

# **SPECIAL REPORT**

## **FAO CROP AND FOOD SECURITY ASSESSMENT MISSION TO TAJIKISTAN**

**22 October 2009**



**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, ROME**

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### **Mission Highlights**

- The 2009 aggregate (first and second seasons) cereal production is forecast at a high level of over 1 million tonnes. Wheat crop is put at a record high of about 829 000 tonnes, one-quarter above the average crop of last year. About 20 percent is of feed quality.
- Well-distributed and timely rainfall throughout the country, the continued use of improved seeds, a complete control of migratory pest threats and increased fertiliser use compared to last year boosted plantings and yields in 2008/09.
- Potatoes and other non-cereal food crops have also substantially increased this season. Cotton production is anticipated to be reduced.
- Cereal import requirement in marketing year 2009/10 (July/June), mostly wheat, are estimated at 777 000 tonnes, a decline of 24 percent from the previous year's level. Nearly all this requirement is to be covered on commercial basis.
- Prices of wheat have declined from their peaks of a year earlier but remain well above the pre-food price crisis.
- The overall food security situation has improved but access to food by vulnerable populations continues to be affected by the high prices and lower incomes as a result of a sharp decline in remittances.

## **1. OVERVIEW**

An FAO Crop and Food Security Assessment Mission, with the collaboration of the Ministry of Agriculture (MoA), was conducted in Tajikistan from 7-24 July 2009, following a request from the Government to assess the food situation in the country. The Mission was to estimate the 2009 main season (winter and spring) cereal production and forecast the secondary (summer) season cereal crops; assess the overall food supply situation; and estimate cereal import requirements for the 2009/10 marketing year (July/June).

The timing of the international component of this year's CFSAM Mission was arranged to coincide with the final weeks of a national wide assessment conducted by joint FAO Dushanbe and Ministry of Agriculture teams that covered the four regions and 47 districts of the country. The international agronomist of the Mission travelled through 23 districts with the national team leader, conducting transects en route through Sughd, RRP-Central, Khatlon-KyrganTube and Khatlon-Kulyab.<sup>1</sup> During these visits key informant interviews were undertaken with District Administrators (DAOs), NGOs, farmers, traders, combine and thresher operators, and cereal crop samples were taken in harvestable fields. Prior to field visits, the international agronomist and the national team leader held detailed discussions with the MoA Heads of Departments for crops, pest control and input supply, finance and credit, and pastures and ranges to obtain first hand opinions on factors affecting production since the beginning of the cropping season last autumn (September 2008).

The overall performance of the 2009 main season cereals is far better than the previous five years and considerably better than last year due to improved yields from a greater cultivated area in both the main production zones and the country's marginal areas.

Generally, good autumn rainfall encouraged timely and widespread planting of winter cereals that was continued after the thaw in spring. The spring rains began in March throughout the country and continued in all districts until July in an unprecedented manner, obviating the need for irrigation of cereals in all but one district visited by the teams. Consequently, farmers have, universally, taken advantage of the rains with a 25 percent increase in the area planted to cereals achieved by a reduction in cotton area of some 30 percent and increased planting of cereals in hilly plateaux, sloping hill sides, and areas of irrigable land without functioning irrigation systems.

A migratory pest-free year due to the timely control of the annual locust threat and a better supply of fertilisers due to better access to Uzbekistan's products albeit at a slightly higher price is apparently reflected in a greater use of fertilisers on cereals this year. Despite widespread lodging of long straw wheat varieties

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<sup>1</sup>Access to GBAO was not possible for security reasons.

that reduced harvestable crops, yields per hectare have increased in all sectors reflected in a national wheat yield estimated at 2.44 t/ha, compared with 2.17 t/ha last season.

Good rainfall in the high mountain pastures and foothills during autumn boosted animal body condition at mating time which has been reflected in normal birth rates this year. The well-distributed rains throughout spring and early summer have made this a very good grazing/hay producing year with hay prices noted to be dropping by 70 percent in all districts compared to last year. No reports of contagious diseases were noted and generally animal body condition is very good.

The Mission puts the 2009 aggregate cereal production at a record level of 1.03 million tonnes. This is about 31 percent above last year's State Statistics Committee (SSC) post-harvest estimates and 18 percent above the average returns for the previous five years. Production of the first cereal season is estimated at 943 000 tonnes (88 percent wheat) and that of the second summer season, not harvested at the time of the Mission, is forecast by MoA at some 85 000 tonnes, mainly maize. As a result of the sharp increase in production, import requirements of cereals in marketing year 2009/10 (July/June), mostly wheat, are estimated at 777 000 tonnes, a decline of about 24 percent from the previous year's level.

The overall food security situation is expected to improve in 2009/10 reflecting a widespread good harvest this year. However, the still relatively high level of food prices give rise to concern for the food security of vulnerable populations, who spend a large share of their incomes on food and whose incomes have been reduced due to a sharp decline in remittances.

## **2. SOCIO-ECONOMIC CONTEXT**

### **2.1. Macro-economic situation**

Tajikistan is a landlocked low-income food-deficit country in Central Asia. It is located between Uzbekistan (west and north); Kyrgyzstan (north); China (east) and Afghanistan (south). With a population of around 7.4 million people, Tajikistan has existed as an independent republic since 9 September 1991.

The country suffered a brutal civil war immediately after independence (from 1992 to 1997), which inflicted widespread physical damage and heavy human losses. Peace and stability were achieved after 1997. Since market transition in 1991, Tajikistan has experienced high levels of migration. Early emigration was motivated by war and conflicts following independence, while more recent migration has been motivated by economic factors. Remittances from migrant labour have been one of the drivers of Tajikistan's robust economic growth, averaging about 8.4 percent per year during 2003-2008. In 2008 remittances were estimated at USD 2.2 billion or 47 percent of GDP and the most important source of external financing for the balance of payments. Remittances also play an important role as source of income for households, helping poverty reduction. Tajikistan's economy depends also heavily on exports of aluminum and cotton. Due to the global economic crisis, Tajikistan's economic growth is forecast to slowdown to 2 percent in 2009. This mainly reflects an expected 35 percent drop in remittances from Tajik migrants working in Russia and a decline in exports of cotton and other commodities.

The country still has a high level of poverty with a per capita income of USD 550 (World Bank, Atlas method, 2008). It is estimated that about 53 percent of the population live below the poverty line established at USD 41 per month, and 17 percent below the extreme poverty line of USD 26 per month. While poverty is still high, these rates are a significant improvement over the levels of 64 percent in 2003 and 83 percent in 1999. About 71 percent of the poor and 76 percent of the extremely poor live in rural areas. The high poverty rate of people living in rural areas makes them exceptionally susceptible to weather shocks. Food comprises over 50 percent of total expenditures of Tajik households making the poor also susceptible to price shocks. Food prices of staple food, for example bread, remain well above the levels of September 2007, affecting food security of the vulnerable population.

Tajikistan remains the poorest and among the most socio-economically fragile of the CIS countries. Social indicators, although having improved in the past few years, remain at low level, reflecting poor public service delivery, weak governance, persistent energy shortages and low per capita incomes. Tajikistan is the only country in the Central Asia region, which is at risk of not achieving most of its Millennium Development Goals (MDGs).

The anticipated reduction in economic growth in 2009 and the possible return of migrant workers (around 1 million out of a population of 7 million, or almost half the labour force, worked outside Tajikistan in 2008) is likely to add to the existing problem of widespread underemployment, estimated in the order of 60 percent. Under current projections of the IMF, U.S. dollar income per-capita would decline by around 10 percent in 2009. The food security situation of vulnerable groups is anticipated to deteriorate together with the macro-economic situation.

**Table 1: Main economic indicators, 2003-2007, Tajikistan\***

Economic Indicator	2003	2004	2005	2006	2007	2008	2009
Per capita GNI (USD)	210	280	330	390	423	550	500
GDP growth (% change per year)	10.2	10.6	6.7	7.0	7.8	8	2
CPI (% change per year)	16.4	7.2	7.3	10.1	13.1	11	13
Unemployment rate (%)	2.4	2.0	2.0	2.3	2.6	2.7	2.7
Remittances (% of GDP)	n/a	n/a	22	28	30	47	32
Agriculture production(% of GDP)	22	22.5	22.8	23.2	23.6	23	22
Fiscal balance (% of GDP)	-1.7	-2.4	-2.9	1.7	-6.4	1	-3
Export growth (% change per a year)	29.6	21.0	-68.5	1.2	9.4	-10	-7
Import growth (% change per year)	24.6	20.2	-21.5	38.0	39.2	36	20
Trade balance (% of GDP)	n/a	n/a	-26.1	-35.1	-45.1	-50.5	-42.9
Current account (% of GDP)	-1.3	-4.0	-2.5	-2.5	-15.2	-9.3	-9.7
External debt (% of GNI)	78.7	49.6	46.2	42.5	34	29	30

\* The above table is based on a variety of sources, including the Ministry of Finance and Economic Development (MOFED), State Committee for Statistics (2008); National Bank of Tajikistan; World Bank; WFP; ADB; UNDP; CIA and IMF.

