UNODC
United Nations Office on Drugs and Crime

Government of Afghanistan
Ministry of Counter Narcotics

Afghanistan
Opium Survey 2010

December 2010

ABBREVIATIONS

AGE	Anti-government Elements
ANP	Afghan National Police
CNPA	Counter Narcotics Police of Afghanistan
GLE	Governor-led Eradication
ICMP	Illicit Crop Monitoring Programme (UNODC)
ISAF	International Security Assistance Force
MCN	Ministry of Counter-Narcotics
UNODC	United Nations Office on Drugs and Crime

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CONTENTS

EXECUTIVE SUMMARY **9**

1 INTRODUCTION **21**

2 FINDINGS **23**

2.1 OPIUM CULTIVATION 23
2.2 ERADICATION 40
2.3 OPIUM YIELD 53
2.4 POTENTIAL OPIUM PRODUCTION 57
2.5 SECURITY 60
2.6 FARMERS WHO CULTIVATE OPIUM 60
2.7 REASONS FOR OPIUM CULTIVATION 62
2.8 OPIUM CULTIVATION AND DISTANCE TO AGRICULTURAL MARKETS 65
2.9 OPIUM CULTIVATION AND CANNABIS 66
2.10 LOANS 66
2.11 AGRICULTURAL ASSISTANCE 67
2.12 INCOME OF FARMING HOUSEHOLDS 68
2.13 OPIUM PRICES 71
2.14 FARM-GATE VALUE OF OPIUM PRODUCTION AND INCOME FROM OPIUM 75
2.15 POTENTIAL VALUE OF THE OPIATE ECONOMY 77

3 METHODOLOGY **81**

3.1 OPIUM CULTIVATION 81
3.2 VILLAGE SURVEY METHODOLOGY 92
3.3 DRUG FLOW SURVEY 95
3.4 OPIUM YIELD AND PRODUCTION 95
3.5 ERADICATION VERIFICATION METHODOLOGY 99
3.6 OPIUM POPPY-GROWING HOUSEHOLDS 101
3.7 AVERAGE FARM-GATE PRICE AND FARM-GATE VALUE OF OPIUM PRODUCTION 101
3.8 PER HECTARE INCOME FROM OPIUM 102
3.9 VALUE OF AFGHAN OPIATES IN NEIGHBOURING COUNTRIES 103

ANNEX I: OPIUM POPPY CULTIVATION PER PROVINCE (HA), 2002-2010 ..... **111**

ANNEX II: INDICATIVE DISTRICT LEVEL ESTIMATES OF OPIUM CULTIVATION (HA), 2001-2010 ..... **112**

ANNEX III: ERADICATION FIGURES BY DISTRICT (2010) **118**

PREFACE

This year's Afghanistan Opium Survey shows that while the total area under cultivation and the number of families growing opium poppy remained the same as in 2009, opium production fell drastically to roughly half of last year's levels. The cause of the decline in production was a naturally occurring plant disease that affected Afghanistan's major opium poppy-growing regions this year.

Like opium production, the gross export value of Afghan opiates was halved this year. This indicates that the income of Afghan traffickers from the 2010 opium season is also down.

But there is cause for concern. The market responded to the steep drop in opium production with an equally dramatic jump in the market price to more than double 2009 levels. Meanwhile, the price of wheat—one of Afghanistan's principal crop alternatives to opium—has fallen. At current prices, planting opium poppies is six times more profitable than growing wheat. The high price of opium combined with a low wheat price may encourage more farmers to cultivate opium in 2011.

The 2010 Survey continues to underscore the linkage between opium poppy cultivation and security in Afghanistan. In areas where there is a government presence and the rule of law prevails, only a few hundred hectares of opium cultivation remain. Twenty provinces are already poppy-free, and with some additional effort, Afghanistan could achieve five more poppy-free provinces next year (Hirat, Kabul, Kunar, Laghman and Zabul). We encourage their governors, the central Government and donors to help these provinces become poppy-free in 2011. Badghis and Zabul have achieved significant reductions, and we encourage efforts to stop the increased cultivation in Badakhshan and Nangarhar to avoid a return to the worrying levels observed in 2007. The significant expansion of cultivation in Kandahar Province over the past two years must also be stopped, and we urge the governor and other partners to play an active role in preventing any further increase and to ensure progress is made in eradication. Further growth in poppy cultivation in Kandahar would have an adverse effect on other provinces as well.

