After the enormous loss of livestock experienced in recent years because of the long drought combined with war and political instability, the year 2002 marked an inflexion point. Rains were back, at least in many parts of the country, fields were greener, and animals could survive better. Also, economic conditions started to improve, making gradually less necessary for farmers to sell their livestock in distress. However, signals of actual recovery are mostly visible in sheep, and only in an incipient way. For the whole livestock sector times are still difficult, and generally at the beginning of 2003 stocks remained still very low.

The winter survey compared holdings at the time of the survey (December 2002 or January 2003) with holdings one year before. For this particular comparison, sheep holdings per household (Table 48.2) or per household with sheep (Table 48.4) showed still a decline. However, if compared with holdings found by mid 2002 in the precedent survey, and the stocks reported at that time for one year before (mid 2001), the picture becomes clearer.

In the sample covered by the Winter Survey, average sheep per household had declined during 2002 (comparing the time of the survey and one year before) from about 7 to about 6 animals per household, but the minimum appears to have been reached somewhere **during** 2002. The process by semester, combining the two surveys, appears more positive, as shown in the following table. This implies that between mid 2002 and the end of the year a recovery may have started in the case of sheep. However, the picture is slightly different when other livestock species are considered. A similar analysis combining the two recent surveys for total livestock (expressed in sheep equivalent units) shows a slightly less upbeat picture.

Table 52
Changes in livestock ownership, 2001-03
52.1. Sheep per settled household

Period	Sheep per household
Mid 2001*	10
End 2001**	7
Mid 2002*	4
End 2002**	6

52.2. Total livestock per settled household
Sheep equivalent units

Period	Livestock per household
Mid 2001*	50
End 2001**	36
Mid 2002*	33
End 2002**	33

(*) Crop Assessment Survey 2002. (**) Winter Survey 2002-03
Averages computed over all farm households, including not owners.

Unlike the case for sheep, **total livestock holdings do not show clearly the start of a recovery in late 2002**. What the figures show is only that holdings **stopped declining and stabilized**. They had fallen sharply from mid 2001 to the end of that year, in the depth of the drought and during a period of violent war; continued falling though very lightly in the first half of 2002, and remained stable in the second part of that year. This is good news, but not actual recovery of past holdings. Recovery, if any, would have to wait until 2003, and may take several years to complete.

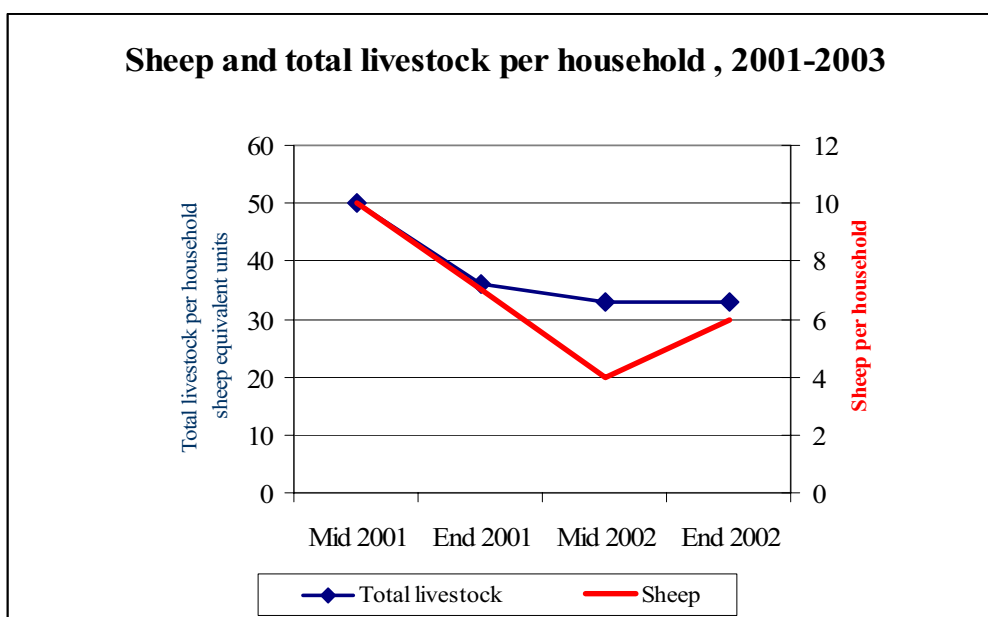


Figure 12 Crisis and recovery in livestock

6.4. Poultry

Poultry is an important and quite diffused asset in farmer households, though in modest numbers. About 64% of all farmers possess poultry (Table 53). About 71% of those households with poultry have mother hens that hatched chicken in the last year. Of course, keeping poultry provides eggs besides providing meat and possibly cash income, and therefore an important contribution to household food security and nutrition. On average, there are about 5 birds per farm household in the Afghan farming sector. The average number of birds owned by settled farmers (counting only households with poultry) is 7.67. Their total stock is more than five million birds.

The Livestock census found more poultry (about 12 million), but this includes urban households and non-farming rural households, excluded from the Winter Survey.¹¹

¹¹ Preliminary Livestock census results come from village-level estimates given by village informants, and not from the household-level sample. The probability of error in village estimates is probably larger as regards poultry than other animals, since poultry is mostly kept inside the walled household yards, seldom seen by strangers, and thus averages are difficult to estimate, even for fellow villagers, without actually asking the households. Besides, urban poultry enumerated in the Census, not covered by the Winter Survey, is quite significant. If an estimate for poultry owned by the 20% non-farming rural population were added to the Winter Survey figure, and urban poultry for Kabul and other towns were taken into account as well, the two estimates would come closer to each other.

Table 53
Poultry in farmer households

	Total farms	Farms with poultry		Farms with hatching hens	Total poultry	Mean per farm	Mean per owner
		Number	%				
TOTAL	1,065,523	684,157	64.2%	487,201	5,248,444	4.93	7.67
Agro-ecological zone							
Badakhshan mountains	35,346	29,668	83.9%	26,555	243,391	6.89	8.20
Central mountains	167,168	118,439	70.9%	49,068	928,562	5.55	7.84
Eastern mountains	177,322	146,646	82.7%	124,948	1,557,737	8.78	10.62
Southern mountains	79,426	63,741	80.3%	45,943	466,102	5.87	7.31
Northern mountains	281,308	144,161	51.2%	104,679	860,028	3.06	5.97
Turkistan plains	74,857	31,066	41.5%	29,805	266,412	3.56	8.58
Herat-Farah lowlands	146,759	72,749	49.6%	47,938	478,964	3.26	6.58
Helmand River valley	103,338	77,687	75.2%	58,265	447,247	4.33	5.76
Region							
North	177,764	51,803	29.1%	26,355	255,172	1.44	4.93
Northeast	164,134	126,858	77.3%	113,385	963,225	5.87	7.59
West	196,371	98,983	50.4%	69,238	630,398	3.21	6.37
West Central	75,463	49,406	65.5%	10,829	448,376	5.94	9.08
Central	104,796	83,387	79.6%	65,455	589,456	5.62	7.07
South	72,871	63,031	86.5%	35,381	490,133	6.73	7.78
East	127,941	110,483	86.4%	99,510	1,285,894	10.05	11.64
Southwest	146,183	100,206	68.5%	67,049	585,789	4.01	5.85

6.5. Livestock flows

6.5.1. Livestock balance

Besides investigating livestock at the time of the survey and one year before, the Winter Survey inquired also about major factors determining stock change, namely animals born, deceased, slaughtered, purchased or sold. Some **unexplained balance** may remain, due to two kinds of factors: mere **reporting errors**, and **unreported flows**. Small reporting errors are to be expected, since numbers reported by farmers are often only approximations. Unreported flows concern animals acquired or lost due to various processes not explicitly investigated: animals given or received as gifts, animals stolen, animals lost or found, and (most important in the case of sheep) animals given or received as a **means of payment**.

Table A.33 in the Statistical Appendix shows the detailed livestock balance by region and zone, for the three major species (cattle, sheep and goats). Table 54 is a summary.

Table 54
Overall livestock balance 2002

	Stock change	Net reported flows*	Unexplained balance	
			Head	% of stock
Cattle	-39,285	-111,720	72,435	3.0%
Sheep	-1,302,636	-1,508,793	206,156	3.2%
Goat	-690,682	-675,969	-14,713	-0.6%

(*) Net reported flows = Births + purchases – sales – slaughter – deaths from disease or drought. See Table A.33 for details.

If births, death, sales, purchases and slaughter had been reported without error, as well as stocks, and those were the only ways of acquiring or losing livestock, stock change should equal the net sum of reported flows. A small discrepancy is normally expected, with an amount in the order observed here for goats (0.6%). In the case of sheep or

cattle the balance is about 3%, and this perhaps involves the use of animals as a means of payment (which is very common for sheep), besides some degree of reporting error. In any case, the three balances are close enough to zero as to be safely ignored. It is convenient to recall that some error or omission in one or a few large owners may produce a large discrepancy when expanded to the whole population (the average expansion factor in this survey is about 200, thus an error involving 100 head of sheep would result in an expanded discrepancy of 20,000).

6.5.2. Fertility

The Winter Survey asked farmers not only about their current and past stocks, but also about factors causing changes in stock. One of them is fertility. The survey investigated the number of offspring born in each species during the past 12 months, thus providing an estimate of fertility.

The number of births can be put in correspondence with total stock for an estimate of the crude birth rate, or with breeding females for an estimate of the breeding rate (or fertility rate). However, the data do not provide an exact estimate, since the number of "grown females" may include some not yet of breeding age (e.g. some heifers 1-2 years old), and most importantly, the number of adult females at the time of the survey may not be representative of the number of adult females available earlier at the breeding season 2001-02. Since in general stocks at the end of 2002 were smaller than at the beginning of that year, it is plausible to assume that the average number of females available during the year may have been larger than the number found at the time of the survey. In some parts of Afghanistan this is evident: farmers in the Helmand River Valley zone reported having fewer cows at the survey time than the number of reported calf births in the year or the number of cows milked during the same year, indicating a significant liquidation of breeding stock occurred after giving birth.

With the data at hand, only **apparent** fertility can be assessed, defined as the ratio of offspring born during the year to females held at the end of the year. Apparent fertility was reasonably good for cattle: the ratio of calf births to grown cattle females (including heifers and cows) was 0.51, which can be considered normal in Afghanistan. If only cows were considered, the ratio would be higher, probably about 60%.

Nonetheless, the number of cows milked, i.e. cows having been milked during the year, is higher, representing about 60% of grown females existing at the end of the year. The difference may reflect, chiefly, the fact that some cows milked in 2002 may have given birth before the end of 2001, and thus their calves were not included in the births occurred during 2002. Also, there might be some omission of calves that died shortly after birth, since many farmers tend to report only on successful offspring, disregarding early deaths. This may be compensated by the sale of cows after giving birth: in some parts of Afghanistan the reported births during the past 12 months are more numerous than the reported number of females at the time of the survey, resulting in an apparent fertility of more than 100% for cattle, which is not credible.

The ratio of goat kids born to female goats (0.37), as shown in Table A.34, shows a level of fertility relatively low but not abnormally so. Also the ratio of reported lamb births to females (an approximation of the lambing rate) was relatively low (0.33), probably reflecting not only a low lambing rate but also the fact that in Afghanistan only one mating season exists for most flocks, and the fact that some of the females considered are not yet of breeding age. Even if the entire unexplained balance of 206,000 head of sheep is attributed to omitted births, the resulting figure would be

only slightly larger (0.38 instead of 0.33). The conclusion is that the lambing and kidding rates for sheep and goats were still quite low during 2002, unlike the rate for cattle which was relatively normal.

6.5.3. Mortality

Farmers reported deaths from disease and drought during 2002 amounting to 5.1% of cattle, 8.8% of sheep and 7.3% of goats. There is no breakdown of deaths by age, but it can be assumed that a high proportion of these deaths are juvenile. The level of general mortality for sheep and goats is significantly higher than the normal level of about 4-5%.

An estimate of juvenile mortality can be obtained by comparing the existing number of offspring at the time of the survey with the total reported number of births in the precedent year. The ratio should reflect mostly offspring mortality, since not many lambs or calves are sold or killed at such a young age. Existing offspring were 75% of births for sheep and goats, indicating a shortcoming of 25% that probably reflects some slaughtered or sold lambs plus a juvenile mortality of about 20%. For cattle the ratio is 91.8%, indicating an apparent juvenile mortality of 8.2%. These figures suggest that high juvenile mortality compounded the effects of low fertility in sheep and goats, conspiring against recovery. In the case of cattle fertility was pretty normal and so was juvenile and general mortality.