## 2.2. The agricultural sector<sup>2</sup>

Agriculture is one of the most important sectors of the economy employing about 67 percent of the economically active population, accounting for 22 percent of the GDP and making around 10 percent of official exports in 2008. The importance of agriculture contrasts with the comparatively small area of arable land (7 percent of total area) as Tajikistan is a mountainous country. With 93 percent of its surface area taken up by a complex of east-west and north-south ranges forming the Tyan-Shan and Pamir mountain systems, half the country is at altitudes of more than 3 000 metres. Elevations range from 300 metres above sea level in the Ferghana Valley to 7 495 metres at the Ismail Somoni Peak in the Akademiya Nauk Range (Pamir). Huge glaciers covering more than 8 000 sq. km, mainly in the Pamir Mountains, are the primary source of water for Tajikistan's many rivers, which also feed the rivers of Uzbekistan to the west.

Arable agriculture is confined primarily to river valleys in which some 68 percent of the total area is usually dependent on irrigation.<sup>3</sup> There are four main well-defined valley systems:

- the Ferghana Valley in the north of the country along the Syr Darya, the south-western part of the valley that stretches from Uzbekistan into Tajikistan;
- the broad Khatlon lowlands in the south-west, extending from Kulyab in the east to the border with Uzbekistan in the west;
- the Gissar Valley between Dushanbe and Tursunzade, just north of Khatlon;
- the narrow strip of the Zeravshan Valley extending east to west between Ferghana and Gissar valleys.

The agricultural significance of the republics four regions (oblasts) connects to the proportional representation of the four river basins within the respective provincial boundaries. Table 2 presents the regional percentages of agricultural land, cropped area, livestock and gross agricultural output.

<sup>2</sup> This section is based on WFP "Regional Market Survey for the Central Asia region" June - August 2008 prepared by W.I. Robinson.

<sup>3</sup> FAO Stat (2004)

**Table 2: Agriculture significance of Tajikistan's four regions by percentage contribution\***

Region	Sughd (%)	Khatlon (%)	RRP-Central (%)	GBAO (%)	Tajikistan (%)
Agric. output	25	45	26	4	100
Agric. land	24	33	26	17	100
Cropped area	32	49	18	1	100
Cattle	27	40	26	7	100
Sheep/Goats	31	39	21	8	100

\* Z. Lerman and D Sedk (2009) The Economy Effects of Land Reform in Tajikistan, EC/FAO Food Security Programme, Phase 2

Note: Figures might differ due to rounding

The main agricultural area of Tajikistan is Khatlon Oblast which has both the largest population (2.5 million) and agriculture area, including more than 50 percent of the total area under cotton and over 30 percent of that under cereals, as well as 40 percent of the country's total cattle and small ruminants (Mission's estimation). Sughd Region in the north and the Gissar zone in the western part of RRP-Central make roughly the same contribution to agricultural production and roughly have the same area sown to cereals. Horticultural crops – potatoes, vegetables, melons – are evenly distributed among the three major agricultural regions. Orchards and vineyards are grown mainly in Sughd and Khatlon. Sughd has over 50 percent of fruit orchards, while Khatlon has over 50 percent of vineyards. The mountainous GBAO is the largest region by territory but has the smallest population and the smallest level of agricultural activity.

### 2.2.1 Farm structure

Following land reform, particularly since 1997, the structure of agriculture is based on three types of farms: (a) large state (*sovkhos*) and collective (*kolkhos*) farms from the Soviet system; (b) private *dehkan* farms, created as a result of land reform comprising both private and collective farms, the latter managed by former managers on behalf of workers with land share certificates; the former with associated land use titles conferred with 50-year leases that can be bought and sold since 1997; and (c) households plots, the number of which was increased enormously by a series of Presidential Decrees (see Table 3 below).

**Table 3: Farm structure in Tajikistan**

Type of entity	Number	Arable land* (ha)	Average size (ha/farm)	Arable area (%)
State Farms	193	62 146	322	7.52
Collective <i>Dehkan</i> Farms	9 000	162 000	18	20.00
Private <i>Dehkan</i> Farms	18 040	324 720	18	39.22
Household Plots	740 400	199 908	0.27	24.18
Presidential Plots	375 000	75 000	0.2	9.08
<b>Total</b>	-	<b>823 774</b>	-	<b>100</b>

Source: State Statistic Department and State Land Committee; World Bank, 2006; W.I. Robinson, Mission data 2008; Z. Lerman and D. Sedek (2009); The Economic Effects of Land Reform EC/FAO Food Security Programme.

\*Mostly, but not only, irrigated arable land.

The majority of households in the rural areas have access to a small plot (0.08-0.3 ha) of land, usually attached to homes. Household plots/kitchen gardens are a household asset and play an important role in its food security, providing a source of food and income as part of the produce from the household plots is supplied to the local markets.

### 2.2.2 Rainfall and cropping seasons

The country has abundant surface water resources to sustain irrigated agriculture. The importance of irrigation from the glacier sources notwithstanding some 55 percent of the area sown to winter cereals depends on precipitation during the cropping season. Dramatic increases of area planted to rainfed cereals and oilseeds through opportunistic planting in the foot hills occurred in good years. Rains start in September and continue until May supporting autumn/winter plantings and spring growth. Snowmelt also provides substantial quantities of moisture to support growth in the rainfed sectors in years of heavy snow fall. The virtual absence of rains from June until October, indicates the high dependency of spring planted crops and second season summer crops on, at least, supplementary irrigation.

The first (major) cropping season includes autumn plantings (mainly wheat, some barley and cotton) and spring plantings (wheat, barley, some maize and cotton). The second (minor) cropping season refers to crops sown after that the autumn and winter planted wheat and barley crops has been harvested in June or July. The second season cereal crops are maize or either rice- in areas with very good water supply, as well as vegetables, including potatoes.

Water management is important given that some two-thirds of the crop production is under irrigation. The present system is an adaptation of the inherited Soviet system whereby primary supply is controlled and managed by the relevant Ministry departments, who are responsible for delivering water to the areas that were previously *sovkhoz* and *kolkhoz*. In some privatised areas, the responsibility for distribution has been allocated to water users associations (WUAs) supported by international cooperation. However, many of WUAs are not effective and face interference of local governments.

Table 4 shows average estimates for annual food crops divided by type of land.

**Table 4: Annual crop areas (excluding cotton and irrigated forage) and production**

Crop	Area (ha)		Production (tonnes)		Total	
	Irrigated	Rainfed	Irrigated	Rainfed	Area (ha)	Production (tonnes)
Wheat <sup>1</sup>	169 000	186 000	557 000	111 000	355 000	668 000
Barley <sup>2</sup>	11 000	34 000	33 000	13 000	45 000	46 000
Maize <sup>2</sup>	50 000	none	150 000	-	50 000	150 000
Rice (paddy) <sup>2</sup>	20 000	none	50 000	-	20 000	50 000
Total cereals					470 000	914 000
Potatoes <sup>1</sup>	30 000	none	579 000	-	30 000	579 000
Vegetables <sup>1</sup>	40 000	none	835 000	-	40 000	835 000
Melons <sup>1</sup>	11 000	none	255 000		11 000	255 000

<sup>1</sup> MoA estimates

<sup>2</sup> Mission estimates extrapolated from CFSAM 2005

### 2.2.3 Crop patterns

Since the times of the USSR, cotton has been the main cash crop for the nation as well as for individual household, accounting for 75-90 percent of agricultural exports depending on the year. It is grown under irrigation with concomitant levels of inputs, purchased centrally and subject to mandatory growing quotas by district. Whereas state procurement for other crops and commodities was dismantled from 1997 onwards, state control over the cotton crop was sustained. However, since 2007, area quotas have been relaxed and more flexibility has been granted to farmers, which has resulted in significant declines in plantings in the past two years. The collapse of the Soviet system resulted in the disruption of the state supported supply chains and the reduction of the production levels by half. Continuous mismanagement of all aspects of the cotton industry in the post-Soviet period has culminated in an enormous debt which affects all elements of the value chain from the peasant farmers through the ginneries to the cotton dealers. Despite the relaxation of quotas, it is the indebtedness, exacerbated by the repeat loans in successive years to bad debtors that committed farmers to continue growing significant areas of cotton. Cotton inputs are available as part of the cotton contracts when the impoverished farmers have no funds for inputs for alternative crops. In May 2009, after several consultation and discussion between the Donor Community and the Government of Tajikistan, the President issued a decree to write off all cotton debts to farmers, estimated at around USD 548 million. This was followed by Resolution No 406 that includes the reform of the agriculture sector by June 2010.

In addition to the direct competition for land during the spring and early summer, growing cotton prevents the planting of a second crop in mid-summer. Whereas winter wheat production allows the same area of land to be planted, following the wheat harvest in June, to maize, potatoes and a plethora of vegetables, the cotton crop is not harvested until it is too late for a second crop to be grown, thereby directly affecting production of food. Before the planting season this year (2008/09) a statement was issued from the office of the President encouraging farmers in: a) low potential cotton areas, and b) areas with high marketing potential for other crops to diversify further, effectively reversing the long-standing policy to grow as much cotton as possible.

Wheat is by far the most important cereal and food crop. In the last two years, wheat area has increased in the irrigated sub-sector on the collective and private *dehkan* farms at the expense of cotton, where the crop



does not, however, receive more than one or two irrigations at the most; and on the household plots where wheat is expected to have replaced some barley on average. Wheat production does not meet much more than half of the domestic consumption requirements with the difference being imported mainly from Khazakstan.

Contributions of the different farm units to the total crop production are given in Table 5.