Enabling farmers to make a living and support their families by planting licit crops is the most effective way to stop opium poppy cultivation. Providing villages with agricultural assistance encourages the cultivation of licit crops. For the first time this year, we saw a correlation between provision of agricultural assistance and a drop in opium cultivation. Providing farmers with access to markets for their crops also helps keep them away from opium poppy cultivation. In villages that are close to agricultural markets, farmers plant less poppy than in villages with no access to markets.

We encourage donors and the Afghan community to continue to invest in alternative livelihood programmes and increasing market access for farmers. But security, stability and an environment free of corruption remain the key elements to making such initiatives effective and sustainable.

In closing, we would like to thank our dedicated team of skilled Afghan surveyors for visiting opium poppy fields all over the country to collect data on cultivation levels, crops and plant cycles. This work is both arduous and dangerous. We are grateful to these brave men for their commitment to helping Afghanistan rid itself of opium's scourge.

Yury Fedotov
Executive Director, UNODC

Zarar Ahmad Moqbil Osmani
Minister of Counter Narcotics

Fact Sheet Afghanistan Opium Survey 2010[1]

	2009	Change from 2009	2010
Net opium poppy cultivation (after eradication)	123,000 ha (102,000-137,000)	0%	123,000 ha (104,000-145,000)
in % of agricultural land	1.6%		1.6%
in % of global cultivation**	68%		66%
Number of poppy-free provinces[2]	20	No change	20
Number of provinces affected by poppy cultivation	14	No change	14
Eradication	5,351 ha	-57%	2,316 ha
Weighted average opium yield ***	56.1 kg/ha	-48%	29.2 kg/ha
Potential production of opium[3] ***	6,900 mt (5,900-7,900)*	-48%	3,600 mt (3,000-4,200)*
in % of global production**	89%		77%
Number of households involved in opium cultivation[4]	245,200	+1%	248,700
in % of total population	6%		6%
Average farm-gate price (weighted by production) of fresh opium at harvest time	US$ 48/kg	+167%	US$ 128/kg
Average farm-gate price (weighted by production) of dry opium at harvest time	US$ 64/kg	+164%	US$ 169/kg
Current GDP[5]	US$ 10.7 billion		US$ 12.7 billion
Total farm-gate value of opium production	US$ 438 million	+38%	US$ 605 million*
in % of GDP	4%		5%
Potential gross export value of opiates	US$ 2.8 billion	-50%	US$ 1.4 billion
in % of GDP	26%		11%
Potential net export value of opiates	US$ 2.3 billion	-48%	US$ 1.2 billion
in % of GDP	21%		9%
Average yearly gross income from opium of opium growing households	US$ 1,786	+36%	US$ 2,433
Gross income from opium per ha [6] Net income from opium per ha	US$ 3,600 US$ 2,000	+36% +45%	US$ 4,900 US$ 2,900
Ratio of gross (net) income from opium to wheat	3:1 (2:1)		6:1 (4:1)

** Updated due to the availability of more detailed information.*
*** Based on provisional estimates.*
**** Refers to oven-dry opium.*

[1] Numbers in brackets indicate the upper and lower bounds of the estimation range.

[2] Poppy-free provinces are those which are estimated to have less than 100 ha of opium cultivation.

[3] The 2010 opium production estimate takes into account the impact of disease on opium yield by combining different approaches. This introduces an additional uncertainty, which , however, cannot be expressed in statistical terms.

[4] Estimates are based on a population of 24.0 million for 2009 and a population of 24.5 million for 2010 and an average household size of 6.2 persons. Source: Government of Afghanistan, Central Statistical Office

[5] Nominal GDP of the respective year. Source: Government of Afghanistan, Central Statistical Office.

[6] Income figure are indicative only as they do not include all expenditure and income components associated with opium cultivation.