The data, as will be shown shortly hereafter, reveal extensive sales, much beyond the sustainable level of extraction and amounting to stock liquidation, still going on in 2002, especially for sheep and goat. Therefore, it could be safely assumed that mortality would have been even higher if those excess animals were not sold. It should also be mentioned that some neonatal deaths short after birth are likely to have been ignored, thus understating true mortality.

The gross mortality rate (deaths divided by average stock) was more or less uniform across the country in the case of cattle (with only lower levels in the Eastern Mountains and the Helmand River Valley), but for sheep and goats it was significantly higher in some regions than others. For sheep, mortality appears to have been especially high in the Helmand River Valley zone (including Kandahar and Helmand), where it reached nearly 24% of the total sheep stock; for goats it was 21% in the same zone. Goats were also dying at high rates in the Turkistan Plains (18%).

6.5.4. Natural growth

Natural growth, the difference between births and deaths, is the fundamental process determining livestock production. Natural growth establishes the ceiling for extraction, if the stock is not to be reduced. A good level of natural growth in 2002 was found for cattle (16.8%), while sheep showed only 9.7% and goats an intermediate but quite remarkable 12.9%. The rate for cattle was significantly below average in the Turkistan Plains, the Herat-Farah Lowlands and the Helmand River Valley; for sheep, natural growth was severely **negative** (more deaths than births) in the Helmand River Valley zone (with -14.5%) and quite low in the Turkistan Plains (3.7%) and Herat-Farah (3.8%). The same is true for goats, which decreased at a rate of -12.7% in the Helmand River zone, and at -7.6% in the Turkistan Plains, with very low growth in Herat-Farah. The best conditions were observed in Badakhshan, where the three species had excellent rates of natural growth.

6.5.5. Gross and net livestock extraction

Gross extraction is total on-farm slaughter plus net sales. It may involve normal extraction or it may involve delving into the stock and reducing it through excessive extraction, as is usual in times of distress.

Reported extraction was clearly above the ceiling during 2002. The gross extraction rate was 21.5% for cattle, 31.3% for sheep and 38.2% for goats. In some parts of the country, gross extraction rates were even higher. Cattle gross extraction rate was nearly 30% in the Northern Mountains and Turkistan Plains. For sheep it reached no less than 51% in the Herat-Farah zone, 37% in the Northern Mountains and nearly 36% in the Eastern Mountains zone. For goats, gross extraction was an astonishing 75% in the Turkistan Plains, amounting to wholesale liquidation., and nearly 45% in the Northern Mountains and Herat-Farah.

Net extraction takes stock changes into account. It is defined as gross extraction plus stock changes. It indicates the **amount of extraction compatible with a stable stock**. If the stock was reduced along the year, net extraction is less than gross extraction. If the stock was growing, net extraction is higher than the gross. Net extraction can be considered as a measure of **sustainable** extraction.

Net extraction rate for cattle was 19.7%, it was 12.7% for sheep and 12.4% for goats. The three are lower than gross extraction. The differences with gross extraction rates cited before reflect the stock reductions experienced in the three species along the year (see Figure 6).

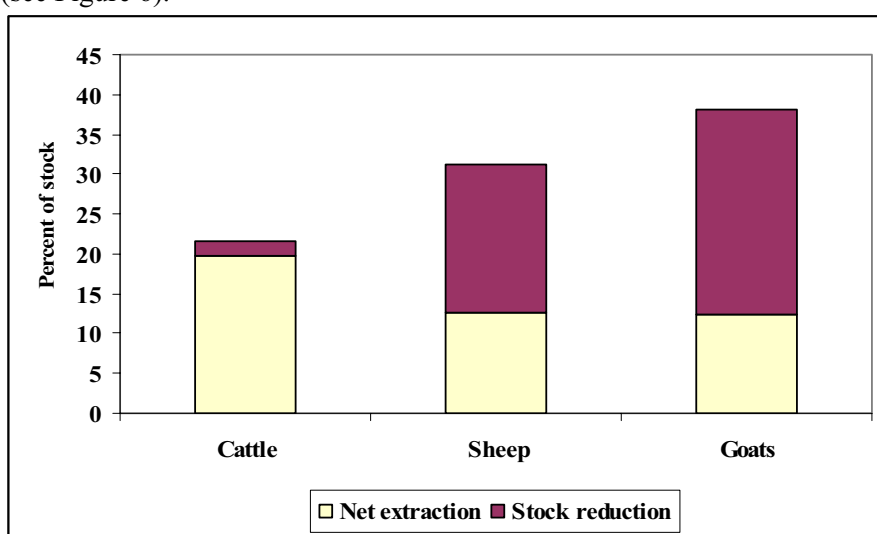


Figure 13 Composition of gross livestock extraction rates during 2002

Most of the gross cattle extraction was regular or normal extraction, but more than one half of sheep extraction and three quarters in the case of goats was outright stock liquidation.

The drought that affected the country since 1998 had already caused a large reduction in livestock before 2002, and the drought in effect ended in 2002 with a very good grain harvest, especially in the North of the country. However, for livestock the conditions were evidently not yet good. Besides climate conditions affecting the supply of fodder, political and economic conditions may have also contributed to the process, especially in the case of farmers facing debts and disrupted livelihoods forcing them to liquidate their herds.

Those conditions may have started to change in the second half of the year. Various sources reported, for instance, that the flow of live animals being exported to Pakistan had reverted to importation of meat and animals into Afghanistan by mid 2002, as farmers started to re-stock and the liquidation of livestock stalled and came to a halt. Survey data about average holdings of sheep in 2001 and 2002 seems to show also the start of a recovery in late 2002, as mentioned before. The process of re-stocking, however, is a slow one and may take years to reach again the levels observed before the drought.

6.6. Farms involved in livestock

Not all farms keep livestock in Afghanistan (see Tables A.33). All in all, about 74% of all farms have some cattle, but only 50% have cows and are therefore able to produce milk and offspring: the rest has only oxen used as draught animals (Table A.33.2). Possession of small ruminants is less prevalent. Only 48% own sheep (Table A.33.4), and 34% own goats (Table A.33.6). It is remarkable that in spite of large reductions in stock, the number of households holding each kind has remained nearly constant from one year to the next. This is generally true also for each zone, though sheep and goat ownership somewhat increased in the Central Mountains and decreased in the Northern Mountains and the Turkistan Plains.

6.7. Winners and losers

Livestock decreased in 2002, comparing the beginning of the year to the end. But not all farmers saw their herds reduced. Some kept them more or less stable, and some actually increased their holdings. How many were winners or losers, and who were the winners and the losers as regards livestock is an important question.

	TOTAL	Livestock change 2002, sheep equivalent			
		Not owner	Fell 10% or more	+/- 10%	Grew 10% or more
Total					
Number of farms	1,065,523	82,496	301,175	355,270	326,583
Percent of farms	100.0%	7.7%	28.3%	33.3%	30.7%
Total livestock now, sheep equivalent	35,854,904		9,191,133	11,831,146	14,832,625
Percent of total livestock now	100.0%		25.6%	33.0%	41.4%
Total livestock one year ago, sheep equivalent	38,001,579		16,466,674	11,863,179	9,671,726
Percent of total livestock one year ago	100.0%		43.3%	31.2%	25.5%
Average per farm					
Livestock owned now, sheep equivalent	33.36	0.00	30.65	33.30	44.35
Livestock owned one year ago, sheep equivalent	35.66	0.00	55.07	33.39	29.25
Cattle owned now	2.27	0.00	1.93	2.12	3.34
Cattle owned 1 year ago	2.31	0.00	3.45	2.09	2.09
Sheep owned now	5.97	0.00	5.63	6.43	7.29
Sheep owned 1 year ago	7.19	0.00	12.12	6.59	5.12
Goats owned now	2.28	0.00	2.73	1.85	2.90
Goats owned 1 year ago	2.92	0.00	5.88	1.99	1.95

“Not owner” = No livestock now, and no livestock one year ago. Those not having livestock one year ago but having some now were classified among those that grew more than 10%, and those who had no livestock now but have had livestock one year before were classified among those whose livestock fell by more than 10%.

Table 55 shows that on average, livestock owners fell only slightly, from 35 to 33 sheep units, but livestock **losers** (those that actually reduced their flocks) fell from about 55 to 30 sheep-equivalent units; they were partially compensated by livestock winners that on average increased their holdings from 29 to 44 units. Those in the middle stayed about 33 units. Losses and gains appear on all the relevant kinds of livestock, i.e. the average loser lost cattle, goats and sheep; the average winner increased the three kinds. The balance was a small loss, since the average farmer fell from 35.66 to 33.36 livestock units (sheep equivalent) during the year.

The winners, those that increased their holdings, passed from controlling 25% of the livestock to own 41% of it, whilst the losers decreased their share from 43.3% to 25.6%. Those in the middle, who represent 33% of farms, increased slightly their share from 31 to 33% of all livestock. This shows that the process in 2002 was not balanced, and produced a huge redistribution of livestock among farm households.

Table 56 shows the regional distribution of winners and losers. Winners are approximately the same number than losers nationwide, but they were clearly more numerous than losers in some parts of the country such as the Badakhshan and Central Mountains, and also the Eastern and Southern Mountains. On the contrary, losers were clearly more numerous in the Turkistan Plains, the Northern Mountains, and the Herat-Farah Lowlands. Table 53.4, in particular, shows that most of the losses were concentrated in the latter three agro-ecological zones. Instead, in the Eastern Mountains what some lost others gained and the balance was only a small overall loss. In the meantime, the Badakhshan Mountains zone had a net gain of more than half a million livestock (sheep equivalent) units, the only zone to show such a good performance in this regard, followed closely by the gains in the Central Mountains where the increase was a quarter of a million livestock units, and the Southern Mountains where the increase was equivalent to 154,000 units. In the rest of the country, the balance for 2002 remained negative in spite of some signs of incipient recovery.

Table 56
Livestock losses and gains, by zone and region
56.1. Households involved

	Total	Livestock change category			
		Not owner	Fell 10% or more	+/- 10%	Grew 10% or more
TOTAL	1,065,523	82,496	301,060	355,270	326,698
Agro-ecological zone					
Badakhshan mountains	35,346	183	4,762	9,157	21,244
Central mountains	167,168	11,167	32,825	65,311	57,866
Eastern mountains	177,322	26,436	54,867	29,928	66,090
Southern mountains	79,426	2,670	22,471	17,131	37,155
Northern mountains	281,308	18,962	86,756	106,757	68,833
Turkistan plains	74,857	9,171	19,603	37,715	8,368
Hirat-Farah lowlands	146,759	8,410	50,462	48,780	39,108
Helmand River valley	103,338	5,497	29,316	40,492	28,033
Region					
North	177,764	17,811	69,252	75,863	14,838
Northeast	164,134	3,232	35,374	57,505	68,023
West	196,371	15,683	56,955	69,040	54,693
West Central	75,463	5,076	13,536	34,855	21,996
Central	104,796	16,014	11,985	22,835	53,962
South	72,871	6,063	7,704	21,735	37,370
East	127,941	12,220	53,122	22,695	39,904
Southwest	146,183	6,396	53,133	50,741	35,913

Table 56
Livestock losses and gains, by zone and region

56.2. Total livestock at the time of the survey, sheep equivalent					
	TOTAL	Livestock change category			
		Not owner	Fell 10% or more	+/- 10%	Grew 10% or more
TOTAL	35,854,904	0	9,191,133	11,831,146	14,832,625
Agro-ecological zone					
Badakhshan mountains	2,821,247	0	295,402	605,455	1,920,389
Central mountains	3,919,992	0	679,163	1,524,479	1,716,350
Eastern mountains	5,246,078	0	1,729,073	982,876	2,534,129
Southern mountains	2,228,390	0	417,823	487,905	1,322,661
Northern mountains	11,182,965	0	3,507,648	3,828,438	3,846,880
Turkistan plains	4,937,221	0	889,683	2,423,731	1,623,807
Hirat-Farah lowlands	3,696,309	0	1,245,980	1,256,913	1,193,416
Helmand River valley	1,822,702	0	426,360	721,349	674,993
Region					
North	5,293,434	0	2,128,711	2,129,328	1,035,396
Northeast	12,644,069	0	2,340,379	4,369,843	5,933,847
West	4,700,238	0	1,469,624	1,615,367	1,615,248
West Central	2,031,398	0	464,619	871,373	695,406
Central	2,300,063	0	280,595	465,826	1,553,641
South	2,019,378	0	204,592	557,690	1,257,097
East	4,319,816	0	1,684,182	832,988	1,802,646
Southwest	2,546,508	0	618,431	988,732	939,344