**Table 5: Contribution of produce by sub-sector, 2007, Tajikistan**

Crop	Wheat (%)	Maize (%)	Potato (%)	Veg. (%)	Fruit (%)	Cotton (%)
hh plots	42	75	69	66	72	0
<i>Dehkan</i>	43	18	27	24	19	63
State	15	7	4	10	9	37
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: SSC Year Books.

#### 2.2.4 Agricultural inputs

##### *Seeds*

Most cereal crops are grown from seed carried over from the previous harvest, either by the farmers themselves, or by buying from preferred seed stock kept by farmers in the same locality. Although chemical seed treatment is rare among the smaller farms, Mission case studies note that seed treatment to be part of the preparation process in the collective *dekhan* farms and the cooperatives sampled. Elsewhere, seeds are cleaned (manually with sieves), weed seeds and impurities removed by hand, washed, dried and stored in sealed containers. It is estimated that only 10 percent of wheat is planted with certified seeds. Farmers often rely on humanitarian aid through NGOs, or locally produced seed schemes supported by NGOs and international agencies. An Integrated Seed Development Unit has been established by the Swedish International development Agency (SIDA) since 2004. This unit is currently involved in addressing regulatory frameworks and legal aspects in terms of standardization and certification of seeds, supporting the Government Seed Development Strategy 2010-2014 approved in 2009. Unfortunately, the project will end its activities in 2010.

Overall, however, the amounts of seed mobilized by NGOs and international agencies represent only a small fraction of the country's annual requirement.

##### *Fertilizer, agro-chemicals and machinery*

The use of agricultural inputs has continuously declined since independence. Fertilizers, agro-chemicals, machinery and fuel are mostly imported at international prices. Fertilizer is mostly used for cotton. Wheat is the other crop on which chemical fertilizers are regularly used, although basal dressing of phosphates are now uncommon and potassium applications non-existent, top-dressing applications of nitrogenous fertilizer in spring remain part of standard husbandry procedures. Whereas the fertility of the small household plots is restored annually by the use of animal manure due to the integrated nature of the crop/livestock system, the larger private *dehkan*, collective *dekhan* and state farms do not have such a capability.

Pesticide and herbicide use is low due to limited access to agricultural chemicals, leaving crops vulnerable to pest attack. Pesticides against non-migratory pests are available in the market place and are used mostly for cash crops, especially cotton but also orchards, garden and vegetable plots. Migratory pests remain the concern of government. Following the pattern established during the Soviet era, thousands of hectares of the dry steppe - semi-desert grasslands in areas bordering Afghanistan, which comprise one of the internationally-recognised breeding grounds for the grassland locusts *Calliptamus italicus* - the Italian locust; and *Dociostaurus maroccanus* - the Moroccan locust, are blanket sprayed every year by the authorities with broad spectrum pesticides to control the hopper (larval) generations before they reach the flying stages and threaten field crops in the bordering arable areas.

Most farm machinery and irrigation equipment such as pumps and pipes are in a dilapidated condition and most machinery has passed its usual life expectancy, being at least 18 years old. Tractors in use are mostly as inherited at the break-up of the Soviet regime and maintained by the larger farm businesses through cannibalising units or obtaining spare parts from Russia. The consequence being that the Soviet-style

cultivation practices of multi-pass land preparation still followed are executed badly with concomitantly high sowing rates intended to compensate for sub-standard practices.

### 3. CROP PRODUCTION 2008/09

#### 3.1. Assessment process

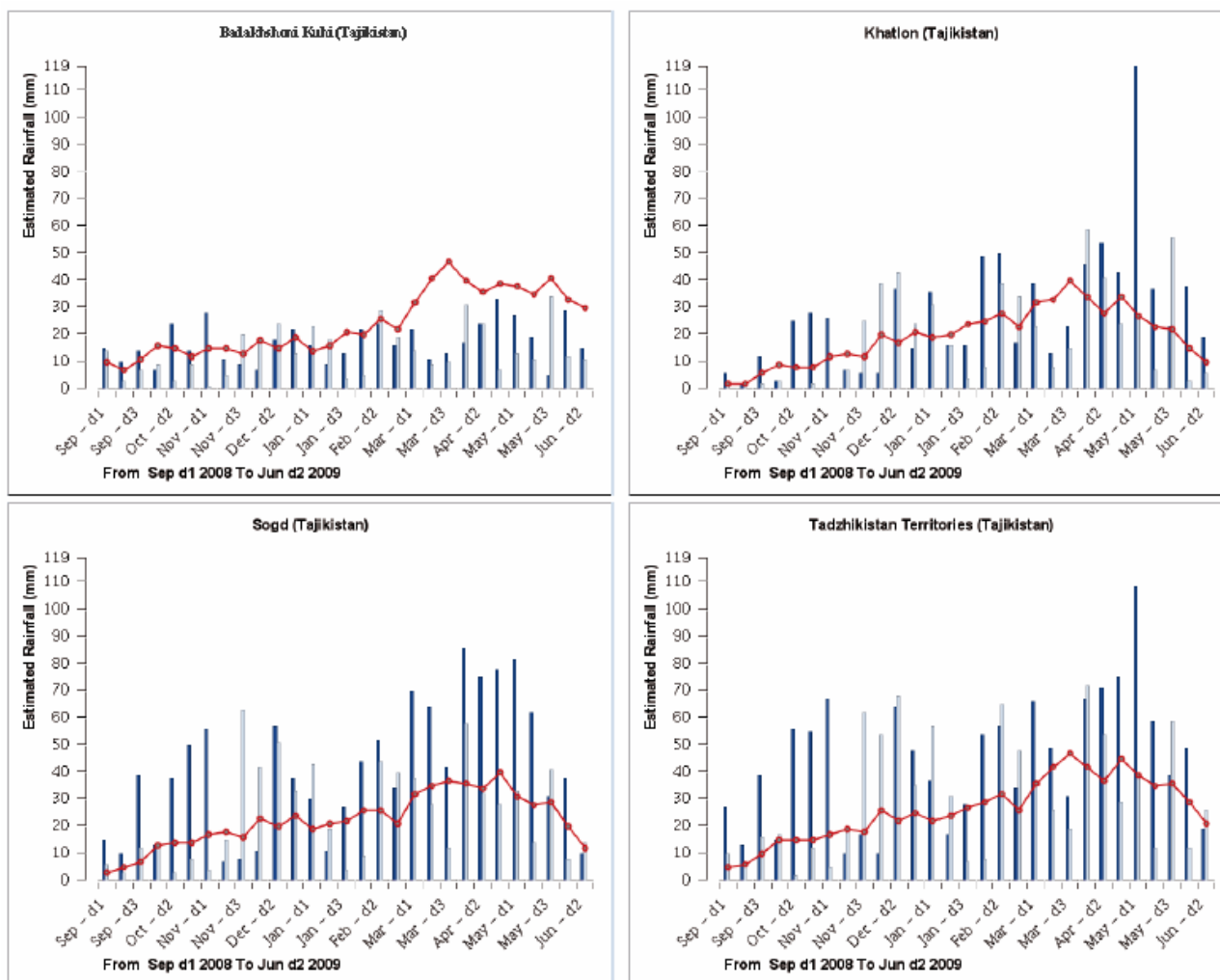
Details of the methodology approach followed for this year's assessment are given in Annex 2.

#### 3.2 Factors affecting area planted and yields of the 2009 cereal crops

##### 3.2.1 Rainfall in 2008/09 cropping season

The Mission's requests for daily or decadal rainfall data from the Meteorological Institute both directly and through the MoA Hydro-meteorological office have not been met. Consequently, all local quantitative rainfall detail is missing from the analysis. In the absence of data from the hydro-meteorological stations, FAO/GIEWS rainfall estimates from remote sensing images have been reproduced in the chart below:

**FAO/GIEWS Rainfall Estimates**



#### Legend

1st Timeserie 2008-2009      2nd Timeserie 2007-2008      Average (1974 - 2008)

The 2008/9 winter was not severe as the previous year (2007/08) which went on record as having been one of the coldest winters in recent history. Information derived from remote sensing images showing generally above average rains in all regions, is confirmed by key informants and the 1210 farmer sample, expressing that this year has been an exceptionally good rainfall year. In the main agricultural regions, precipitation was plentiful in autumn and continued, in an unprecedented manner, from March to July in most districts with profound effects on the performance of cereals and other crops in the rainfed sector; obviating the need for irrigation in the majority of irrigable lands for autumn sown and most spring sown field crops except cotton; and reinforcing the growth and re-growth of pastures for grazing and haymaking. In all districts sampled (47/58), with the exception on N. Khusrav (Khatlon-KyrganTube)<sup>4</sup>, supplementary irrigation of cereals grown on irrigable land, was not necessary this year. Transects driven by the team through 23 districts suggest that heavy rains and occasionally hail in the final weeks before harvesting to have caused patches of lodging in fields of long straw wheat varieties. Where nitrogen fertilizer use has been high, harvested yields may be reduced by up to 10-15 percent in such places. On-farm interviews suggest that where such fields are being cut by scythe and threshed using threshers or combines acting as stationary threshers, losses are lower. However, the Mission notes that the considerable advantages from timely and well-distributed rain far outweigh the negative effects of patchy lodging. The optimal rainfall for cereal growing also encouraged more top-dressing with fertilizer than last year.