EXECUTIVE SUMMARY

The *Afghanistan Opium Survey* is implemented annually by the United Nations Office on Drugs and Crime (UNODC) and, since 2003, in collaboration with the Afghan Government. The survey team collects and analyses information on the location and extent of opium cultivation, potential opium production and the socio-economic situation in rural areas. As well, since 2005, UNODC has been involved in the verification of opium eradication conducted by provincial governors and central forces. The results provide a detailed picture of the outcome of the current year's opium season and, together with data from previous years, portray medium-and long-term trends in the evolution of the illicit drug problem. This information is essential for planning, implementing and monitoring the impact of measures required for tackling a problem that has serious implications for Afghanistan and the international community. The 2010 survey received financial contributions from the Governments of Germany, Norway, the United Kingdom, and the United States of America.

In 2010, the total area devoted to opium cultivation in Afghanistan remained unchanged from 2009, with 123,000 hectares or 1.6% of the country's agricultural land growing opium. This stable situation halted a declining trend in cultivation that began in 2007. Afghanistan continues to account for about two-thirds of all global opium cultivation.

Ninety-eight per cent of the Afghanistan cultivation took place in nine provinces in the Southern and Western regions, including the most insecure provinces in the country. This strong link between insecurity and opium cultivation confirms that the less security an area has, the more likely it is to grow opium. Thus, Hilmand - one of the most dangerous provinces in the country - remains the single largest opium-cultivating province, growing more than half of all opium in Afghanistan (53%). The Southern and Western regions are places the United Nations Department of Safety and Security (UNDSS) classify as high or of extreme security risk. Most of the districts in these regions were inaccessible to the UN and NGOs.

Also unchanged from 2009 were the number of provinces affected by poppy growing (14) and the number of provinces that remained poppy-free (20). The number of households growing opium also remained relatively constant at 248,700 households in 2010 compared to 245,200 in 2009, an increase of only 1%.

While poppy cultivation trends at the national level did not change, several other significant patterns did. One was opium cultivation at the regional level. In the Central region, cultivation increased by 15% while in the Northeastern region there was an alarming increase of 97%. Even more dramatic was the increase in Nangarhar province in the Eastern region where, due to tough resistance from anti-government elements (AGE), proper eradication did not take place and cultivation increased by 145% from 2009.

Another change in 2010 was the substantial decrease in national opium yield and opium production. Despite the steady cultivation figures, both total opium yield and total opium production fell by almost half (48%) from 2009.

This overall decline was the result of several factors: unfavourable climactic conditions; the significantly smaller size of opium poppy capsule; and a smaller number of capsules per square meter in the Western and Southern regions. The most important factor, however, was

diseases in major growing areas that affected opium plants at a late stage of development. While opium poppy diseases are a normal occurrence in Afghanistan, in 2010 the late onset of diseases in the Southern region meant that poppy plants dried up much faster than normal. This greatly reduced the amount of opium available for harvest. Many farmers, especially in the south, lost nearly their entire opium crop, and overall in the Southern region, opium yield fell 49%. As a result, opium production in Afghanistan represented less than 80% of global opium production in 2010, a decline from almost 90% in 2009.

As with other commodities that becomes scarce, the greatly reduced supply of fresh opium during harvest time triggered a spectacular rise in opium prices. Between 2009 and 2010, dry opium prices at harvest time increased to US$ 169/kg from US$64 in 2009, a jump of 164%.

This amount may represent a price ceiling for opium in the country. The farm-gate value of the 2010 opium harvest amounted to US$ 605 million, 38% more than in 2009. The farm-gate value of opium as a proportion of GDP also increased to 5% from 4% in 2009. This rise in price made the 2010 opium farming much more profitable – at least for those farmers whose fields were not affected by poppy disease. The average annual income from opium in opium-growing households rose 36% to US $2,433.