56.3. Total livestock one year before, sheep equivalent					
	TOTAL	Livestock change category			
		Not owner	Fell 10% or more	+/- 10%	Grew 10% or more
Total	38,001,579	0	16,466,674	11,863,179	9,671,726
Agro-ecological zone					
Badakhshan mountains	2,254,617	0	445,942	602,159	1,206,516
Central mountains	3,669,917	0	1,046,324	1,521,772	1,101,821
Eastern mountains	5,320,648	0	2,617,428	1,001,830	1,701,390
Southern mountains	2,073,875	0	732,414	484,902	856,559
Northern mountains	12,584,050	0	6,037,861	3,851,295	2,694,894
Turkistan plains	5,752,850	0	2,283,991	2,393,811	1,075,048
Hirat-Farah lowlands	4,398,145	0	2,503,314	1,267,006	627,826
Helmand River valley	1,947,477	0	799,402	740,404	407,671
Region					
North	7,390,412	0	4,665,203	2,145,622	579,587
Northeast	12,178,213	0	3,706,473	4,342,930	4,128,810
West	5,421,036	0	2,899,431	1,625,719	895,887
West Central	1,907,206	0	660,890	871,711	374,606
Central	1,927,490	0	458,134	466,186	1,003,170
South	1,760,660	0	369,748	549,977	840,935
East	4,660,742	0	2,556,325	851,443	1,252,973
Southwest	2,755,819	0	1,150,470	1,009,591	595,758

56.4. Change in livestock during 2002

	TOTAL	Livestock change category			
		Not owner	Fell 10% or more	+/- 10%	Grew 10% or more
Total	-2,146,675	0	-7,275,541	-32,033	5,160,899
Agro-ecological zone					
Badakhshan mountains	566,630	0	-150,540	3,296	713,873
Central mountains	250,075	0	-367,161	2,707	614,529
Eastern mountains	-74,570	0	-888,355	-18,954	832,739
Southern mountains	154,515	0	-314,591	3,003	466,102
Northern mountains	-1,401,085	0	-2,530,213	-22,857	1,151,986
Turkistan plains	-815,629	0	-1,394,308	29,920	548,759
Hirat-Farah lowlands	-701,836	0	-1,257,334	-10,093	565,590
Helmand River valley	-124,775	0	-373,042	-19,055	267,322
Region					
North	-2,096,978	0	-2,536,492	-16,294	455,809
Northeast	465,856	0	-1,366,094	26,913	1,805,037
West	-720,798	0	-1,429,807	-10,352	719,361
West Central	124,192	0	-196,271	-338	320,800
Central	372,573	0	-177,539	-360	550,471
South	258,718	0	-165,156	7,713	416,162
East	-340,926	0	-872,143	-18,455	549,673
Southwest	-209,311	0	-532,039	-20,859	343,586

7. Food Security and Livelihoods: Other findings

The Winter Survey was not a study in livelihoods or vulnerability, but an agricultural survey. The main theme was agricultural production at the farm, and especially cereals. However, a number of questions in the survey point to the food security and the livelihoods of farmers. Among them is production of fruit and vegetables, sufficiency of wheat production, sources of income, and indebtedness.

Economic access to food is therefore essential. The survey investigated household access to various sources of income and the level of household indebtedness.

7.1. Vegetables and fruit

Vegetables and fruit in the diet provide essential micro-nutrients. Of course growing vegetables and fruit trees is not a necessary condition for consuming the products, since they are widely available in the market, but for peasants living in isolated villages the family farm may be their sole source of such foodstuffs.

Only 37% of all farms have a vegetable garden. Apart from this element usually located inside the walls of the house, about 42% of farmers grow vegetables in their farms. Overall, nearly 43% of the farms grow some vegetables. While the vegetable garden is chiefly for domestic use, vegetables grown in the farm are mainly for sale, though are also used for family consumption.

Table 57
Vegetables in households and farms

	Vegetable crops grown in the farm		Total
	No	Yes	
Vegetable garden			
No	611,128	61,181	672,309
Yes	11,107	382,107	393,214
Total	622,235	443,288	1,065,523

	Vegetable crops grown in the farm		Total
	No	Yes	
Vegetable garden			
No	57.4%	5.7%	63.1%
Yes	1.0%	35.9%	36.9%
Total	58.4%	41.6%	100.0%

As shown in Table 57, there are 443,288 households growing vegetable crops (either for sale or home consumption) in the family farm, of which the vast majority (382,107) also have a vegetable garden. There are, besides, 11,107 households which do not grow vegetable crops in the farm, but maintain anyway a vegetable garden. However, about 57% of all households do not have any vegetable production.

The main vegetables grown, present in the vast majority of vegetable gardens and also in farm-produced vegetables, are onions and tomatoes. Cultivation of carrot, pumpkin and okra is practiced in about one half of the vegetable gardens. Garlic and leek are grown in about one quarter or one fifth of the gardens. Cauliflower, spinach and other vegetables are relatively rare. Details are given at Tables A.35 and A.36.

The fact that 57% of all farms do not grow any vegetables is a matter of concern from the nutritional point of view. The usual diet of many Afghans in the countryside consists mostly of bread, with little pulses and almost no vegetables. Micronutrient deficiency is widespread, since most of those same households also lack the incomes to purchase a sufficient amount of vegetables in the market. Some households, however, are able to make partially up for the lack of vegetable production by growing fruit trees or vineyards.

Almost seven hundred thousand farmers do not grow vegetables, but one third of them grow fruit trees or vineyards instead. Only some 412,000 households (39%) fail to grow either, as shown in table 58. Both fruit and vegetables contribute to improve the households' nutritional status, besides being also a potential source of income.

Table 58			
Households reporting fruit and vegetable production			
	Fruit trees or vineyards		Total
	No	Yes	
No vegetables grown	412,084	199,045	611,129
Growing vegetables	183,384	271,011	454,395
Total	595,468	470,056	1,065,524

	Fruit trees or vineyards		Total
	No	Yes	
No vegetables grown	38.7%	18.7%	57.4%
Growing vegetables	17.2%	25.4%	42.6%
Total	55.9%	44.1%	100.0%

The 1.065 million farm households covered by the Winter Survey possess a total of 72 million vines, 4.8 million almond trees, 3.8 million each of apple and 3.7 million apricot trees, 3.1 million mulberry trees and 2.2 million pomegranate trees, among other species (Table A.37). Most of the trees are in households with a fruit tree garden, or orchard, but some are simply scattered about the house or farm. They are also frequently intercropped with pulses, alfalfa, vegetables or cereals. A total of 470,056 households have fruit trees, a total of 454,395 grow vegetables, and 271,011 have both (as seen before in Table 58).

It is difficult to estimate the area with fruit trees, since some are grown in orchards while others are grown as individual trees, perhaps inside the house walls. Besides, many trees are intercropped, or they are isolated, or grown in rows around fields or house yards. In general, vineyards occupy dedicated plots; apple, pomegranate, almond and apricot trees can be grown in orchards or as isolated trees; mulberry and walnut trees are mostly found in isolation.

Individual trees have most probably been underestimated, as farmers not having dedicated orchards may have omitted to report on some or all of their isolated trees. Also, farmers are likely to omit reporting on trees along irrigation canals, in and around villages, or in other “public” places which are mostly “harvested” by children. Finally, production for sale may have been underestimated because of a social factor. Producing fruit for sale is considered by many Afghans, particularly in the South of the country, to be a degrading work, and they avoid it (or avoid reporting it) lest they are labelled as “baghwan” or “gardeners”, a job which only poor or dependent people do (See Ahmed, 1980). There are lots of fruit gardens that are kept as “prestige” gardens by richer people, and their fruit are not sold but consumed and offered to guests. These “prestige” gardens are not necessarily large in size but very frequent. Some gardens from which fruit is actually sold may have been declared as only for consumption, for this reason.

However, an approximate estimate, possibly somewhat on the low side because of under-reporting of isolated trees, can be obtained by assigning an area per tree or per vine. The FAO Land Cover Atlas estimated 38,213 hectares of vineyards for 1990-93, but that area has probably increased in recent years: at the normal density found in Afghan vineyards, 71 million vines planted at 3-4 meters from each other would occupy some 70,000 to 90,000 hectares. The main kinds of fruit trees, in turn (apple, apricot, mulberry, almond, pomegranate and a few others) total around 22 million trees, which if planted at 4-5 meters from each other would occupy about 40,000-45,000 hectares. There has been destruction of fruit trees due to war or neglect during the 1990s, but there have been also some new plantations especially near Kabul, and the exact balance is unknown. The Land Cover Atlas reports 52,852 hectares with fruit trees, which is consistent with the findings in this survey, indicating fruit trees may have suffered a net reduction of 10-20 percent over recent years.

The winter survey did not assess fruit or vegetable output. The 2003 CFSAM indicated an increase in vegetable planting due to good and sustained rainfall and abundant river discharge. Regarding fruit trees the assessment was less favourable: “Fruit production in 2003 was badly affected by lack of irrigation water in the South-West which resulted in further desiccation of orchards while in the northern, western and north-eastern parts of the country winter frost had seriously damaged fruits trees. Most of the fig and pomegranate trees in the North are cultivated in the Khulm oases (mixed orchards). Closer to the Tang-e Tashkurgan, the pomegranate trees were less

affected and still bear some flowers. These few orchards could be pruned and maintained. However, in lower parts of the Khulm oases most trees need to be replaced.” (CFSAM 2003 report, p.11).

The spring frost has severely affected all fruits trees in North-East, North and West regions. The frost line for vineyard and mulberry appeared to have decreased westward from 1600 meters in the Salang road to 1000 meters in Sari Pul and 500 to 800 meters in Maimana and then to have increased again to about 1000 meters in Badghis and Herat provinces. An estimated 50-60% of the mulberry and 60-70% of vineyard production has been damaged by spring frost in these regions.

However, walnut trees have been badly damaged from the lowland up to the highest elevation in Northern and Western Afghanistan. An estimated 80-90% of the walnut production in Northern Afghanistan is reduced due to spring frost. In the South of the Hindu Kush mountains, the frost was less severe, however, walnut trees have been damaged above 2300 meters elevation. Also in the South region, mild spring frost in April while apple trees were flowering has negatively impacted apple production.

The frost will impact significantly on the food security of the fruit growers, particularly in districts that rely heavily on fruit production such as Khulm in Balkh province, Sari Pul, Sozma Qalah, Sangcharak in Sari Pul province, Dawlatabad, Shirin Tagab in Faryab province, Injil and Guzaran in Herat province and Badakhshan.

7.2. Cereal output and self-sufficiency

Another relevant piece of information contained in the survey concerns food supplies from farm wheat production. Wheat is the main staple food in the country, and provides a substantial share of total calorie intake. Most farmers devote all or a substantial part of their wheat crop to self-subsistence, although most must also procure more wheat from the market.

The winter survey investigated the use households had made or intended to make of wheat coming from the 2001-2002 harvest. Farmers were asked about the total quantity of wheat they got, the amount they had sold so far, how much was used to make payments, the amount of wheat required in the household for food purposes, and the number of months of household requirements covered by the wheat supply. It was also investigated whether the household has purchased any wheat since the last harvest, and whether it has received any form of food aid.

On average, farmers obtained from their farms in 2002 about two metric tons of wheat. The figure may involve some underreporting, since farmers in general underreported wheat yields by about 30% on average. Besides, this concept of wheat availability from the farm is not exactly the average **production**, but the supply of wheat acquired by household from the family farm; some farmers receive only a share of the wheat produced in their farms (e.g. sharecroppers), and some receive also wheat as rent paid them as landlords by other farmers acting as tenants. In most cases, however, supply of wheat equals total production in the farm.

The winter survey was conducted several months after the harvest. For wheat planted in the autumn of 2001, the survey was done about six-seven months after the harvest. For spring wheat the survey came 3-4 months after completing harvest. Therefore most of the sales of wheat by commercial farmers were completed at the time. It is, however, remarkable that on average only 224 kg of wheat have been sold per

household, i.e. about 11% of the supply. Another 12% had been paid as land rent or for other obligations. Therefore 77% of all the wheat remained in the households for domestic consumption or for later sale.

Household-reported wheat requirements were, on average, 2.2 MT (equivalent to about 204 kg per capita). Since reported supply from the farm was 2.03 MT per household, the balance would seem close to total needs, but this is a fallacy of aggregation. In fact needs are roughly proportional to household size, whilst production depends on land size and productivity and can vary enormously from minuscule backyard size plots up to large commercial farms. The surplus of some households does not offset the shortcomings of others. Farm supplies of other cereals should also be considered.