While overall the rainfall chart shows generally above average precipitation in the 2008/09 cropping season, these remote-sensed data, are less accurate when sourced in very cloudy conditions which may explain the lower rainfall estimates in the Pamir mountains<sup>5</sup>, which contradict the opinions of farmers interviewed in the GBAO Region by the national assessing team who unanimously declared the rainfall this season (2008/09) to be far better than average in both volume (greater) and distribution (evenly distributed).

Table 6 summarizes, by region/zone, the qualitative returns from sampled farmers and key informants to the assessing teams. The overall appreciation of the farmers and other key informant interviewed regarding rainfall during the 2008/09 season is that it has been "excellent" this year with regard to quantity and quality, encouraging expanded plantings, in particular widespread "opportunistic" planting in rainfed areas, and reducing irrigation needs to zero for cereals grown on irrigable land.

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<sup>4</sup> Supplementary irrigation provided in May.

<sup>5</sup> Pamir mountains region noted as Badakhshan in the FAO/GIEWS Rainfall Estimates.

**Table 6: Summary of qualitative rainfall information during 2008/09 season (by region)\***

Region		Autumn rainfall			Spring rainfall quantity			Spring rainfall quality- distribution			Disadvantages
Region	Districts assessed/ actual	Good	Normal	Poor	Excellent	Good	Normal	Evenly	Breaks	Extreme	
Sughd	8/14	8	-	-	6	2	-	Yes	No	No	Splashing-up replanting cotton (10-20%)
RRP	11/13	10	1	-	10	-	1	Yes	No breaks 'til mid June (10 days)	Hail-damage 400 ha	Splashing-up replanting cotton (10-20%) Delay planting cotton and vegs. up to 20 days. Lodging of cereals
K-Kulyab	10/11	10	-	-	10	-	-	Yes	No	Hail damage - (apple grapes) Landslide (Khovaling)	Splashing-up replanting cotton-(15-20%). Lodging of long- straw cereals
K-KyrganTube	13/13	13	-	-	9	4	-	Yes	No	Mud flow-(Khoroson)	Splashing-up replanting cotton-some locations. Lodging of long- straw cereals. Exacerbated structural drainage problems.
GBAO	6/7	6	-	-	6	-	-	Yes	No	-	Spring planting delayed- late spring for pastures.
<b>Total</b>	<b>48/58</b>	<b>47</b>	<b>1</b>	<b>-</b>	<b>41</b>	<b>6</b>	<b>1</b>	Yes	First breaks in June c. 10 days	Hail on orchards; localized land slide - 1; and mud flow -1	Splashing-up caused replanting cotton-often 2 or 3x- usually <20%. Lodging of long- straw cereals. Late spring in high mountains.

\*Drawn from 1 210 interview returns.

### 3.2.2 Seed supply

Incomplete data from Mission teams suggest that MoA programmes have supplied up to c 20 tonnes of improved seed in districts in Sughd; 100 tonnes in Khatlon-Kulyab and at least 50 tonnes in Khatlon-KyrganTube. Such supplies of improved seeds are thought to have been part of 10 000 tonnes seed of which 8 000 tonnes were produced in Gissar and 2 000 tonnes on Institute farms elsewhere (90 percent wheat). Of these seeds, 400 tonnes were bought for Government farms. In collaboration with World Bank, FAO bought 750 tonnes (and imported 550 tonnes along with fertilizers) for its Food Security Programme which has supplied 1 264 tonnes of wheat seed to 70 000 households in 19 districts (116 jamoats) in South Tajikistan. The rest was sold directly to big farms on credit and to small farms cash. The supply was marketed by MoA through advertising on both television and in the newspapers, dressed, packaged and labelled certified for germination 85-99 percent, purity 96-99 percent, moisture 86 percent DM; 1000g weight 30-50 (variety range). Although premium prices were charged and received at the start of the selling campaign (July 2008 at TJS 3.5/kg to TJS 4.0/kg) by October the prices dropped to grain price at TJS 1.5/kg.<sup>6</sup>

This supply of improved seed compares with the national annual wheat seed requirement of some 80 000 tonnes for an expected 400 000 hectares of wheat (200 kg/ha), therefore 87 percent of the seed used was unchecked and uncertified. In any event, there is no indication that shortages of cereal seeds restricted area planted this year. Further, given the highly suitable conditions pertaining in spring, no replanting of cereals was noted throughout the 47 districts visited.

Wheat and barley seeding rates are high conforming to the North German Schleswig- Holstein system that favours heavy plant populations over tillering for winter wheat, anticipating 600 ears/m<sup>2</sup> at harvest. Rates this year are noted to be 200-230 kg/ha in Khatlon (Kulyab and KyrganTube); 180-220 kg/ha in RRP and GBAO. Similar rates were noted on the plains in Sughd, but in the mountain valley plots rates up to 300kg/ha and 350 kg/ha were reported by farmers interviewed where high rates were used to offset winter frost kill and to smother weeds in spring.

Cotton was, however, replanted up to 2 or 3 times as the heavy rain caused temporary waterlogging or the heavier than usual raindrops caused splashing, covering the vulnerable seedlings with often saline-mud layers. The continuation of the rainfall meant that where replanting did occur, the rains supported the growth and development of the replacement crop as well as the main crops in most areas, reinforcing the role of rainfall as the single most important determinant regarding crop performance this year.

### 3.2.3 Fertilizer use

Last season (2007/08), fertiliser use was reduced due to price increases from 50-100 percent and export restrictions from Uzbekistan. Requests for fertilizer import data in 2008/9 have unsuccessfully been made by the Mission to the Customs and Excise Department both directly and through the MOA. In the absence of such data, fertilizer use is extrapolated from Mission teams' case studies and key informant interviews with the MoA input supply department and District Agricultural Officers. This year it is unlikely that much, if any phosphate or potassium fertilizers were used but the former was available in the form of *super phosphate*; *double super phosphate* and *ammo-phos*. Nitrogenous fertilizers in the form of ammonium nitrate, ammonium carbonate and ammonium sulphate are noted to have been available in all districts at prices slightly higher than last year. Prices in districts close to the Uzbekistan border are noted to be much less than elsewhere with the highest costs noted in GBAO which also reported the lowest rates of use. In any event fertilizer use in 2009 is expected to be greater than in 2008 due to the promising rainfall in spring and increased availability. Table 7 shows prices and reported use of fertilizer on wheat crops by region/zone.

Extrapolation of the data received from the 1 210 case studies (Mission samples) suggests that 66 000 tonnes of various fertilisers was used on the wheat crop this year, which is equivalent to an average application of 194 kg/ha of gross fertilizer of which 164 kg/ha was in the form of nitrogenous fertilizers. Of these, 2 120 tonnes were supplied by FAO under the Food Security Programme along with the wheat seeds. An expected use on the cotton crop of 700 kg/ha of nitrogenous compounds and 150 kg of phosphates adds a further 101 500 tonnes bringing the estimated total for the main field crops to around 167 000 tonnes. The

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<sup>6</sup> MoA, Dushanbe (2009) Pest Control and Input Supply Department- Mission interviews with key informants.

level of use noted does not include plots or other field crops, and neither is fertiliser used on the second season rice and maize crops.

**Table 7: Mission estimated fertiliser use on wheat during 2008/09 first season (by region)**

Fertilizer	Sughd			RRP			Khatlon-Kulyab			Khatlon-KyrganTube			GBAO		
	use	rate kg/ha	cost TJS/50 kg	use	rate kg/ha	cost TJS/50 kg	use	rate kg/ha	cost TJS/50 kg	use	rate kg/ha	cost TJS/50 kg	use	rate kg/ha	cost TJS/50 kg
Nitrogenous	yes	150-250	50-85	yes irrigable	<300	70-85	yes 50%	50-100	95-105	yes 65%	100-120	70-125	yes	50-100	110-125
				high land	50-100	100-120									
Phosphate	yes	150	65	some 30%	50	65 or 120 <sup>7</sup>	no	-	-	yes <30%	80-100	75-95	no	-	-
Potassium	no	-	-				no	-	-	no	-	-	no	-	-
<b>Total tonnes</b>	<b>22 400</b>			<b>31 390</b>			<b>4 913</b>			<b>6 895</b>			<b>350</b>		

<sup>7</sup> Double super phosphate twice as expensive

### 3.2.4 Pests and diseases

As noted in Section 2.2.4, government intervention regarding pest control is limited to locust control. This year, 70 000 hectares of pasture breeding grounds in 12 districts were sprayed of which 90 percent were permanent pastures in the foot hills and 10 percent were lower pastures. Chemicals supplied by FAO in 2008 were used in the process this year to completely control the threat.<sup>8</sup>

At farm level, apart from the rigorous application of pesticides on cotton, concerns for pests this year brought about the private purchase of pesticides from commercial sources throughout the regions for the control of Colorado Beetle in potatoes and cutworms, aphids and the Turkestan Moth in other orchards and garden crops. However, despite the more humid conditions during the 2008/09 season, no pests were reported to be above the normally expected levels of infestation.

Weed control is almost entirely by hand. All cotton crops are continuously hand-hoed and mechanically-hoed during the sequence of fertiliser applications to the extent that during Mission transects through 23 districts all cotton crops are noted to be perfectly clean. Other field crops were far more variable. Wheat and other cereals are generally weeded once by hand at, or just before, top-dressing. Thereafter, hand roughing may or may not follow. Maize fields cultivated for grain are noted to be clean-weeded by hand, as are all potato and vegetable crops reflecting the importance of the crops and the availability of family labour at household level.