This situation presents a worrying possibility, given that farmers surveyed in 2010 cited the high sale price as the most important reason (47%) for cultivating opium poppy in 2010. Although poppy-growing households generally have a higher cash income than households that do not grow poppy, opium farmers in 2010 sold their harvested crop at more than twice the price of 2009. Farmers in the Southern region accounted for close to 89% of the total income from opium production – the highest such concentration ever encountered in Afghanistan. Farmers in Hilmand, for instance, the largest opium-producing province, earned around US$ 350 million, equivalent to 73% of the total farm-gate value of opium in Afghanistan in 2009.

This bonanza (for some) may provide farmers with a strong incentive to continue growing opium and even expand cultivation in 2011. Adding to the attractiveness of the opium crop in 2010 was a corresponding drop in the price of wheat. In 2010, the ratio between gross income from opium and wheat was 6:1, the highest ratio calculated since 2008.

This high opium price, however, may not last long. A similar phenomenon was observed in 2004 when opium production fell due to disease and prices rose. The price hike then was relatively short-lived, lasting less than a year.

Another change in 2010 concerns opium eradication. The security situation continued to be hostile for eradication campaigns as most of the opium cultivation was confined to the Southern and Western provinces, which are affected by insurgency and organized crime groups. In 2010, total hectares eradication of opium fields fell to its lowest level in five years. Eradication levels dropped from the previous year by 57% (2,316 ha compared to 5,351 ha in 2009). This is mainly because only Governor-led eradication was implemented and - unlike in previous years - there was no eradication by central government forces (PEF - poppy eradication forces). Particularly troubling was the heightened danger faced by eradication teams. Although security incidents were fewer – 12 attacks on GLE teams compared to 34 in 2009 – there were more deaths, mostly of policemen. Twenty-eight eradication campaign-related-fatalities were reported in 2010 compared to 21 such fatalities in 2009.

The calculation of the potential income from opium production for the Afghan economy is based on the value of opiate exports in the border areas of neighbouring countries. This approach is based on the observation that Afghan traffickers - far more than nationals of other countries - are heavily involved in shipping opiates across borders to neighbouring countries, notably Iran and Pakistan, and to a lesser extent, countries in Central Asia. From there, traffickers in neighbouring countries usually take over the drug shipments. Thus, the far larger funds generated in subsequent trafficking activities to Europe and various other overseas locations are not collected by Afghanis or the Afghan economy. The financial gains made by criminal groups in Afghanistan constitute only a small proportion of the overall trafficking profits arising from Afghan opiates. Nevertheless, the amounts are still important relative to the size of the Afghan economy. While farm-gate prices were high, the gross export value of opiates was cut in half. This could indicate that traffickers' revenues are down. In 2010, the gross export value of opiates amounted to US$ 1.4 billion, equivalent to 11% of GDP, a drop of 50% from 2009. Calculations of money made from the Afghan opium economy, however, remain far less robust than estimates of the area under cultivation, yield, opium production or the income made by Afghan opium farmers.