Total wheat requirements reported by farmers amounted on average to 204 kg of wheat per person per year, 20% above the 170 kg for food needs estimated by FAO and WFP in their annual Special Reports from Crop Assessment and Food Supplies Missions. Other cereal food requirements (maize, rice, barley) are estimated by FAO and WFP at an additional 10 kg per person/year. Reported requirements may include a provision for household waste or non-food uses. For the purpose of the present analysis it can be assumed that households' total cereal requirements are around 200 kg per capita, with an allowance for random variation about this figure due to various reasons (demographic composition, preferences, food consumption habits, amount of household non-food uses for cereals, etc.) In the various agro-ecological zones, average reported wheat requirements per capita varied between 178 kg (Herat-Farah) and 256 kg (Eastern Mountains).

The sufficiency level here is estimated as a range from 150 to 250 kg per capita, with a margin around the level of requirements. For the sake of simplicity, households producing between 150 and 250 kg of cereals per capita are classified as "near self-sufficient"; their deficit or surplus, if any, would be quite small and within tolerable margins of inter-household variation. Households producing less than 150 kg per capita are deemed "below self-sufficiency", or equivalently "deficit households", whilst those above 250 kg are considered "surplus households" positioned comfortably above self-sufficiency in cereals, and thus having a marketable cereal surplus.

If households and their population are classified according to the amount of wheat produced per capita (Table A.39), it is easily seen that most of them do not produce nearly as much as needed for family consumption. Table 59 summarizes this matter. As shown there, after the 2002 harvest, 57.7% of all farmer households (comprising 60.2% of the people) apparently obtained from their farms **less than enough for subsistence**. This includes 12% with no wheat (or other cereals) output at all. Only 27% of households were above self sufficiency and may have some cereal for sale, but most of them had a very small surplus.

Table 59
Distribution of households, population and cereal production
by level of per capita cereal output, 2001-2002

Per capita cereal output 2001-02	% hous.	% pop.	% cereal output	Cum. % households	Cum. % population	Cum. % cereal output
BELOW SELF SUFFICIENCY	57.7%	60.2%	15.1%			
No cereal output	12.2%	12.3%	0.0%	12.2%	12.3%	0.0%
1 - 24 kg/capita	5.6%	6.4%	0.4%	17.8%	18.7%	0.4%
25-49 kg/capita	10.6%	11.6%	1.9%	28.4%	30.2%	2.4%
50-99 kg/capita	16.6%	17.3%	5.7%	45.0%	47.5%	8.0%
100-149 kg/capita	12.7%	12.7%	7.1%	57.7%	60.2%	15.1%
NEAR SELF-SUFFICIENCY	14.4%	13.9%	12.1%			
150-199 kg/capita	8.1%	7.8%	6.0%	65.8%	68.0%	21.1%
200-250 kg/capita	6.3%	6.1%	6.1%	72.1%	74.1%	27.2%
ABOVE SELF-SUFFICIENCY	27.9%	25.9%	72.8%			
250-499 kg/capita	16.1%	15.0%	23.4%	88.2%	89.1%	50.6%
500-999 kg/capita	8.5%	7.7%	23.4%	96.7%	96.7%	74.0%
1000+ kg/capita	3.3%	3.3%	26.0%	100.0%	100.0%	100.0%
TOTAL	100.0%	100.0%	100.0%			

Some totals may not add up due to rounding. Includes wheat, barley, maize and rice.

As some farmers under-reported their output, the incidence of under-sufficiency may be somewhat exaggerated, but probably not by much. Whilst the true output of each family is unknown, the amount of under-reporting is not exceedingly large. The true proportion of households below the requirement level is probably lower than 58%, but not much lower indeed. Even if the reported output is increased to reflect estimated under-reporting of yields, just a limited number of deficit households will cross the line into those that are near self-sufficiency, and few of the latter will cross the boundary into having a very small surplus. Most of the deficit households produce less than 100 kg of cereal per capita, thus increasing by 30% would not make them self-sufficient, and if the output in the 6% households with reportedly 200-249 kg per capita increase is increased by 30%, few of them would end up with a surplus, and a very small surplus at that. Most of the deficits are large relative to needs, and most of the surplus comes from households with large surpluses. This indicates a significant degree of polarization in this regard, with many households deeply into deficit and a few with large surpluses.

Households below cereal self-sufficiency produced only 15% of all the cereal output. On the other hand, only 28% of the households produced more than 250 kg per capita, safely above their needs, and these minority households produced 73% of all the wheat output. Only 14% of the households were around the self-sufficiency level (150-250 kg per capita), 58% were below, 27% were above that range. The top 3.3% of households produced 26% of all cereals. Commercial farmers selling at least one MT of wheat each year are included in this small group of 3.3%. **They, the commercial farmers more narrowly defined, represent about 1-2% of all farmers, producing a quarter of all cereals.**

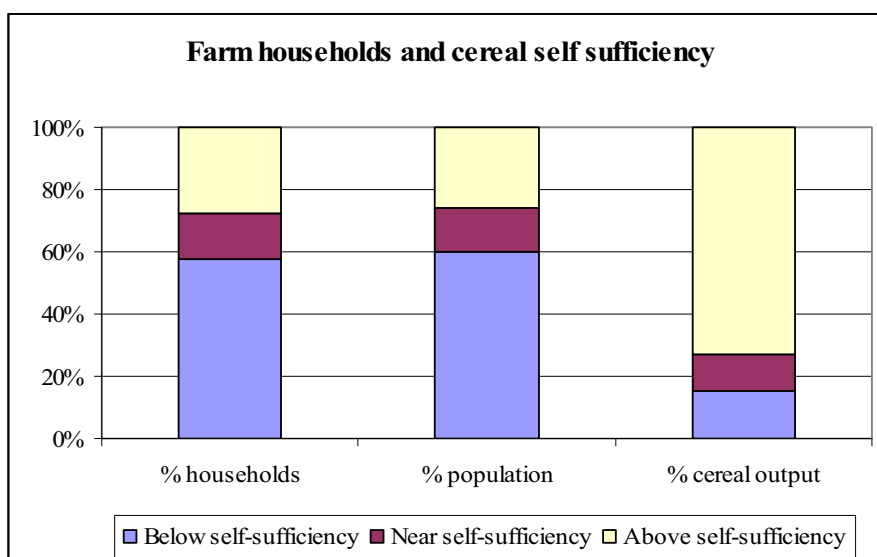


Figure 14 Most farmers were not self-sufficient in cereals after the 2002 harvest

The definition of self-sufficiency given above refers to the so-called **gross cereal balance** of each household, defined as total output minus estimated needs. But some households have to reckon with obligations in kind that must be paid in cereals, such as land rent, private debts, sometimes the wages of harvest workers. Deducting those obligations from total output before subtracting household food needs leads to the concept of **net cereal balance**. Tables A.39-A.41 in the Statistical Appendix show the amount of gross and net cereal balances, and their distribution across regions, zones and households,

The total cereal balance of the farm sector is positive (+310,480 MT, as shown in Table A.41.1), but once obligations in kind are deducted the net balance turns out to be negative (-49,660 MT, Table A.41.2). However, as some under-reporting of output is present, probably even the net balance is (albeit slightly) positive for the entire farm sector. Nonetheless, the distribution of output across farms is highly unequal, and as a result most farms fail to produce enough to cover their needs.

By the time of the survey some wheat had already been sold. It was only a fraction of the marketable surplus, but it shows clearly that it is mostly the minority of surplus households who sell most of the wheat. Out of 39,026 farms having sold wheat, 36,713 are surplus households (Table A.41.3) and they sold 94% of all the wheat already sold (Table A.41.5).

By the time of the survey, four to six months after the harvest, **69% of all farmers had already purchased some wheat for their families** (see Table 60). This may be in addition to purchases of wheat **flour**, for which there was not a specific question and may have been omitted by some farmers.

Table 60
Wheat purchases and food aid

	Since last harvest have you:	
	Purchased wheat?	Received food aid?
TOTAL	69.1%	13.7%
Agro-ecological zone		
Badakhshan mountains	39.4%	21.2%
Central mountains	66.8%	14.0%
Eastern mountains	89.6%	2.7%
Southern mountains	80.4%	0.3%
Northern mountains	56.1%	18.3%
Turkistan plains	52.7%	21.7%
Herat-Farah lowlands	77.1%	28.4%
Helmand River valley	74.6%	0.4%
Region		
North	66.6%	18.4%
Northeast	40.4%	16.7%
West	71.1%	28.9%
West Central	55.6%	7.2%
Central	80.8%	8.3%
South	76.5%	13.2%
East	92.4%	0.4%
Southwest	75.9%	3.0%

Data reflect wheat purchases or food aid receipts since the 2002 harvest until the time of the Survey.

The onset of winter in many parts of Afghanistan mandates accumulation of food, and the high proportion of wheat purchasers indicates the low degree of self-sufficiency of Afghan farmers as regards their supplies of wheat. About 13% of farmers had received wheat as food aid **since last harvest**. The proportion was up to 28% in the Western Region, and about 20% in the North, with much less in the Centre, South and East. This covers the period of somewhat reduced food aid delivery after the 2002 harvest, not including emergency deliveries in the first part of 2002, but including distribution occurred just before winter in preparation for the cold months.

Since few deficit farms have sufficient amounts of cash crops, most of the monetary income used by deficit farmers to purchase wheat is off-farm income, including farm labourer's wages, wages in non-agricultural occupations such as construction, remittances from relatives living in towns or abroad, and other analogous sources. Many resorted to borrow money to cover their food needs. Some reference is made later to non-farm sources of income and the financial situation of farm households. These findings on self-sufficiency match other researchers' findings indicating that rural livelihoods in Afghanistan are quite complex and diversified; they also match existing evidence on widespread rural poverty and malnutrition.¹²

¹² About livelihoods see for instance Adam Pain, "Livelihoods under stress in Faryab Province, Northern Afghanistan. Opportunities for Support," a Report to Save the Children (USA). Pakistan / Afghanistan Field Office, Islamabad, 2001; also Adam Pain and Sue Lautze, **Addressing livelihoods in Afghanistan**, Kabul, AREU, 2002; regarding nutrition see Sandra Tedeschi and Rosio Godomar, "A review of the nutrition situation in Afghanistan: Compilation of nutrition surveys and food consumption assessments conducted in 2001-2002", mission report, Kabul, FAO/WFP, 2002. About the livelihoods of the urban poor, IDPs, returnees, kuchis, and other vulnerable groups, with valuable indications also about nutrition, see Marilee Kane and Raja Aziz, "Vulnerable Livelihood Systems in Afghanistan", mission report, FAO, Kabul-Rome, June 2002. On the Kuchi livelihoods see DeWeijer (2002).

The situation in 2003 is surely better. Production increased, and the proportion of households below self-sufficiency diminished. However, the concentration of cereal output in the hands of richer farmers increased.

Table 61.1 shows the distribution of **expected** output and people in three categories regarding total cereal output. The proportion of deficit households, which was 57.7% after the previous harvest, was expected to be only 45.9% after the 2003 harvest. Regarding population the percentage in deficit households would fall from 60.2% in 2002 to 48.1% in 2003. Regarding output, the 27.9% surplus households produced 72.8% of total output in 2002, but in 2003 the 38.9% surplus households were expected to produce 82.3% of total cereal output.

All these figures are somewhat distorted by farmers' under-reporting of their own production, but as seen before the general picture would not change much if this is corrected, and moreover, the comparison between the two years would be not much affected.

Table 61
Reported cereal balance 2002 and expected cereal balance 2003
61.1. Change in the distribution of households, population and output

	After reported 2002 harvest			After expected 2003 harvest		
	% hous.	% pop.	% output	% hous.	% pop.	% output
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Deficit households	57.7%	60.2%	15.1%	46.1%	48.1%	9.0%
About self-sufficient	14.4%	13.9%	12.1%	15.1%	14.9%	8.8%
Surplus households	27.9%	25.9%	72.8%	38.9%	36.9%	82.3%

Table 43 in the Statistical Appendix gives additional detail on this illustrative use of the expected cereal output in 2003 to classify farm households regarding self-sufficiency.

Progress from 2002 to 2003 was not, however, universal. The status of individual households changed in various directions from one year to the next.

61.2. Comparison of cereal balance status 2002 and 2003

Reported balance 2002	Total	Expected balance 2003		
		Deficit households	About self-sufficient	Surplus households
Total	1,062,576	489,183	160,439	412,954
Deficit households	612,589	447,017	79,562	86,010
About self-sufficient	152,641	25,724	60,077	66,840
Surplus households	297,346	16,442	20,800	260,104

As seen in Table 61.2, a considerable number of households would remain in the same category in both years, but a sizeable minority would change their sufficiency status. Cells above the highlighted diagonal would **improve** their status, including 79,562 households getting a “promotion” from deficit to self-sufficiency, and about 150,000 reaching the status of surplus households. These households represent nearly 22% of the total. Cells below the diagonal, instead, correspond to households that would **degrade** their status, and they represent about 6% of all households, including more than 40,000 that would enter the deficit situation having been before in a better position. Retrocession in this regards means lower production expected for 2003 than that reported for 2002, for whatever reason including an exceptionally high production obtained in 2002 but not expected again in 2003.