The Mission notes the use of herbicides in only three locations in RRP connected to paddy rice planting in areas where labour costs are high.

### 3.2.5 Traction and machinery

The smaller farm businesses and plots using tractors depend on hiring from the larger farms at rates which are noted to vary significantly between regions and between districts within regions as noted in Table 8, according to demand. Where newer tractors are available through leasing companies, greater efficiency has reduced the price this year, however, generally prices are higher than last year.

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<sup>8</sup>Mustafakulov, U. (2009) Head of Crop Inst. ex Chief Locust control- Personal Communication



**Table 8: Summary of informants' views on tractor use during the 2008/09 season (by region)\***

Region		Cultivation - traction			Availability - timing			Average cost TJS/ha			Comments
Region	Districts assessed/ actual	Tractor	Animal	Hand	On-time	Queues	Delays	300 to 400	400 to 500	500 to 600	
Sughd	8/14	6 districts 90-99%	2 dist 20-30%	All 1-10%	6	Yes	No	4	4 districts	No	Animal <200 TJS/ha - no queues
RRP	11/13	6 districts 90-98%	5 dist 5-15%	All 2-10%	Most	Yes	Yes	2 districts (1x <300)	5 districts	4 districts	Access delayed in spring by rain – some queues and delays
K-Kulyab	10/11	6 districts 90-95%	4 dist 15-30%	All 5-10%	On time	No	No	9 districts (2<300)	1 district	No	Tractors cheaper due to leasing company.
K-KyrganTube	13/13	13 districts 95-99%	-	1-5%	On time	Yes	No	9 districts (2<300)	3 districts	1district	Tractors cheaper due to leasing company.
GBO	6/7	2 districts 80% 4 districts	4 dist 35-40%	All 10-20%	On time	Yes	Yes		3 districts	3 districts	Bulls used up to 40% of area in 4 districts

\* Drawn from 1 210 interview returns.

### 3.2.6 Credit supply

Farmer interviews including cooperatives, collective *dekhan* farms, and private *dekhan* farms indicate in almost all cases that interest rates of seasonal credit available to the farmer were above 20 percent and often above 30 percent. Additional 10 percent payments to *secure* the credit were frequently mentioned. Aga Khan Foundation small-scale credit available in GBAO region was reported to be less this year. In general, credit through banks was avoided or unavailable to the small farmers due to high interest rates and bad debts preventing uptake of seasonal agricultural loans. Corruption within the lending bodies is allegedly a significant feature as well as the risk involved with not insurance policies covering the cost to the borrower, while substantial guarantees are required by the lender.

Other sources of funds noted include credit in-kind from cotton investors (also possibly available for wheat); funds invested by returnees/remittances for use in the plots and small scale private *dekhan* farms.

### **3.3 Area planted to cereals in 2008/09**

Notwithstanding the difficulties experienced with planting equipment, a greater area has been cultivated this year in response to the exceptionally abundant rains during the 2008/09 season.

Areas planted by region collected by Mission teams for the first season crops (winter and spring) and estimates from MoA for the second (summer season) are shown in Table 9 compared to State Statistical Committee (SSC) data for 2007/08.

**Table 9: Area planted to cereals and cotton, 2007/08 and 2008/09 (by region)**

Crop	Sughd			RRP			Khatlon			GBO			Totals		
	2007/08 (ha)	2008/09 (ha)	% Change*	2007/08 (ha)	2008/09 (ha)	% Change*	2007/08 (ha)	2008/09 (ha)	% Change*	2007/08 (ha)	2008/09 (ha)	% Change*	2007/08 (ha)	2008/09 (ha)	% Change*
Wheat	40 066	63 603	59	70 200	70 799	1	188 617	200 815	6	4 751	4 877	3	303 634	340 094	12
Barley	20 482	39 126	91	5 922	3 746	-37	10 174	8 453	-17	1 161	1 065	-8	37 739	52 390	39
Maize	3 699	5 952	61	1 873	4 597	145	5 226	28 014	436	19	21	-10	10 817	38 584	257
Oats	1 279	1 280	0	0	0	n/a	467	100	-79	0	0	n/a	1 746	1 380	-21
Rice	4 725	8 661	83	1 425	3 953	177	2 545	8 444	232	0	0	n/a	8 695	21 058	142
<b>Total</b>	<b>70 251</b>	<b>118 622</b>	<b>69</b>	<b>79 420</b>	<b>83 095</b>	<b>5</b>	<b>207 028</b>	<b>245 826</b>	<b>19</b>	<b>5 931</b>	<b>5 963</b>	<b>0.5</b>	<b>362 630</b>	<b>453 506</b>	<b>25</b>
Cotton	69 683	45 547	-34.6	14 620	7 330	-49.9	152 827	112 311	-27	0	0	0	237 130	165 188	-30

\* Area percent change 2008/09 over 2007/08 SSC data  
n/a = not available

The total area planted to cereals in the 2008/09 main cereal season is estimated to have increased by 25 percent (or 90 876 hectares) with the most significant increase in Sughd region where cereal plantings expanded by 69 percent, mostly wheat crop, due to the favourable weather conditions. Overall, the increase in cereal area comes from a) the replacement of cotton with wheat; b) opportunistic planting of wheat and barley on irrigable lands with dysfunctional water supply that was not needed this year, c) increased barley and wheat planting on foot-hill slopes and mountain plateaux and d) significant increase of second (summer) season area planted to maize and rice as assessed by MoA subsequent to the visit of the Mission. However, the decrease in the area planted to cotton estimated at 30 percent, is larger than the wheat area increase as other crops replacing cotton are alfalfa and forage maize. However, data for such crops are not yet available.

### **3.4 Cereal yields in 2009**

Overall, given the sufficient and well-distributed rain, adequate seed supply, adequate if inefficient cultivation practices, improved fertilizer supply compared to last year, complete control of migratory pests, and non-migratory pests/diseases showing no increase from expected levels, yields per hectare this year of the two main cereals assessed by the Mission are noted to be far higher than last year:

- a) Average yields of wheat grown in the traditional rainfed areas is assessed at 1.5 to 2.0 tonnes per hectare compared to 0.5 – 1.2 tonnes noted last year despite the increase in area planted in the more marginal hills.
- b) Average yields of wheat grown in the irrigable lands (rainfed this year) are expected to be more than 3.0 tonnes per hectare despite lodging. During transects driven in 23 districts, the Mission regularly noted yields of irrigated wheat with yields ranging between 3 to 5 tonnes per hectare that were confirmed by both farmers and combine harvester drivers working in the districts visited. Mission sampling elsewhere recorded similar yields throughout the main wheat growing areas.
- c) Barley yields are noted to be similar to wheat yields in the traditional, rainfed areas but lower than wheat in the irrigable lands.

Combining factors a), b) and c) results in average yields this year of 2.44 tonnes/ha for wheat and 1.55 tonnes/ha for barley. The yield for barley is lower as latter crop is grown mostly in the more marginal rainfed areas.

Yields for the summer crops, maize and rice, are forecast by MoA at 2 and 3 tonnes per hectare respectively. Early-planted grain maize and the potato crops were noted by the Mission to be in good condition in all districts visited suggesting that production will be better than last year.

### **3.5 Production of first season cereals 2008/09**

Given the foregoing information, estimates of 2009 cereal production are presented below in Table 10, showing percentage changes by crop and by region. The combined harvest of the first and second seasons is put at 1.028 million tonnes of which 829 000 tonnes is wheat. The estimates for maize and rice include the forecast for the second season crops by MoA, as summer crops were not harvested at the time of the Mission.

The 2009 production compares very favourably with the past several years (Table 11). Wheat output, at 829 000 tonnes, shows a significant increases of 26 percent from the average level of the previous season, of which 12 percent connects to area and 13 percent connects to yield mostly due to the excellent rainfall. Around 20 percent of the wheat crop is of poorer quality and likely to be used for animal feed.

**Table 10: Cereal production estimates, 2007/08 and 2008/09 (by region) - tonnes**

Crop	Sughd			RRP			Khatlon			GBO			Totals		
	2007/08	2008/09	% Change*	2007/08	2008/09	% Change*	2007/08	2008/09	% Change*	2007/08	2008/09	% Change*	2007/08	2008/09	% Change*
Wheat	72 559	149 244	106	137 137	173 339	26	439 368	495 041	13	10 032	11 584	15	659 096	829 209	26
Barley	24 930	55 037	121	10 171	5 695	-44	19 329	18 439	-5	1 894	2 060	9	56 324	81 231	44
Maize	15 429	21 364	38	7 448	6 768	-9	20 906	58 443	180	60	70	17	43 843	86 645	98
Oats	1 634	2 500	53	n/a	n/a	-	933	n/a	-	n/a	n/a	-	2 566	2 500	-3
Rice	13 405	2 727	-80	4 350	9 075	109	7 949	17 037	114	n/a	n/a	-	25 703	28 839	12
<b>Total</b>	<b>127 957</b>	<b>230 872</b>	<b>80</b>	<b>159 106</b>	<b>194 877</b>	<b>22</b>	<b>488 485</b>	<b>588 960</b>	<b>21</b>	<b>11 986</b>	<b>13 714</b>	<b>14</b>	<b>787 532</b>	<b>1 028 423</b>	<b>31</b>

\* Percentage increases of cereal production.

n/a = not available

**Table 11. Production Time Series – 2004-2009 ('000s tonnes)**

<b>Crop</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Wheat	631	618	640	649	659	829
Barley	63	65	64	75	56	81
Maize	113	155	139	130	43	87
Rice	51	62	49	52	25	29

### **3.6 Other crops**

This year, the crops other than cereals have not yet been assessed by the Mission in terms of yield. However, it appears that greater areas of potatoes and pulses have been planted but, in particular, that there has been a considerable increase in planting of sunflowers this year.