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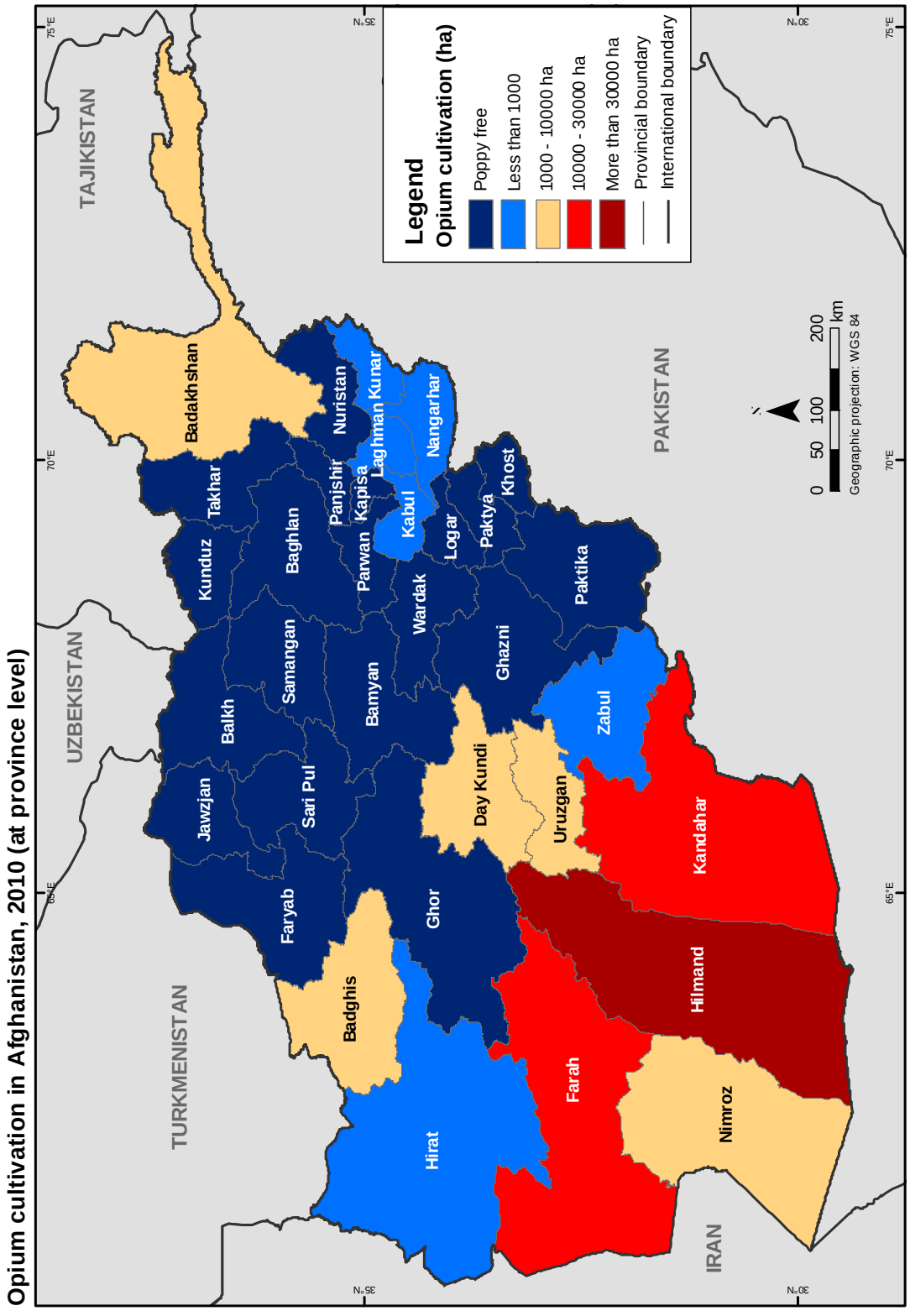
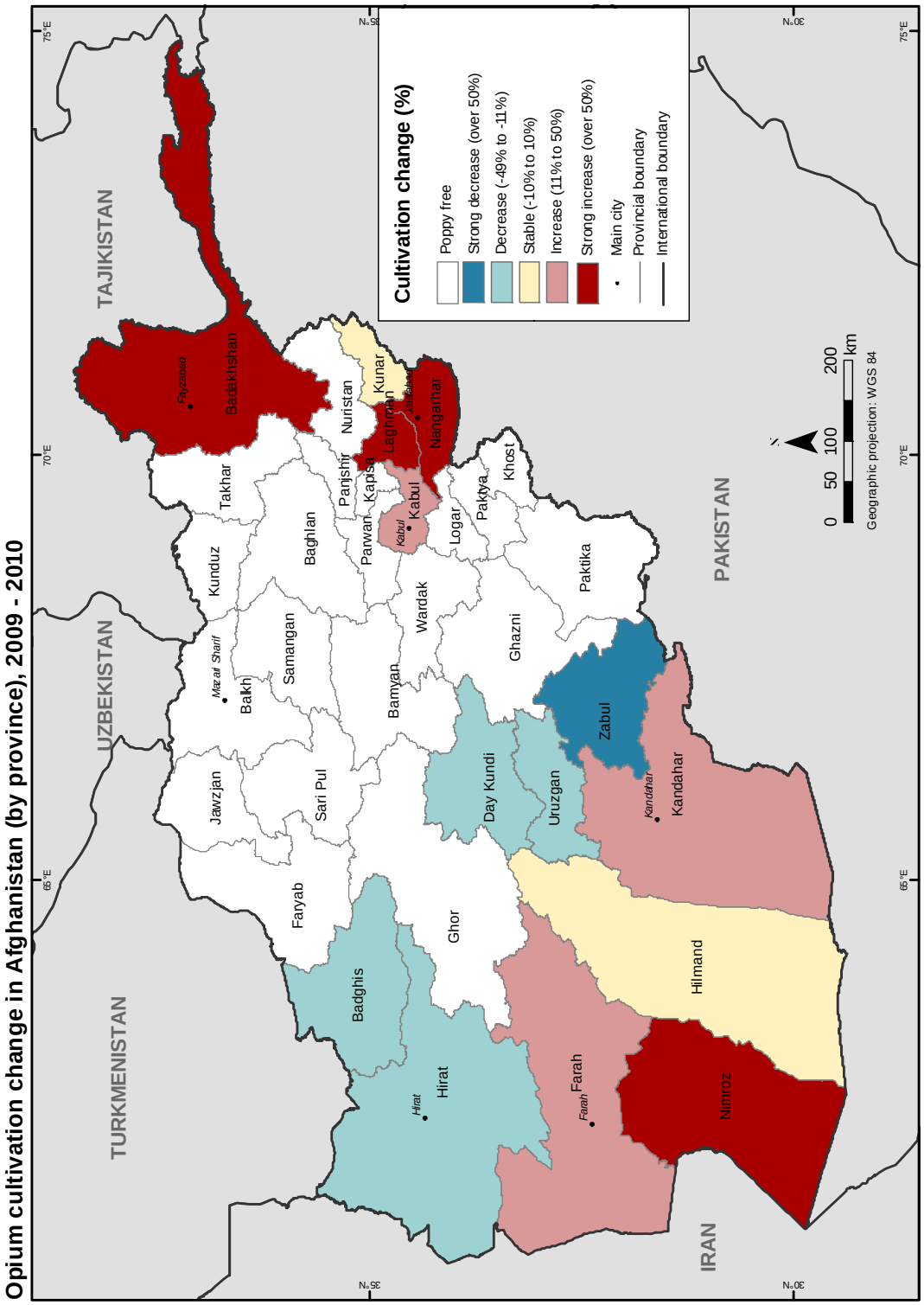