7.3. *Marketable wheat surplus*

Even with the increased production attained in 2003, that was even higher than these farmer expectations, **only a fraction of Afghan farmers are able to sell cereals, and most of those are only able to sell modest amounts.** Even among surplus households, most had only small surpluses.

The total amount of wheat sold since the harvest until the winter survey (according to farmers' responses) was about 3% of total production. More wheat, no doubt, would be sold later (and some already sold may have been not declared). Of all farms with wheat output, 84.3% had not sold any wheat by the time of the winter survey (see table 58 and table A.41.3 in the Statistical Appendix). About 95% of the wheat already sold had been sold by surplus farmers.

The scale of the sales is also modest, mostly below 5 MT, and two thirds of the sellers had sold less than 1 MT. As expected, most of the wheat sold comes from the larger sellers. Those selling more than one metric ton are less than 7% of all farmers, but they had sold 81% of all wheat that was already sold at the time of the survey.

Table A.38 summarizes the results obtained about the use of wheat supplies up to the time of the survey, given also in Table 62 in the form of averages per household. This table reveals that at the time of the survey farms had already sold an average 224 kg of wheat, and had used another 338 kg to pay in kind for land rent or other obligations. The rest of the wheat (1444 kg per farm) had been already consumed or was still available in the farm. This implies that net wheat availability after the harvest (including wheat already sold by the time of the survey, wheat already consumed and wheat still available in the farms) amounted to 1.67 MT per farm, below the average requirements of 2.19 MT per farm. This result would indicate an overall wheat deficit in the farm sector, though this may be somewhat overstated since many farmers underreported their production. If production is adjusted according to CFSAM yields, estimated availability would be about 2 MT per farm, still somewhat below requirements but not by so much.

But the wheat already sold at the time of the survey is only part of the **marketable surplus** obtained by farms. The size of the saleable surplus can be computed as total production, minus household consumption requirements.¹³ By this standard, as shown in Table 60, most farms have a **deficit** rather than a surplus. Out of 1,065,523 farms, only 292,924 (or 27.5%) had in 2002 a net marketable surplus of 905,940 MT, or about **three metric tons per surplus farm**. The farms in deficit had (after the 2002 harvest) a total shortcoming of 1.22 million MT relative to their needs. All in all, farm households needed 319,063 MT more than they reportedly supplied in 2002, in spite of the increase in production observed in that year after three years of drought.

¹³ Besides food consumption requirements, a small amount would also be needed as a seed reserve, which is implicitly assumed to be included in the reported requirements. Most seed is purchased in the market. Afghan farmers in 2001-02 used on average about 40 kg per farm of their own saved wheat seeds, which is a negligible amount relative to total wheat requirements of about 2200 kg per farm household.

Table 62
Wheat production, uses and reported requirements (after 2001-02 harvest)

	Wheat from farm	Wheat sold so far	Wheat paid for land rent	Wheat paid for other obligations	Rest of wheat from farm	Wheat requirements
TOTAL	2,006	224	84	254	1,444	2,192
Agro-ecological zone						
Badakhshan mountains	4,594	643	120	603	3,228	2,113
Central mountains	1,261	89	30	101	1,041	2,020
Eastern mountains	1,181	60	37	47	1,037	2,739
Southern mountains	1,608	220	214	312	862	2,354
Northern mountains	2,742	355	25	389	1,973	2,037
Turkistan plains	3,592	440	46	453	2,653	2,603
Herat-Farah lowlands	1,232	96	28	225	882	2,045
Helmand River valley	1,992	254	402	225	1,112	1,760
Region						
North	2,014	217	22	342	1,433	2,151
Northeast	4,660	701	62	546	3,351	2,142
West	1,327	81	25	241	980	2,083
West Central	1,643	187	35	65	1,356	1,548
Central	1,067	44	61	97	864	2,037
South	1,771	245	198	344	985	2,809
East	1,229	48	28	45	1,107	2,955
Southwest	1,585	182	295	187	922	1,910

Figures reported by farmers may underestimate farm production.

Total wheat production reported by farmers and reflected in the above table was 2.2 million MT, whereas the 2002 CFSAM estimated 2.68 million MT (20% more). Even if this increase is added to the reported production, average supply would be about 2500 kg per farm instead of 2006 kg, but even so most farms would still show a deficit. Besides, actual net wheat availability is total production minus wheat needed to pay land rent and other obligations. If the balance be based on net rather than gross wheat availability, the deficit would be larger.

The total marketable surplus of more than 914,000 MT, or somewhat larger if account is taken of underreporting, was largely **concentrated in only a small fraction of the surplus farms**. The top 1.4% of all farms, i.e. about 15,000 farms with the largest surpluses, each over 10 MT, controlled nearly 34% of the total marketable surplus. Thus the vast majority of the commercial supply of Afghan wheat comes from a small minority of farmers.

As shown in Table 63, with a total reported wheat output of 2.14 million MT, farms had an overall reported deficit of nearly 200,000 MT. This, however, is the result of 729,408 farms having a deficit of 1.1 million MT, combined with 308,357 farms with an aggregate surplus of 914,181 MT. Therefore, 68% of all farms reported not covering their wheat needs.

Table 63
Aggregate household wheat balance from 2001-02 reported output

	Households	Wheat (MT)		
		Produced	Required	Balance
TOTAL	1,065,523	2,137,376	2,335,128	-197,752
Household wheat balance:				
Size of deficit:	729,408	554,050	1,669,124	-1,115,074
More than 1000 kg	451,456	258,825	1,237,182	-978,357
500 to 999 kg	142,177	135,501	241,196	-105,695
200 to 499 kg	78,098	93,015	120,858	-27,843
Below 200 kg	57,677	66,709	69,888	-3,179
Size of surplus:	308,357	1,541,277	627,097	914,181
Below 200 kg	27,759	42,048	38,907	3,141
200-499 kg	48,935	100,296	82,925	17,372
500-999 kg	59,192	139,945	96,148	43,797
1000-2499 kg	100,580	357,993	195,636	162,357
2500-4999 kg	54,882	324,279	133,006	191,273
5000-9999 kg	29,663	261,600	69,618	191,982
Over 10000 kg	15,104	357,164	49,763	307,401

Table 64
Average household wheat balance from 2001-02 reported output
by size of household deficit or surplus

	Wheat in kg per farm			% households	% production	% surplus	% deficit
	Produced	Required	Balance				
TOTAL	2,006	2,192	-186	100.0%	100.0%		
Household wheat balance:				0.0%	0.0%		
Size of household deficit	760	2,288	-1,529	68.5%	25.9%		100.0%
More than 1000 kg	573	2,740	-2,167	42.4%	12.1%		87.7%
500 to 999 kg	953	1,696	-743	13.3%	6.3%		9.5%
200 to 499 kg	1,191	1,548	-357	7.3%	4.4%		2.5%
Below 200 kg	1,157	1,212	-55	5.4%	3.1%		0.3%
Size of household surplus	4,998	2,034	2,965	28.9%	72.1%	100.0%	
1 to 199 kg	1,515	1,402	113	2.6%	2.0%	0.3%	
200 to 499 kg	2,050	1,695	355	4.6%	4.7%	1.9%	
500 to 999 kg	2,364	1,624	740	5.6%	6.5%	4.8%	
1000 to 2499 kg	3,559	1,945	1,614	9.4%	16.7%	17.8%	
2500 to 4999 kg	5,909	2,423	3,485	5.2%	15.2%	20.9%	
5000 to 9999 kg	8,819	2,347	6,472	2.8%	12.2%	21.0%	
Over 10000 kg	23,646	3,295	20,352	1.4%	16.7%	33.6%	

This assessment of the marketable surplus may be somewhat understated by farmers, since they usually under-reported their wheat output: instead of 2.13 million MT reported in the survey, the CFSAM estimated a wheat output of 2.58 million MT, i.e. 20% more. If this correction were accepted as regards availability, some of the households with a small deficit may shift to self-sufficiency, but most of the households have a **large** deficit of more than 1 MT each, and this would hardly be reversed by an increase of 20% in output. For instance, 42% of all households appear in Table 64 with more than 1000 kg of deficit and a reported production of 573 kg each; once under-reporting is corrected they would have a production 20% higher i.e. some 700 kg, still far below their average requirements of 2740 kg. In this sense, the results in the preceding tables are essentially robust to corrections for under-reporting.

The surplus and the deficit were extremely concentrated. Most of the deficit (87.7%) belonged to 42% of farms contributing 12% of total production with a deficit over one

metric ton each (see Table 64). Farms having moderate deficits of less than 500 kg were only 12.7% of farms with just 2.8% of the deficit. Farms with modest surpluses (up to 999 kg) controlled only 7% of the surplus. The top 4.2% of farms controlled 54.6% of it. In fitting contrast, most of the deficit farms have **large** deficits. In other words, both surpluses and deficits are relatively large compared with household needs. Farms with small deficits or small surpluses are rather few.

Most of the farmers, as implicit in the above data, are not self sufficient in wheat. The average farm household covered about 5.8 months of wheat requirements with the production of the farm obtained in 2001-02 (see Table 65 and Table A.42 in the Statistical Appendix). In some parts of the country like the South and East the average was less than four months, whilst in the Northeast it was about nine months.¹⁴

Only 31% of households, and even less indeed in some parts of the country, obtained self-sufficiency for 10 to 12 months of the year. In areas like the Eastern and Southern Mountains, still affected by drought in 2001-02, those households were only about 11%. For nearly 60% of farmers, their own wheat is enough for less than half the year, including 40% that do not cover more than three months. Table 63 shows the percent distribution of these households across zones and regions.

	Percent of households within each zone or region						Average months
	Months of wheat self-sufficiency for farmers						
	Total	None	1 to 3	4 to 6	7 to 9	10 to 12	
TOTAL	100.0%	15.6%	24.6%	18.1%	10.6%	31.0%	5.9
Agro-ecological zone							
Badakhshan mountains	100.0%	2.1%	11.4%	10.9%	8.8%	66.8%	9.4
Central mountains	100.0%	18.4%	20.9%	20.9%	12.6%	27.3%	5.6
Eastern mountains	100.0%	21.0%	40.5%	20.1%	7.7%	10.7%	3.6
Southern mountains	100.0%	22.8%	29.8%	24.9%	11.1%	11.3%	4.0
Northern mountains	100.0%	13.3%	14.6%	14.2%	11.4%	46.4%	7.4
Turkistan plains	100.0%	6.0%	18.2%	15.3%	11.3%	49.2%	7.9
Herat-Farah lowlands	100.0%	17.8%	31.5%	18.1%	10.3%	22.3%	5.0
Helmand River valley	100.0%	11.0%	26.4%	20.6%	10.3%	31.7%	6.1
Region							
North	100.0%	16.8%	20.5%	16.3%	10.2%	36.2%	6.3
Northeast	100.0%	2.9%	7.3%	10.5%	12.0%	67.4%	9.6
West	100.0%	17.4%	28.8%	18.1%	10.8%	24.9%	5.3
West Central	100.0%	4.9%	17.0%	19.7%	14.3%	43.9%	7.6
Central	100.0%	10.6%	29.8%	29.1%	15.8%	14.6%	5.0
South	100.0%	38.9%	19.2%	21.0%	8.3%	12.5%	3.6
East	100.0%	21.6%	47.2%	18.7%	5.5%	7.0%	3.1
Southwest	100.0%	18.1%	26.8%	18.4%	9.4%	27.3%	5.3

Self-sufficiency after the 2002 harvest refers to the following 12-month period until the 2003 harvest.

¹⁴ The number of months of wheat self-sufficiency is computed on an annual basis, and has therefore a maximum of 12 months. The rest of wheat available, if any, is considered as a marketable surplus and not counted towards self-sufficiency. This means that the extra wheat available to households with a surplus over their annual needs do not offsets the deficit of other households.