### **3.7 Livestock**

After privatization of the collectives holding livestock, livestock ownership resides in household and peasant farmer units (cattle: 88 percent; sheep and goats: 76 percent; horses: 100 percent). As such, livestock numbers per unit are very small and easily managed.

Mission interviews suggest that with few exceptions the livestock rearing systems practiced for all the sheep and goats and for a major proportion of the cattle, incorporate transhumance to intermediate and high mountain pastures. The migration begins in April/May and finishes in September or October.

Key informants explained that for cattle, unit output is normally spring borne male calves sold off the mountain ranges as store stock, or over-wintered using home grown fodder and grain and sold as fattened steers. Some domestic units regularly build up cattle herds to 2-3 milking cows in order to produce extra female followers to sell after calving as cow-calf couples in spring.

Sheep and goat systems are based on a classical mountain seasonal system involving:

- spring lambing;
- transhumant mountain grazing of the whole flock; household and collective farm flocks are taken to mountain grazing by family members or in groups of flocks by village shepherds and by farm staff;
- late summer, autumn weaning of male lambs for sale as slaughter stock or stores;
- retention of around 50 percent of ewe-lambs to replace broken-mouthed ewes (4-5 year old) as breeding stock members;
- sale of surplus ewe- lambs for slaughter/stores/breeding stock;
- fattening of broken-mouthed, cull ewes on for eating or sale.

Winter carrying capacity determines the size of the household breeding flock/herd, which, in turn depends on a variety of home-produced feeds including the poorer quality wheat, maize and barley grain; and by-products *viz* straw, stover and bran to supplement in-bye grazing and locally-produced meadow and lucerne hay.

Mission returns from the 58 districts surveyed confirm that the rainfall-generated pasture has been and remains exceptionally good in lowland, intermediate and high mountain areas. No outbreaks of contagious diseases during the agricultural season, a condition explained by the widespread use of vaccines, was reported at the time of the Mission. However, in late August 2009 the State Veterinary Inspection Services Department reported the outbreak of PPR (pest des petits ruminants) between Khatlon and DRD. FAO has currently secured 1.2 million doses of vaccines and will support the authorities to undertake a large scale vaccination campaign.

Recorded observations taken during Mission transects in 23 districts confirm cattle, horses, sheep and goats to be in excellent body condition. Further, transhumant patterns were normal in most areas, upward migration has been timely, although access to higher mountains is noted to have been delayed in some districts as rainfall and cold temperatures precluded access for the newly born lambs and calves. Fortunately, there has been more than adequate grazing on the lower pastures in such areas. Prices of animals at the time of the Mission were firm and trader expectations are that the prices would remain firm

until the regular annual sales began in September as stock return from summer grazing, when prices usually fall.

Hay making is noted throughout the regions from both cultivated forage on the irrigable land and from natural pasture. The price of hay bales is regularly noted to have declined 30 percent from last year's prices at TJS 3-4 per bale.

Livestock numbers are presented as a time-series data by region in Table 12. The data show a steady increase to 2007. Complete data collected by the Mission for RRP enable a sample comparison between 2007 and 2009, which suggest that at least cattle numbers have not increased and sheep and goat numbers may even have fallen slightly in the past year.

**Table 12: Livestock (cattle, cows and combined sheep and goat) data**

	2002	2003	2004	2005	2006	2007	2009*
<b>Cattle</b>							
<b>Tajikistan</b>	<b>1 135 784</b>	<b>1 218 979</b>	<b>1 303 346</b>	<b>1 371 882</b>	<b>1 422 614</b>	<b>1 652 718</b>	
<b>DRD</b>	<b>280 105</b>	<b>304 803</b>	<b>327 498</b>	<b>353 678</b>	<b>367 037</b>	<b>412 072</b>	<b>412 217</b>
Sugd	325 351	350 551	364 390	384 257	388 486	498 281	
Khatlon	442 420	471 407	520 172	541 911	573 472	645 824	
GBAO	87 908	92 218	91 286	92 036	93 619	96 541	
<b>Cows</b>							
<b>Tajikistan</b>	<b>586 675</b>	<b>636 296</b>	<b>678 103</b>	<b>719 757</b>	<b>756 615</b>	<b>864 273</b>	
<b>DRD</b>	<b>147 496</b>	<b>161 236</b>	<b>176 209</b>	<b>186 945</b>	<b>197 984</b>	<b>218 980</b>	<b>217 922</b>
Sugd	172 810	185 479	193 290	206 261	210 970	259 489	
Khatlon	233 838	256 791	277 066	294 390	314 592	350 513	
GBAO	32 531	32 790	31 538	32 161	33 069	35 291	
<b>Sheep and Goats</b>							
<b>Tajikistan</b>	<b>2 388 734</b>	<b>2 520 673</b>	<b>2 748 217</b>	<b>3 012 489</b>	<b>3 160 741</b>	<b>3 780 427</b>	
<b>DRD</b>	<b>460 592</b>	<b>522 387</b>	<b>601 478</b>	<b>661 203</b>	<b>669 702</b>	<b>839 648</b>	<b>823 903</b>
Sugd	815 556	869 023	907 284	954 409	980 853	1 181 527	
Khatlon	906 557	938 299	1 044 616	1 177 082	1 247 475	1 498 637	
GBAO	206 029	190 955	194 839	219 795	262 711	260 615	
<b>Forage (not rough pasture)</b>							
<b>Tajikistan</b>	<b>103 007</b>	<b>95 435</b>	<b>97 405</b>	<b>109 883</b>	<b>131 341</b>	<b>130 299</b>	
<b>DRD</b>	<b>19 994</b>	<b>20 953</b>	<b>23 272</b>	<b>24 100</b>	<b>28 746</b>	<b>27 884</b>	
Sugd	36 651	36 389	37 633	47 414	56 225	56 906	
Khatlon	43 529	35 032	33 945	35 682	43 776	42 656	
GBAO	2 833	3 061	2 555	2 687	2 594	2 853	

Note: Time series livestock numbers and forage areas pertain to all regions.

\*DRD data for 2009 presented as sample comparison data.

Given the excellent pasture and abundant hay making, feeding requirements this winter should be met, based on the following approximate assessment:

- 1.73 million LSUs (1.65 million cattle and 3.7 million sheep and goats) require 1.6 million tonnes of dry matter (DM) to eat to appetite during a 100 day winter (3+ months);
- 130 000 hectares of irrigable land alfalfa/plots and grass leys will provide at least 400 000 tonnes DM;
- 415 000 hectares of cereal straw and stover will provide at least another 400 000 tonnes DM;
- supplementary concentrates required to increase quality of the ration for fattening, pregnancy and milk production supplements are in the order of 500 000 tonnes of a mixture of concentrates comprising an estimated 166 000 tonnes of poor quality wheat; 51 000 tonnes of barley and the remainder bran and cotton seed cake;
- rough grazing on in-bye land will provide a currently unknown quantity of DM that needs to be estimated;
- in addition, the indigenous breeds have a strong capability, shared with most highland stock, of rapidly gaining condition in summer to *live off their backs* in winter.

#### 4. FOOD SUPPLY/DEMAND ANALYSIS

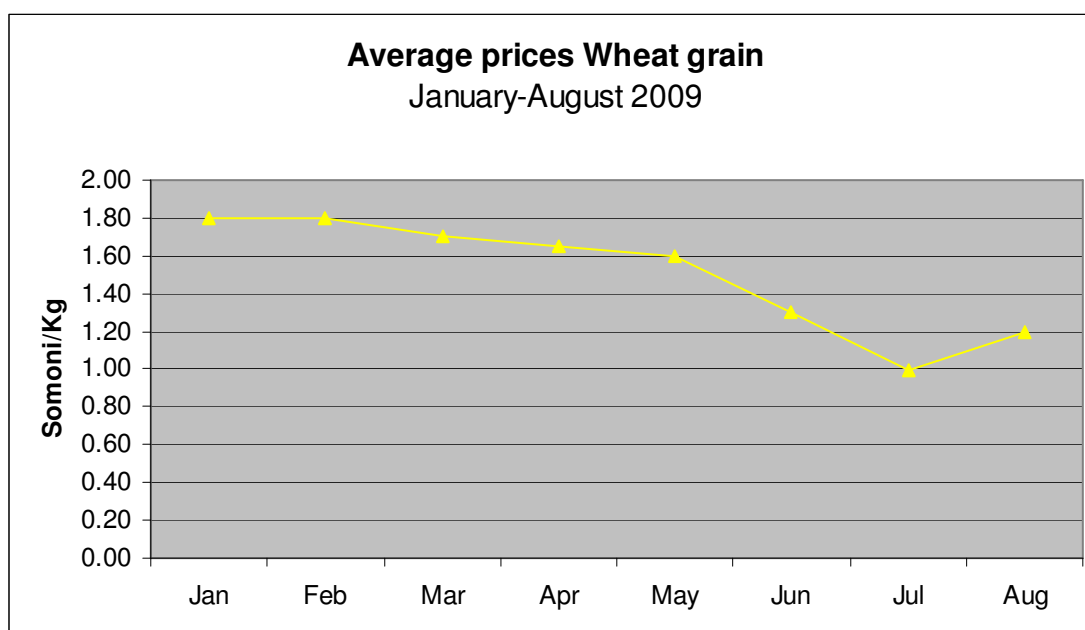
##### 4.1 Food prices

Bread and other wheat products are the main staple foods both in rural and urban areas, accounting on average (2003-2005) for about 58 percent of the total dietary energy supply (DES).

Prices of wheat grain have declined markedly since May this year in anticipation of the 2009 bumper wheat harvest. By July, the average price of wheat grain was 1 Somoni/kg, some 44 percent below the level of January 2009, although prices increased in August due to higher demand during the Ramadan festivity.

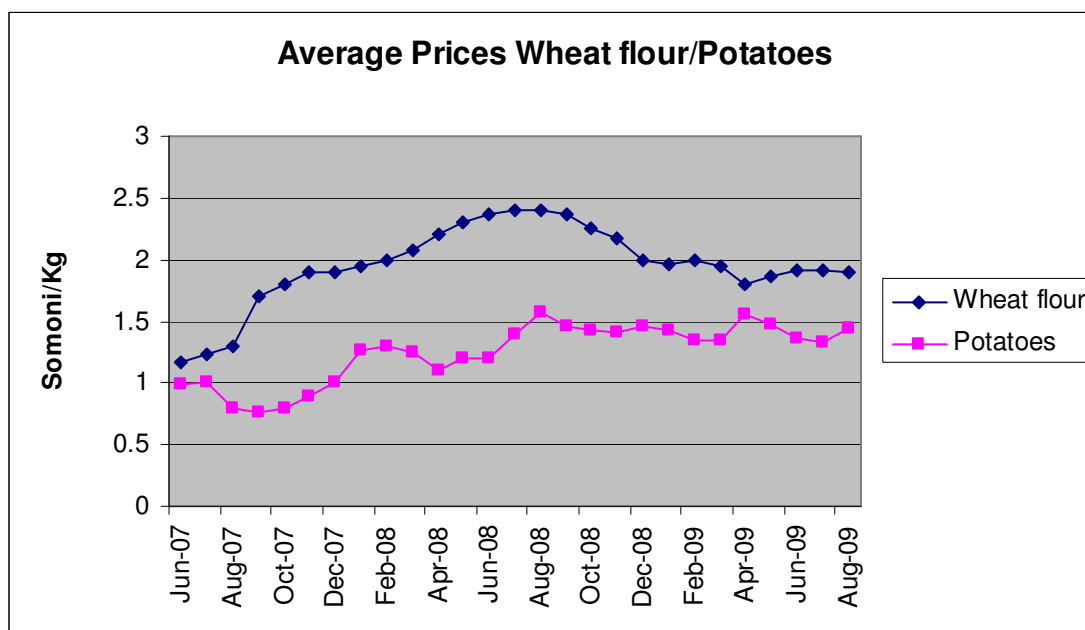
By contrast, prices of wheat flour (1<sup>st</sup> grade) have remained relatively stable since the beginning of the year and by August 2009 were quoted at around 2 Somoni/kg. about the same level than in previous months. Prices of wheat flour have not declined immediately after the wheat harvest in June-July, which may reflect the large share of imported flour in the total supplies. The August flour quotation is some 20 to 30 percent lower than the peaks of July 2008 but still 50 to 60 percent higher than the pre-food price crisis period of the first half of 2007. Prices of both wheat and wheat flour are reported to have declined further in September reflecting the full arrival of the new crop into the markets but no official statistics are yet available. In general, prices of flour are expected to be lower in marketing year 2009/10 because of anticipated lower prices of wheat flour in Kazakhstan (the main source of imports), where a record harvest has been gathered this year and exports are forecast to increase by around one-third in 2009/10 (July/June).

Prices of potatoes, another main staple in the diet have remained relatively stable since August last year but at 1.44 Somoni/kg by August 2009, were still well above their levels of two years ago.



Source: State Committee on Statistics, Republic of Tajikistan





Source: State Committee on Statistics, Republic of Tajikistan

#### 4.2 Overall food supply situation and access to food

The significant increase in this year's cereal output is expected to result in a satisfactory food supply situation at national level during 2009/10 (July/June). As the expansion in food production has been widespread across regions and in both the main producer zones and marginal areas, food security is anticipated to improve in areas previously affected by poor harvests. However, despite the satisfactory food output at national level, the relatively high level of food prices continues to give rise to concern for the food security of low-income vulnerable populations, who spend a large share of their incomes in food and have seen their incomes reduced by the sharp decline in remittances this year. The situation of these populations needs to be closely monitored

#### 4.3 Cereal Balance for 2009/10 (July/June)

There is a vast amount of official information on agricultural production and food security in Tajikistan but accuracy and consistency of the data is weak. Parameters used in the construction of the cereal balance for the 2009/10 marketing year (July/June) are derived from both official information and information maintained in FAO/GIEWS from a variety of sources, as well as from a series of assumptions presented below:

- **Population** - A mid 2009/10 marketing year population (December 2008) of 7.568 million persons has been used in the balance, based on information from the State Committee on Statistics.
- **Stocks** – In absence of sound data on stocks, no changes in the level of cereal stocks are assumed.
- **Human consumption** – Wheat is the main cereal consumed as food, together with minor quantities of rice and maize. GIEWS cereal balances for Tajikistan show that apparent consumption of wheat has been increasing in the past years, based on increasing imports of wheat flour, mainly from Kazakhstan. The increase in apparent consumption of wheat derived from GIEWS cereal balances is supported by information on food consumption from Household Budget Surveys of the State Committee on Statistics, indicating that consumption of wheat products has increased from 148.8 kg per capita per year in 2007 to 153.6 kg in 2008 and 164.4 kg in the first quarter of 2009. Based on the apparent consumption of wheat in previous years, and allowing for a slight increase in consumption in view of this year's bumper harvest, a per capita consumption of 167.3 kg has been assumed in the cereal balance for marketing year 2009/10. Adding relatively small consumed

quantities of rice, barley and maize, the total per caput cereal consumption is assumed at 171.8 kg/annum

- **Feed use** – Taking into account that about 20 percent of this year's wheat harvest is of poor quality, it is expected that it will be used for animal feed. Interviews to farmers during the Mission's field work also confirm that feed use of wheat is higher than has been traditionally assumed. Most of the maize and barley productions are assumed to be used for feed.
- **Other uses** include seed use and post-harvest losses:
  - **Seed requirements** are calculated by using seed rates of 200 kg/ha for wheat, 200 kg/ha for barley, 80 kg/ha for paddy and 25 kg/ha for maize, and average areas planted in the past five years.
  - **Post-harvest losses** are assumed at 12 percent of production including handling and storages losses. This percentage is based on old reports and therefore, there is a need for a technical study to determine the exact extent of losses under various conditions.
- **Cereal import requirements** - According to exports by destination reported to GIEWS by main exporters, imports of wheat and wheat flour in the past marketing year 2008/09 (July/June) amounted to 995 000 tonnes of grain equivalent. This is in line with official information on wheat imports until March 2009. Using the above mentioned wheat consumption rates, import requirements of wheat in marketing year 2009/10 are estimated at 775 000 tonnes, a decline of some 22 percent from last year's level. Almost all these requirements are to be covered on commercial basis. Food aid is assumed to decline from the previous year when the harsh winter of 2007/08 left large number of vulnerable population in need of food assistance. Minor quantities of other cereals are also anticipated to be imported.

**Table 13: Tajikistan – Imports of wheat by marketing year (July/June) – ('000 tonnes)**

Imports	2004/05	2005/06	2006/07	2007/08	2008/09*
<b>Wheat</b>	<b>631</b>	<b>784</b>	<b>903</b>	<b>990</b>	<b>994</b>
Grain	237	262	308	254	306
Flour (in grain equivalent)	395	523	595	736	688

Source: State Committee on Statistics (SCS), Republic of Tajikistan, 2004/05 to 2007/08; FAO/GIEWS 2008/09.

\*SCS estimate until March 2009 shows 777 000 tonnes.

**Table 14: Tajikistan - Cereal balance sheet, 2009/10 marketing year ('000 tonnes)**

	Wheat	Rice (milled)	Maize	Barley*	Total
<b>Domestic availability</b>	<b>829</b>	<b>19</b>	<b>87</b>	<b>84</b>	<b>1 019</b>
Domestic production	829	19	87	84	1 019
<b>Total utilization</b>	<b>1 604</b>	<b>21</b>	<b>87</b>	<b>84</b>	<b>1 796</b>
Food use	1 266	18	8	8	1 300
Feed use	166	0	69	56	291
Other uses	172	3	10	20	205
<b>Import requirements</b>	<b>775</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>777</b>
Commercial imports	755	2	0	0	757
Food aid	20	0	0	0	20

\* includes minor quantities of oats

## **ANNEX 1**

### **CROP PRODUCTION OF THE 2008/09 FIRST SEASON BY REGION/ZONE**

#### **Sughd**

Sughd region is located in the north, comprising:

- a) Northern Tajikistan zone, territory straddling the south-western part of the Ferghana Valley along the Syr Darya with the eastern part of the valley in Uzbekistan. Enclosed by two east-west mountain ranges, namely the Kuramin Range from the north and Turkestan Range from the south, the valley has rich alluvial soil and the natural conditions are favourable for cotton and Mediterranean crops (grapes, apricots, peaches).
- b) Zeravshan zone, the southern part of Sughd, stretching east to west in a narrow valley along the Zeravshan River, edged by the Turkestan Range in the north and the Zeravshan Range in the south. Sughd ranks first in the production of rice, tobacco, and fruits. Tajikistan's entire tobacco harvest comes from the Zeravshan Valley. Main crops in order of importance are: Northern zone -- cotton, cereals, livestock and horticulture; Zeravshan zone -- tobacco, cereals, livestock and horticulture.