Table 66
Percent geographical distribution of farm households with various degrees of wheat self-sufficiency after the 2002 harvest

	Percent distribution across zones or regions					
	Total households	Months of wheat self-sufficiency for farmers				
		None	1 to 3	4 to 6	7 to 9	10 to 12
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Agro-ecological zone						
Badakhshan mountains	3.3%	0.4%	1.5%	2.0%	2.8%	7.2%
Central mountains	15.7%	18.5%	13.3%	18.0%	18.6%	13.8%
Eastern mountains	16.6%	22.4%	27.3%	18.4%	12.1%	5.7%
Southern mountains	7.5%	10.9%	9.0%	10.2%	7.8%	2.7%
Northern mountains	26.4%	22.5%	15.6%	20.7%	28.5%	39.6%
Turkistan plains	7.0%	2.7%	5.2%	5.9%	7.5%	11.1%
Herat-Farah lowlands	13.8%	15.7%	17.6%	13.7%	13.4%	9.9%
Helmand River valley	9.7%	6.8%	10.4%	11.0%	9.4%	9.9%
Region						
North	16.7%	18.0%	13.8%	15.0%	16.0%	19.5%
Northeast	15.4%	2.8%	4.6%	8.9%	17.5%	33.5%
West	18.4%	20.5%	21.6%	18.4%	18.7%	14.8%
West Central	7.1%	2.2%	4.9%	7.7%	9.6%	10.0%
Central	9.8%	6.7%	11.9%	15.8%	14.7%	4.6%
South	6.8%	17.1%	5.3%	7.9%	5.3%	2.8%
East	12.0%	16.7%	23.0%	12.4%	6.2%	2.7%
Southwest	13.7%	16.0%	14.9%	13.9%	12.1%	12.1%

From Tables 65 and 66 it transpires that non-self-sufficient farmers are clearly concentrated in some areas, chiefly the South, East and Southwest, the areas where the drought was still persisting in 2002. On those areas, only a small fraction of farmers achieved self-sufficiency for more than 9 months. On the other side, in the North and Northeast of the country a substantial proportion of farmers were self-sufficient most of the year. In the East, it should be noted, some farmers are not self-sufficient in wheat but grow other cereals like maize, while in other areas access to purchased cereals is made easier by other sources of income like remittances or revenue from poppy cultivation. In a later section some information about off-farm sources of income is discussed. Table A.42 in the Statistical Appendix gives also details (including geographical distribution) of deficit and surplus farms, and total gross and net marketable surplus, which follows similar lines as those shown in Table 60.

7.4. Some data on food consumption

Food consumption patterns in Afghanistan are not well known. Neither a thorough food consumption survey nor a nationwide survey of nutritional status has ever been done. The Winter Survey had **not** the purpose of measuring food consumption, but nonetheless some questions were included in this regard. They addressed consumption of certain non-staple foods that are the main sources of protein, vitamins and minerals, and asked about the frequency of their consumption.

As shown in Table 67, vegetables are consumed at least once a week by 48% of the households, but only 26% eat fruit every week, and less than 18% eat meat every week. Even in times of livestock liquidation due to the drought, it seems the excess supply of meat was not taken advantage of by most farmers.

Table 67
Frequency of consumption of non-staple foods among farmer households

Frequency of consumption	Fruit	Vegetable	Meat
	%	%	%
Never, no answer	2.4%	2.9%	2.8%
Once a year	19.1%	7.4%	13.2%
Every month	52.2%	41.5%	66.2%
Every week	26.3%	48.3%	17.9%
Total	100.0%	100.0%	100.0%

These micronutrient-rich foods are more generally consumed with a monthly frequency or so, but a significant proportion of households (nearly 23% in the case of fruit) consume them only rarely or never. From a nutritional point of view, anything less frequent than once a week implies an increased risk of micronutrient deficiency, especially for those vitamins that cannot be stored in the body for a long period. And a majority of rural households fail to meet that standard, especially for fruit and meat. A nationwide micronutrient deficiency survey will be carried out in 2004, and will probably reveal the extent of the impact of limited consumption of non-staple food.

7.5. Sources of income

Access to food not otherwise provided by the family farm requires **access to the market through monetary income**. Determining the amount of income available to peasant households is, however, a difficult task, and the results usually unreliable. The winter survey did not ask about the **amount** of money income, which is a sensitive matter prone to elicit under-reporting, but investigated the **sources of income** available to the household, with the expectation of better results.

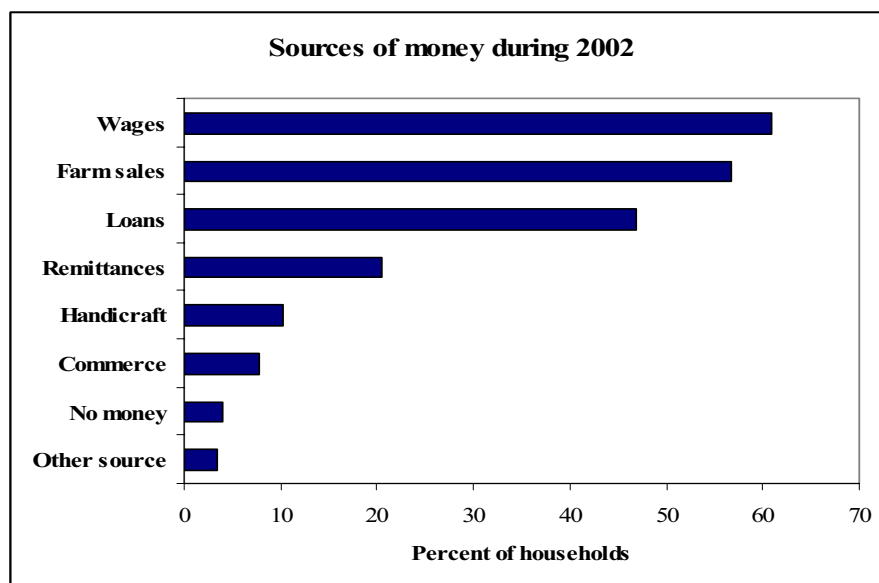


Figure 15 Wages are the most common source of money

Table 65
Sources of money for farm households during 2002

	% households
Total households	100.0%
No money source reported*	3.9%
Money from any source	96.1%
Farm product sales, money income	56.7%
Sale of animals	34.6%
Sale of crops	22.7%
Other sales**	13.3%
Non-farm activities, money income	70.1%
Sale of homemade handicraft	10.3%
Labour income, wages	60.8%
Commerce, trading	7.7%
Transfers and loans	64.1%
Remittances received	20.4%
Money borrowed from others	46.8%
Other sources of money***	3.4%

(*) Households not reporting any source of money may have anyway received money although they omitted to report it.

(**) This category may include some non-farm products but mostly includes farm products like eggs, meat, honey, hides, skins, wool.

(***) Inheritances, gifts, charity, etc.

Households may have many sources of money, and thus percentages do not add up to 100%.

According to the responses obtained, practically all farmer households, even in the remoter parts of the country, procure some money revenue to meet their needs. Slightly more than one half of farm households obtain some money income from the sale of crops, animals or other products. Instead, three quarters of them receive money income as earnings accruing from **non-farm economic activity** (handicraft or other products, commerce, or wage labour). In particular, **60.8% of all farmer households have some wage-labour income**. Money needs are also addressed through informal financial relations: about one half of households had received some loan in the year preceding the survey, and a sizable number receive remittances.

Money income is almost universal. Reported sources of income indicate 96% of farmers have some form of money income. The remaining minority of less than 4% almost surely has also some source of money that remained unreported.

Since only about one half sell any farm products, and 96% have money revenue, most farmers have off-farm monetary incomes. Farmers selling specifically **crop** output are almost 23%. This includes sellers of wheat but also sellers of other crops who do not sell wheat. The difference comes from the modest cash crops grown by Afghan farmers, such as melons or some pulses. Farms with any form of revenue from sale of farm products amount to 56% of farms, including farms reporting sale of crops, sale of animals, or both, and other sales most of which are supposedly farm products such as eggs, hides or wool.

Sale of animals, reported by 34.6% of farms, appears to have been more frequent than sale of crops. On the one hand, this may be normal, as animals are raised as a form of capital accumulation and a form of occasional money income, while many crops are for subsistence. Almost all livestock owners may sell some animal every year, even if they do not have any marketable crop surplus. On the other hand, the proportion of animal sellers might have been higher than normal, still being a reflection of the

drought, since it referred to the entire year 2002, including the first half of that year when still many farmers may have had to sell animals because of the lack of water.

A hefty 61% of farmer households have income from labour. This indicates a deep penetration of labour market relations for population living in the Afghan countryside. It includes agricultural work and also non-farm work such as occasional jobs (rural or urban) in construction, transportation or other activities, in the countryside as well as in towns or even outside the country (seasonal migration to neighbouring countries is quite common). This figure may still understate the incidence of off-farm wage income since it refers only to **money** wage income, whilst some kinds of work are paid in kind (harvest labour is typically paid in such fashion, with a fraction of the harvested crop usually equivalent to the seed rate used in the relevant area harvested).

A 20% of farmers report receiving remittances. The true percentage must be higher, since there is a tendency to hide this source of income. With millions of Afghans living abroad, and not only in neighbouring countries, remittances are a major source of income for many.

Almost one half of farmers incurred some new indebtedness during 2002. This shows that the informal rural credit system has been active in 2002. Much has been said about indebtedness and its impact on Afghan livelihoods (see Lautze et al, 2002, as a well-known example). In the following section some additional details on farmer debt will be discussed. However, it is worth remarking that informal credit relations at village level are a traditional and normal feature of Afghan life, and by no means a sign of crisis, though of course the prolonged drought since 1999 may have driven indebtedness to an unusually high level. However, the outcome was not as dramatic as expected in some quarters. Neither the debt existing at the end of 2001 caused a perceptible “cash famine” nor were farmers unable to get more credit or refinance their debt.

7.6. Indebtedness

As seen before, about 49% of farmers borrowed some money during 2002. However, somewhat above one half of the farmers (56.4%) were in debt at the moment of the Winter Survey. At the same time, 5.1% of them were creditors, having lent money to other people. A few (0.2%) were in the two conditions at once (Table 69). The total number of farmer households in debt was almost 600,656 (this figure is higher than that of households who borrowed money in 2002, since some of the debt is older).

Table 69
Financial position of farmers

Money owed to the farmer		Farmer in debt		Total
		No	Yes	
No		412,628	598,832	1,011,460
Yes		52,239	1,824	54,063
Total		464,867	600,656	1,065,523

Money owed to the farmer		Farmer in debt		Total
		No	Yes	
No		38.7%	56.2%	94.9%
Yes		4.9%	0.2%	5.1%
Total		43.6%	56.4%	100.0%

Expressed in US dollar equivalent, total debt reported by farmers represents \$287 million. Credit owed to farmers represented in the sample amounted to \$43 million (Table A.45 at the Statistical Appendix). The amount of indebtedness is equivalent to \$478 **per debtor household**. On average, creditor farmers are owed \$800.

About one fifth of the debt is in US dollars, about 25% in Pakistani rupees (especially in the South and East), about 15% in Northern currency (the so-called *jumbeshi*), and the rest in old and new afghani.¹⁵

The fact that money owed to farmers is far less than total farm debt is simply due to the fact that many farmers owe money to people that are not farmers. Large debts, especially, are incurred with non farmers such as traders. The creditors, however, (Table 70 and Table A.46) are in large proportion **relatives** of the debtors. About 41% of the debtors owe money only to relatives, making a total 60% owing money to relatives alone or in combination with other creditors. Another large category of creditor is “other village member” (21% of debtors, of which 9% alone, 9% along with relatives, and 3% in other combinations). This indicates that practically the vast majority of debtors owe money to a family member or another member of the same village. However, many of the “relatives” may be family members that are not farmers, and are not residing in the village. Many of those relatives may live in towns or abroad.

More than a quarter of the debtors (27.4%) owe money to traders, and most of them (16%) owe money **only** to traders. Average debts to traders are not particularly high, but some of the larger debts are included in this group. About 7% owe money to a landowner, most of them (5.2%) exclusively to a landowner. Data do not indicate the exact amount owed to every type of creditor, but the dominance of family relations and village members is evident in terms of the number of debts owed to them. The fact that most creditors are relatives and neighbours reinforces the hypothesis widely held by long term Afghanistan experts that indebtedness is a way of life for the Afghan peasant, and that credit is easily obtained and deadlines postponed in times of economic distress. Traders also may be members of the same clan or extended family. These factors, fortunately, helped avert the debt crisis envisaged by some studies centred on the drought years such as Lautze et al (2002).

Table 70
Debtors and debt by type of creditor

	Indebted households	Average debt (USD)	Total debt (USD)	% debtors	% debt
TOTAL DEBTORS	600,656	478	287,263,484	100.0%	100.0%
Type of creditor					
Relative only	248,414	540	134,028,531	41.4%	46.7%
Trader only	96,196	388	37,331,384	16.0%	13.0%
Fellow villager only	54,075	451	24,388,140	9.0%	8.5%
Landowner only	31,055	447	13,879,044	5.2%	4.8%
Relative & villager	55,287	598	33,066,329	9.2%	11.5%
Relative & trader	48,144	248	11,931,637	8.0%	4.2%
Trader & villager	11,039	361	3,989,066	1.8%	1.4%
Other combinations	17,718	765	13,553,874	2.9%	4.7%
Not reported	38,728	390	15,095,479	6.4%	5.3%

¹⁵ The new Afghani was officially introduced on 1 January 2003, during the Winter Survey. There is probably very little debt in new Afghanis, but since January many people expresses old debts in the new currency (which was exchanged with the old one at 1000:1, in order to shave off three zeroes).

Indebtedness is closely correlated with agricultural self-sufficiency. As shown in Table 71, more two thirds of the debtors, i.e. 408,774 out of 600,656, holding 71% of all debt, belong to households with a cereal deficit.¹⁶ The average debt per household is also larger in deficit households (\$500) than surplus households (\$390). In fact, households with large surpluses report very little debt. It is clear that cereal self-sufficiency is a factor related to indebtedness (Table 71). Deficit households are 57.7% of all farm households, but they are 68.1% of debtors, and concentrate 71% of all farm debt. Their average debt, moreover, is \$500, in spite of being poorer and having lower assets, whilst households above self-sufficiency have an average debt of \$390 though they could afford having larger debt because they have larger assets and income. This shows that **indebtedness is, in part at least, a coping mechanism for subsistence.**

Table 71
Indebtedness and cereal balance

	Total	Deficit households	About self-sufficient	Surplus households
Total households	1,065,524	614,407	153,771	297,346
Indebted households	600,655	408,774	77,638	114,243
% indebted	56.4%	66.5%	50.5%	38.4%
Average debt (US\$ equivalent)	\$478	\$500	\$493	\$390
Total debt (US\$ equivalent)	\$287,263,483	\$204,434,467	\$38,282,324	\$44,546,692
% households	100.0%	57.7%	14.4%	27.9%
% indebted households	100.0%	68.1%	12.9%	19.0%
% total debt	100.0%	71.2%	13.3%	15.5%

See Table A.48 for more detailed breakdown.

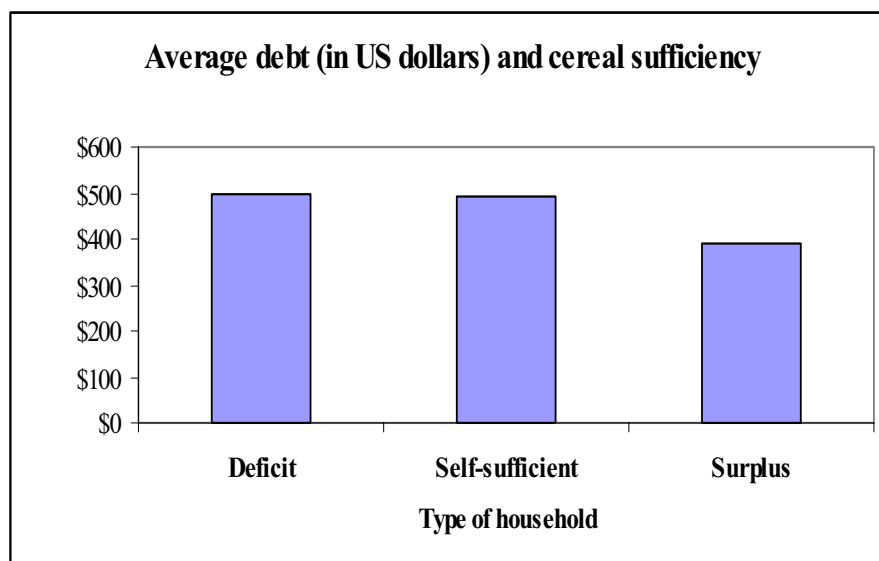


Figure 16 Households with cereal surplus have lower debts

There is little information about **interest rates** (explicit or implicit) for informal rural credit. A direct question about interest rate owed, which was posed in the Winter Survey, got very few responses, not enough for a sensible evaluation. Detailed

¹⁶ The large debt of households with no cereal output (\$873 on average, representing 24% of all farm debt) includes many small debts of poor farmers with failed crops, but it also includes some large debts, probably incurred by farmers that are also traders or farmers who produce valuable non-cereal crops (including fruit trees and poppy). See Table A.48 for details.

questions about loan terms would be needed to figure out the (frequently implicit) interest rate. Field observations made by mid 2003 during the Nationwide Crop Output Assessment point to an average of 50%, in line with a traditional interest rate of 50% existing in the 1970s before the war period, and lower than rates up to 100% reported at the beginning of 2002 by Lautze et al (2002).

Most debts (above 70%) are to be paid in cash. In particular, 442,811 households had debts to be repaid in cash, 89,052 had debts to be repaid in kind, and 94,633 households had debts to be repaid with labour.¹⁷ Table 72 shows the incidence of every form of repayment. One point of interest in the table is that the percentage repaying in cash is more or less the same for kinds of creditors. Another interesting point is that there are very few cases of labour payments to landlords, indicating that bonded labour or related forms of servitude are practically non-existent. On the other hand, a curious finding is that 17% of those borrowing from traders will repay by working for the creditor. It is unclear what kind of work is involved.

Table 72
Conditions of repayment by type of creditor

	Total	Type of creditor				
		Relative	Landowner	Trader	Villager	Other
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
FORM OF REPAYMENT						
Repayment in cash						
Percent of debtors	70.7%	71.5%	74.8%	76.8%	71.1%	64.5%
Percent of total debt	71.1%	74.0%	65.3%	70.5%	63.6%	97.7%
Repayment in kind						
Percent of debtors	14.3%	12.5%	14.8%	17.7%	16.4%	12.2%
Percent of total debt	9.6%	6.4%	22.1%	16.8%	9.5%	0.0%
Repayment in labour						
Percent of debtors	15.1%	16.5%	5.4%	17.0%	18.4%	24.3%
Percent of total debt	12.4%	11.6%	0.9%	8.9%	9.3%	0.1%

Every debtor may have more than one form of repayment, and some may not have reported the form of payment. Therefore percentages may not add up to 100.

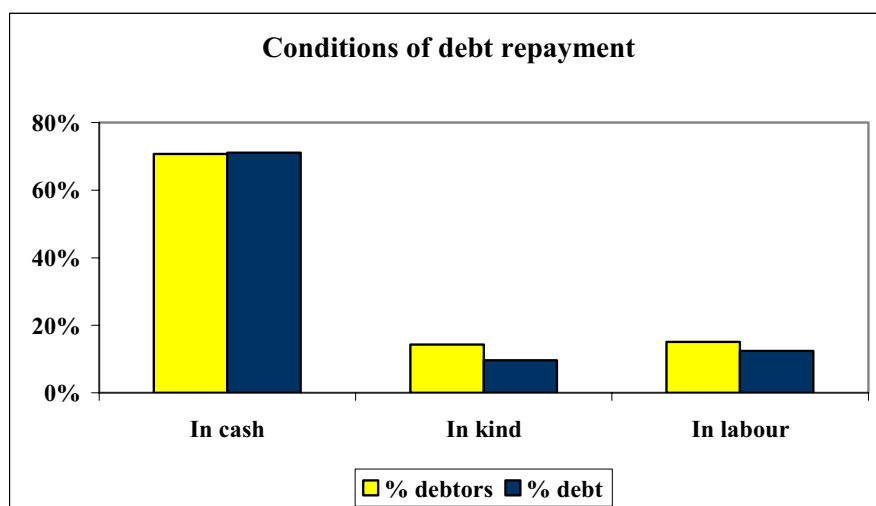


Figure 17 Debt repayment in kind or labour is still frequent

¹⁷ This does not add up to the total number of debtors (600,656) because some households have debts to be repaid in different forms.

8. Conclusions and key lessons learned

The data from the Winter Survey provide an overall picture of the structure of agriculture in Afghanistan. After many years of war and civil strife, where (among greater evils) statistical information was largely absent, this is an important source of information about the main features of the farming sector.

Things are still far from normal, but the 2002-2003 crop season in Afghanistan was the first one planted and harvested in relative peace, after the end of a long period of domestic and international strife, and also the first one after the long drought that afflicted the country since 1999, a plight that in many parts of the country ended only with the autumn rains in late 2002. After staging a healthy recovery in 2002, but still with many areas under the effects of the drought, agriculture in Afghanistan continued its recovery in the 2002-2003 crop year with a significant increase in areas planted, and an expectation of a very good harvest.

The Winter Survey (December 2002-January 2003) covered all the agro-ecological zones and relevant watersheds, interviewing nearly 5000 farmers in more than 500 rural communities. It was part of the seasonal monitoring of food production, assessing results of 2001-2002 year and autumn planting for 2002-2003. It also intended to collect structural data on land tenure, livestock, livelihoods and other matters. The latter proved to be its more lasting usefulness.

Data were expanded by factors based in the FAO Afghanistan Land Cover Atlas, published in 1999 on images from 1990 and 1993, with adequate adjustments reflecting modifications in land use during the last 10-13 years.

The survey estimated a total farming population of 12.1 million people, plus a non-farming rural population of about 2.5 million. This agrees with official nationwide estimates of population. Since the official estimates distribute population by districts and zones based on the 1978 distribution, the Survey population estimates (based on actual distribution now) do not agree with official estimates at province or region level. The farming population lives in about 1.06 million farmer households with an average size of 11.4 people.

It is estimated that about 790,000 refugees and internally displaced persons have returned to the farming sector, including some 325,000 in returnee households and the remaining 465,000 as individuals returning to resident households. Another 200,000 returnees are estimated to have relocated in rural areas in non-farming households. This represents more than half the total number of resettled returnees and IDPs.

Access to land and irrigation shows many constraints. Farm sizes are usually very small. Farms cover nearly 3 million hectares of irrigated land and about 3.5 million Ha of rain-fed land. Only two thirds of these lands are actually cultivated even in a very good rainfall year. After the drought rain-fed lands have been cultivated in larger measure than usual, but they are normally rotated, planting only part of them every year (reportedly some 20-30 percent per year even in the presence of good rains). On the other hand, one third of irrigated land is not planted, and indeed it is presently not possible to irrigate it, due to constraints in irrigation infrastructure, water supply and water management.

Mechanised cultivation covers about one half of crop-planted land, though no mechanisation of harvest exists as yet. Mechanisation is however partial, as many farms combine mechanical and animal power. Fertilizer application covers about 80% of

irrigated cereals, and about one half of the seeds planted are improved varieties, though many of them have lost quality through recycling.

Regarding the 2001-2002 agricultural year, the Survey largely confirms findings by the 2002 Crop and Food Supply Assessment Mission, but makes adjustments both in area and production. A differentiation between area planted and area harvested is introduced, and total cereal output is estimated to have been some 18% larger than previous estimates.

Regarding the 2002-2003 agricultural year the Survey estimated total areas planted (or intended to plant) by farmers as of December-January. Later field visits have ascertained that planting actually went beyond these initial intentions, as rainfall continued all the season and farmers went on planting on usually fallow land, or even on lands used normally for grazing. However, this extra planting concerns mainly non cereal crops planted on rain-fed land, such as melons, watermelons and oilseeds.

Autumn and winter planted cereals as well as expected outputs are in line with later field assessments and agro-meteorological evidence.

Livestock is still greatly diminished by the drought. Some signs of recovery are detected in cattle (mainly through a relatively high breeding rate) and sheep (signs of increase in average size of flocks after bottom level by mid 2002). The apparent breeding rate in sheep was relatively low on average during 2002, as reported in the survey, though it may be improving since field observations in the spring of 2003 showed relatively many sheep offspring, especially in the North of the country. However, complete livestock recovery is expected to take several years. More complete estimates of livestock holdings will be obtained with the 2003 Livestock Census carried out by MAAH and FAO (report forthcoming).

Many farmers remain food insecure and with very restricted and risky livelihoods. Consumption of meat, vegetables and fruit is very limited and infrequent, most Afghan farmers are not self-sufficient in cereals and only a minority of them are able to sell any cereal surplus. Practically all farmers have access to some source of money, but this includes widespread borrowing and indebtedness. Little more than one half of farmers obtain money revenue from their farms. A very large proportion of farmers, however, have regular off-farm income, mainly wages (61%), and there are extensive (and probably understated) reports of remittances.

Some lessons learned through the implementation and analysis of the Winter Survey include the following:

- It is feasible to carry out nationwide sample surveys using local field personnel (in this case, mostly extension workers and other staff from the Ministry of Agriculture and the Ministry of Rural Rehabilitation and Development).
- Sampling and sample-expansion based on areas defined by agro-ecological zoning leads to reasonable estimates of nationwide totals. This covers also estimates of population or livestock, variables not necessarily related to arable land availability. Data were expanded by factors based in the FAO Afghanistan Land Cover Atlas, published in 1999 on images from 1990 and 1993, with adequate adjustments reflecting modifications in land use during the last 10-13 years.
- However, land cover data from 1990-93 need updating, and areas assigned to different uses in the existing Land Cover Atlas need refinement and adjustment. These adjustments concern, first, changes in land use since the early 1990s;

second, changes related to the state of irrigation system and prevailing water-access management practices; and third, changes reckoning with the fact that land described as “rain-fed cultivation” in the Atlas actually includes significant portions not actually cultivable for physical reasons (gullies, steep slopes, etc.) and also includes portions under commons, usually devoted to grazing (though much of it was encroached by cultivation in 2002-03).