This year, good and timely autumn rains allowed the start to the main cropping season. Rainfall continued to June/July with no significant adverse effects. Table 10 summarises this year's area and production of cereals.

#### **RRP-Central**

RRP (*Raiony Respublikanskogo Podchineriya*) consisting of 13 districts (formerly the Karategin Region) stretches in a long band from east to west, between the Gissar and Zeravshan mountain ranges in the north, the Vakhsh and Darvaz ranges in the south, and the western edge of Pamir Mountains in the east (Akademiya Nauk Range). This mountainous belt creates a natural barrier between the Khatlon lowlands in the south and the northern valleys of Zeravshan and Ferghana in Sughd Region. Natural vegetation in Central Tajikistan ranges from semi-desert to mountain meadows and pastures. The elevations rapidly rise from the western part (Gissar) to the rugged Gissar-Alay Mountains in the eastern part (Rasht). Crops flourish mainly in the Gissar Valley, which stretches from Dushanbe to the border with Uzbekistan (Tursunzade). Most agricultural production of RRP, both crops and livestock products, originate from the eastern part centred on the Gissar Valley around Dushanbe. The Gissar zone produces significant quantities of flax, grapes and vegetables. It also grows rice and cotton, although in quantities much smaller than Khatlon and Sughd. In the Rasht zone crop farming is restricted to the long and narrow valley that stretches from east to west following Surkhob River on its way to Vakhsh River in Khatlon Region further south-west. Potatoes grown by rural households for own consumption and sales appear to be only significant crop in Rasht. Main crops/products are: cotton, livestock, horticulture and cereals in western Gissar and livestock, cereals, horticulture and cotton in Rasht zone.

This year, good and timely autumn rains allowed the start to the main cropping season. Rainfall continued to June/July with no significant adverse effects. Table 10 summarises this year's area and production of cereals.

#### **Khatlon**

Khatlon Region is located in the South-West of Tajikistan stretching south of the Gissar Range and west of Pamir. It is a region of wide river valleys (Lower Kofarnikhon, Vakhsh, Kyzylsu) separated by mountain ridges that fan out in the south-westerly direction from the mountain system in the north. Khatlon is the main producer of cereals, cotton, grapes, and flax. It is also the leader in livestock production (milk and meat). The western part Khatlon-KyrganTube enjoys the warmest climate in the country. Cotton and other subtropical crops are grown on large irrigated areas in Lower Kofarnikhon and Vakhsh valleys in western Khatlon. The eastern part of the region, Kulyab, is more mountainous with one relatively small valley along the Yakhsu and Kyzylsu rivers around the town of Kulyab where cotton farming is the main activity. Main crops in order of importance are: cotton, cereals, livestock and horticulture in both Khatlon Kulyab and Khatlon KryganTube.

This year, good and timely autumn rains allowed the start to the main cropping season. Rainfall continued to June/July with no significant adverse effects. Table 10 summarises this year's area and production of cereals.

### **Gorno Badakhshan (GBO)**

GBO comprises the Pamir Mountains which cover the entire eastern half of the country. Agriculture is limited by the terrain and the altitude. While Western Pamir has some narrow river valleys suitable for cultivation at altitudes up to 3 700-4 200 metres, Eastern Pamir is distinguished by the driest and coldest climate in Tajikistan. This is a cold high-mountain desert, without trees and hardly any vegetation, suitable only for rough grazing during a short summer season.

This year good autumn rains were followed by a prolonged and heavy spring rains which with cold temperatures delayed access to the high mountain pastures. Thereafter grass growth has been good and the region has benefited as elsewhere from rainfall until July with no significant adverse effects. Table 10 summarises this year's area and production of cereals.

## ANNEX 2

### ASSESSMENT PROCESS

The timing of the international component of this year's Crop and Food Security Assessment Mission (CFSAM) in the middle of July was arranged to coincide with the final weeks of a national wide assessment conducted by joint FAO and MoA teams. In the national part of the exercise:

- 4 x 2-man teams visited 5 zones covering the 4 regions namely Sughd, RRP-Central, Khatlon-Kulyab, Khatlon-KyrganTube and GBAO over a 44 day period beginning in early June.
- 47/58 districts were included in the procedures which involved:
  - collection of all available farm data regarding area planted during the first season (autumn and spring) for all crops on state farm- cooperatives/enterprises, collective *dekhan*, private *dekhan*, household and Presidential plots from District Agricultural Offices<sup>9</sup>. The data for the eleven unvisited districts, which were of minor agricultural significance, were obtained by telephone;
  - a total of 1210 farm visits were conducted on all types of farms noted above in 171 sub-districts (*jamoat*);
  - during the visits a checklist, nationally derived for evaluating the performance of new releases (plant varieties) which has been used in cereal assessing, was used to determine qualitative performance of all crops;
  - 18 separate indicators, developed for testing seed varieties, were used to assess performance of cereals, culminating in yield per hectares estimates for the main first season cereals.
- The DAO area data were combined with the CFSAM weighted average yield per hectare estimates for crops ready for harvest (cereals) to calculate production in each district. Crops other than cereals have, in all but a few circumstances, no independently assessed estimates of yield (productivity) as the mission was too early for most potato and vegetable crops and way too early for maize, rice, oilseeds and cotton. Area estimates for all first season crops were obtained at district level. Regarding the relevance and validity of such estimates, the following points pertain:
  - the data were obtained at district level, prior to adjusting/cleaning;
  - the mechanisms for collecting the data conform to a uniform approach noted to be based on a series of steps:
    - registered businesses complete forms quarterly describing *inter alia* areas planted; and provide the data to the DAO. Large scale enterprises, cooperatives, collective *dekhan* farms and private *dekhan* farms are required to conform to this system. Such data are the data usually cited by the Ministry of Agriculture as cropped areas and are transformed to production data by using *productivity* estimates from the farmers and as determined by DAO specialists.<sup>10</sup> Given that such data are used for tax levying purposes, there is a distinct tendency for farmers to underestimate yield<sup>11</sup>.
    - Household and Presidential plot area data were obtained from a) district level SSC officers, b) who, in their turn receive data from the sub-districts (*jamoat*); c) who, in their turn receive data from village representatives with the responsibility for recording crop areas farmed in each village or hamlet. Whereas there are obvious opportunities for error and misrepresentation, mitigating factors are that a) the number of households in each village is well documented. b) the plot areas are small, c) land distribution is documented and may be cross-checked case-by-case if

<sup>9</sup> Notwithstanding the concerned team's assurance to the contrary, unfortunately, during the international review the data from Khatlon-KyrganTube were noted not to include the household and Presidential plots. Attempts are in progress to access the data that are thought to connect to some 22 000 hectares of arable land.

<sup>10</sup> In the case of this Mission's assessment, the productivity estimates (yield per ha) will be replaced by the Mission's own cereal crop sample estimates for each district.

<sup>11</sup> Confirmed by all field teams, who reported farmer concern at the accuracy of their field sample measurements

necessary; c) most hh plots contain permanent crops with areas unchanging from year to year, d) no taxes are levied on household or presidential plot area or production, therefore, there are no obvious disincentives to underestimate area planted or production obtained in these cases.

- The international agronomist of the Mission:
  - travelled through 23 districts, conducting transect en route through Sughd, RRP-Central, Khatlon-KyrganTube and Khatlon-Kulyab. Access to GBAO was not possible for security reasons.
  - During the visits, 8 districts were sampled, key informant interviews were undertaken with DAOs, District Administrators, NGOs and farmers, traders, combine and thresher operators and cereal crop samples were taken in harvestable fields in keeping with the Technical Notes in the latest FAO/WFP CFSAM Guidelines<sup>12</sup>.
  - Markets were reviewed and sample prices noted,
  - Area-production, time-series data obtained from the State Statistics Committee for comparison purposes.
  - Prior to field visits, the international agronomist and the national team leader held detailed discussions with the MoA Heads of Departments for crops, pest control and input supply, finance and credit, and pastures and ranges to obtain first hand opinions on factors affecting production since last autumn (September 2008).

All national FAO/MoA teams on return to Dushanbe were interviewed, in depth, regarding their regions/zones, district-by-district using a common format in compliance with the CFSAM Guidelines Technical Note recommendations. All assessments are subjects of rigorous reviews, performance estimates are revisited with respect to seed type, timing of sowing, extent and timing of fertiliser use, the season's pest and disease profile, the performance of similar crops in neighbouring localities, time-series data and finally compared with any other independent assessments available for the zones. The results of the discussions were noted and team responses disaggregated to form the basis of the qualitative analyses of factors affecting area and yield.

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<sup>12</sup> FAO/WFP Joint Guidelines for Crop and Food Security Assessment Missions (2009).