- Crop Assessment Missions until 2002 had customarily made no difference between planted and harvested areas. The Winter Survey shows extensive crop failures in 2001-02, especially for rain-fed crops, leading to large differences between the two.
- Family sizes had been under-estimated for the purpose of some calculations related to food aid or other purposes. An average farm household size of 10-12 persons has been repeatedly found in several recent surveys taken during 2002 and 2003, including the Winter Survey.¹⁸
- Resettlement of returnees and IDPs in the rural sector is higher than expected. In particular, people resettling in the farming sector during 2002 make for a sizeable increase in rural/farming population and labour force, a significant contributing factor for increasing agricultural production. There is, however, a more-than-proportional flow of resettlement towards urban areas.
- After the 2002 harvest, about 60% of the farm population did not achieve cereal self-sufficiency. The proportion of farm population below cereal self-sufficiency is expected to have fallen to about 48% in 2003, after an exceptionally good harvest.
- Most cereal production (and especially wheat) is not for sale. Only a half of farmers obtain money from their farms, most from the sale of animals. Only a fraction of farmers actually have any marketable cereal surplus, and most of them may sell only very small amounts. A very small fraction of all farmers is actually responsible for most of the marketable surplus. Policies regarding crop prices and concern about labour shortages at the time of harvest in 2003 should be adequately weighted with the knowledge that they refer (at least directly) to only a small minority of richer farmers.
- The survey did not investigate the use of hired labour in farms, but it is also likely that wage farm labour is only hired in significant amounts by those few farms having a large cereal surplus or some otherwise large amount of some other labour intensive production (e.g. fruit trees). Concerns about shortage of labour (at the traditionally low wages prevailing for agricultural labourers) should also be weighted in the context of a labour market with relatively few employers, and the context also of higher real wages prevailing throughout the country since 2002.
- Indebtedness is widespread. Half the farmers incurred new debt in 2002, and nearly two thirds were in debt at the turn of the year. However, indebtedness appears to be (or to have been in 2002) no such a dramatic problem as described in other analyses produced at that time. There are indeed farmers crushed by debt,

¹⁸ In some areas where extended families prevail, the household linked to a farm may involve several nuclear families. Other surveys looking for nuclear families (for instance any survey of mother-and-child units) may find smaller family sizes because of using a different definition of family or household.

but overall indebtedness seems to be managed under informal systems where deadlines are easily postponed and terms adjusted in times of need. Most people owe money to relatives and neighbours, who are likely to be flexible. Some large debts incurred by farmers with no cereal output may reflect debts incurred in relation with the fruit or poppy production sectors.¹⁹ Reports of impending financial crisis and destruction of livelihoods on account of widespread indebtedness are not sustained.

- Rural livelihoods are diverse and complex. Most people have two, three or more sources of income in the household: farm sales, handicraft, wage labour, remittances, and petty commerce, in sundry combinations. Wage labour is the most diffused source of money for farm households (61% of those households had some wage income during 2002). Closer examination of prevailing livelihoods is in order. Individual data for family members about employment and migration, included in the 2003 Nationwide Risk and Vulnerability Assessment (NRVA) would surely provide some answers, or at least allow for more precise questions to be posed in future surveys.
- Identification of rural districts, settlements and communities is far from perfect. The existing listings of villages are not complete. The geographical coordinates of many settlements are not known or are imprecise, making mapping difficult. No precise definition of a “village” actually exists, and thus two similar and neighbouring settlements may be variously described as one or two villages, or even as three or more if each mosque in the area is considered as a separate village centre. No account exists at the moment of the *manteqas* that are the real units of ethnic or residential identity in rural Afghanistan, often comprising many villages in the same area within a given district (or sometimes straddling two districts). Villages and even districts are constantly splitting as people claim to have separate identity as a settlement or area.²⁰ A thorough GPS-referenced survey of settlements will be probably available by 2005, after the Population Census is completed. No *manteqa* mapping exists and none is envisaged so far.²¹
- Last but not least, problems encountered for achieving fast and efficient data entry within Afghanistan show the need for intensive capacity building in this regard. They also showed that language problems during data collection and data entry should not be ignored. Rural languages in Afghanistan are various (mainly the two official languages, Pashtu and Dari, but many others as well), requiring translation from various sources into English with perhaps an intermediate Dari stage; transliteration of figures from local languages into English is prone to the error of reversal (whereby 48 becomes 84) because of the different ways of writing and reading words and numbers in both languages: words are written from right to left,

¹⁹ People incurring debts indexed to poppy prices, especially those taking this type of loan before 2001, when poppy prices were low, are likely to have seen their debts multiply by a factor of ten since. If not allowed to grow and sell poppy by lack of water or because of eradication programmes, their poppy debt would probably crush them.

²⁰ A recent government decision has raised the number of districts from 329 to 371. No precise mapping exists yet with the new subdivision. During the Livestock Census, people claimed to be in some “perceived” district, and these perceived districts were 430 in total, signalling demand for further splitting in the future.

²¹ The *manteqa* zones (“the place where one lives”), which are the chief meaningful delimitation of rural zones, are briefly discussed in the Annex I. The authors are planning a specific project to deal with this subject, including identifying and mapping *manteqas* in the various provinces and districts.

reversing the direction of writing in comparison with Western languages, but numerals are written the same way. As an example: the quantity eighty four is written 84 in the West and $\text{^}\text{٤}$ in Arabic or Dari, which is actually the same as in Western languages once allowance is made for the different graphic shape of the characters eight (^) and four ($\text{^}\text{٤}$). It is also pronounced “eighty and four” in Dari, i.e. it is read from left to right, unlike words that are read from right to left. In other words, the direction **for words** is reversed (left to right in English, right to left in Dari), but the direction **for numerals** is not reversed. This makes very likely the mistake of reversing the numbers during transliteration, especially during quick and semi-automatic operations such as questionnaire filling or note-taking in the field, or computer data entry in English from questionnaires filled in Dari. The shape of numbers also may create frequent confusion, especially with the Arabic script shape of the zero (a dot), easily causing mistakes, such as confusing a zero with a decimal separation point, in questionnaire filling or data entry. Computer and English literacy is on the rise in Afghanistan, but there is much road yet to cover in that direction.

References

- AHMED, Salahudin Akbar (1980). **Pukhtun Economy and Society. Traditional Structure and Economic Development in a Tribal Society**, Routledge & Kegan Paul, London.
- ALDEN WILY, Liz (2003). **Land rights in crisis: Restoring tenure security in Afghanistan**. Kabul, AREU.
- BALLAND, Daniel (2002) "Census in Afghanistan", in **Encyclopaedia Iranica**. See <http://www.iranica.com>.
- BERDING, F. R. (1996). "Land Management Report", in **Promotion of Agricultural Rehabilitation and Development in Afghanistan**. Project TCP/AFG/4552, Sub-sector Report No 1. FAO, Rome.
- CENTLIVRES, P. and CENTLIVRES-DEMONT, M. (1988). "Et si on parlait d'Afghanistan?", Neuchâtel, Ed. Inst. Ethnologie.
- CENTLIVRES, P. and CENTLIVRES-DEMONT, M. (1999). "L'anthropologue face à l'humanitaire. Etat, Islam et tribus face aux organisations internationales. Le cas de l'Afghanistan 1978-1998", in **Annales HSS**, 1999, No.4, pp.945-965.
- CSO (1978). **Afghan Agriculture in Figures**. Kabul, Central Statistical Office.
- CLARKE, Paul & John SEAMAN (1998). **A preliminary guide to the food economies of Afghanistan**. World Food Programme, Kabul.
- DEWEIJER, Frauke (2002). **Pastoralist vulnerability study**. Kabul, WFP.
- DUPREE, Louis (1980). **Afghanistan**. Rama Publishers, New Delhi.
- FAO (1999). **Islamic State of Afghanistan - Land Cover Atlas**. FAO, Rome.
- FAO/WFP (2002). **Crop and Food Supply Assessment Mission to Afghanistan, A Special Report**. FAO/WFP, Rome. See <http://www.fao.org/giews>.
- FAO/WFP (2003). **Crop and Food Supply Assessment Mission to Afghanistan, A Special Report**, FAO/WFP, Rome. See <http://www.fao.org/giews>.
- FAVRE, Raphy; Anthony FITZHERBERT and Javier ESCOBEDO (2003), **National Crop Output Assessment**. MAAH/FAO, Kabul, July.
- FITZHERBERT, Anthony (2002). **Afghanistan - Agriculture and Crops**, a preliminary report, FAO, Kabul.
- GRAHAM, Angus (2002). **Afghanistan - Support to Food Security Surveillance**. End of Assignment Report to FAO under Project OSRO/GCP/111/USA. FAO, Rome.
- HUMLUM, J. (1959). **La géographie de l'Afghanistan. Etude d'un pays aride**. University Books. Copenhagen.
- KANE, Marilee and Raja AZIZ (2002), "Vulnerable Livelihood Systems in Afghanistan", mission report, FAO, Kabul-Rome..

- KLEMM, Walter (1996). "Water Resources and Irrigation", in: **Promotion of Agricultural Rehabilitation and Development in Afghanistan**. FAO, Project TCP/AFG/4552, Sub-sector Report No 3. Rome.
- LAUTZE, Sue et al (2002). **Qaht-e-Pool, A cash famine - Food Insecurity in Afghanistan 1999 – 2002**, The Feinstein International Famine Center, Friedman School of Nutrition Science and Policy, Tufts University, Medford, Massachusetts, 2002.
- MALETTA, Hector (2002a). **Crop and Food Supply Assessment Survey 2002: A statistical report**. FAO, Kabul.
- MALETTA, Hector (2002b). **Wages of war, wages of peace: Food prices and unskilled labour pay in Afghanistan, 1996-2002**. FAO, Kabul.
- MOLLET, Mathias (2003). **After winter crop performance evaluation of the emergency agricultural input program - Autumn 2002 season**. FAO, Kabul.
- PAIN, Adam (2001). **Livelihoods under stress in Faryab Province, Northern Afghanistan. Opportunities for Support**. A Report to Save the Children (USA). Pakistan / Afghanistan Field Office, Islamabad.
- PAIN, Adam (2002) **Understanding and Monitoring Livelihoods under Conditions of chronic conflict: lessons from Afghanistan**. Working Paper. Overseas Development Institute, London / Afghanistan Research and Evaluation Unit, Kabul.
- PAIN, Adam and Sue LAUTZE (2002). **Addressing Livelihoods in Afghanistan**. AREU, Kabul.
- PINNEY, Andrew J. (2003). "Implementing the Surveillance System. Lessons from the Field", PowerPoint Presentation. Steering Committee for the National Food Security and Nutrition Surveillance System. Kabul.
- ROY, O. (1981). "Afghanistan: la guerre des paysans", in **Révoltes logiques**, No.13, Paris.
- ROY, O. (1985). **L'Afghanistan: Islam et modernité politique**, Collection Esprit, Editions du Seuil.
- ROY, O. (1996). **Groupes de Solidarité au Moyen-Orient et en Asie Centrale**, Paris, Les Cahiers du CERI.
- SEMPLE, Michael (2000). **Food security in Afghanistan – The regional food economy level**. Islamabad, FAO.
- SCA (1993a). **Farming Systems in Afghanistan**, Summary, 15th Report, Part VIII, July 1993. The Swedish Committee for Afghanistan, Islamabad.
- SCA (1993b) **Agriculture Survey of Afghanistan, 1992-1993**. 17th Report, December 1993. The Swedish Committee for Afghanistan, Islamabad.
- SCHELHAS, Bernhard (1996). **Afghanistan - Farming systems**. FAO, Rome.
- TEDESCHI, Sandra and Rosio GODOMAR (2002), "A review of the nutrition situation in Afghanistan: Compilation of nutrition surveys and food consumption assessments conducted in 2001-2002", mission report, Kabul, FAO/WFP.
- UNEP (2003), **Afghanistan: Post-Conflict Environmental Assessment**, Nairobi.

UNODC (2002), **Afghanistan. Opium Survey 2002**, Vienna.

WFP (2000), “Afghanistan Food Security Studies. Badghis Rain-fed Areas”, WFP, Afghanistan Country Office, Vulnerability Assessment and Mapping (VAM) Unit, February.

WFP (2002). **Afghanistan Vulnerability Assessment and Mapping (VAM) Report 2002**. World Food Programme, Kabul.