Opium cultivation in Afghanistan, 2010 (at province level)
Legend
Opium cultivation (ha)
Poppy free
Less than 1000
1000 - 10000 ha
10000 - 30000 ha
More than 30000 ha
Provincial boundary
International boundary
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
IRAN
PAKISTAN
Badakhshan
Takhar
Kunduz
Baghlan
Nuristan
Panjshir
Kapisa
Laghman
Kunar
Nangarhar
Parwan
Kabul
Logar
Paktya
Khost
Wardak
Paktika
Ghazni
Samangan
Balkh
Bamyan
Jawzjan
Sari Pul
Faryab
Day Kundi
Uruzgan
Zabul
Ghor
Badghis
Kandahar
Hilmand
Farah
Nimroz
Hirat
0 50 100 200 km
Geographic projection: WGS 84
Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.


Opium cultivation change in Afghanistan (by province), 2009 - 2010
Cultivation change (%)
Poppy free
Strong decrease (over 50%)
Decrease (-49% to -11%)
Stable (-10% to 10%)
Increase (11% to 50%)
Strong increase (over 50%)
Main city
Provincial boundary
International boundary
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
IRAN
PAKISTAN
Faryab
Badakhshan
Takhar
Kunduz
Baghlan
Nuristan
Kunar
Laghman
Nangarhar
Panjshir
Kapisa
Parwan
Kabul
Logar
Paktya
Khost
Paktika
Jawzjan
Sari Pul
Balkh
Samangan
Bamyan
Wardak
Ghazni
Zabul
Day Kundi
Uruzgan
Kandahar
Ghor
Badghis
Hirat
Farah
Hilmand
Nimroz
Fayzabad
Mazar-e Sharif
Kabul
Jalalabad
Kandahar
Hirat
Farah
0 50 100 200 km
Geographic projection: WGS 84
Source: Government of Afghanistan - National monitoring system implemented by UNODC
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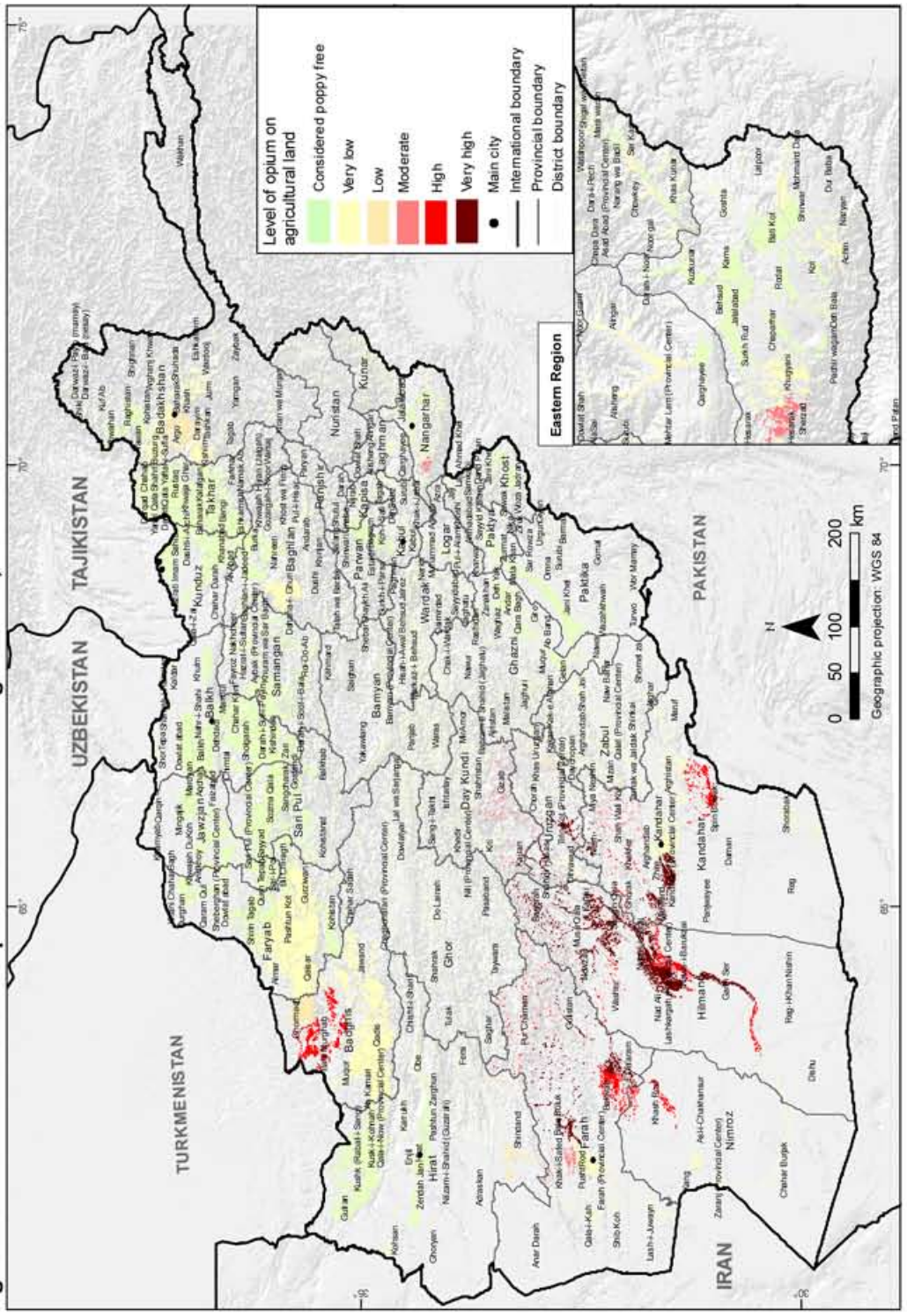
Agricultural land and level of opium cultivation in Afghanistan, 2010



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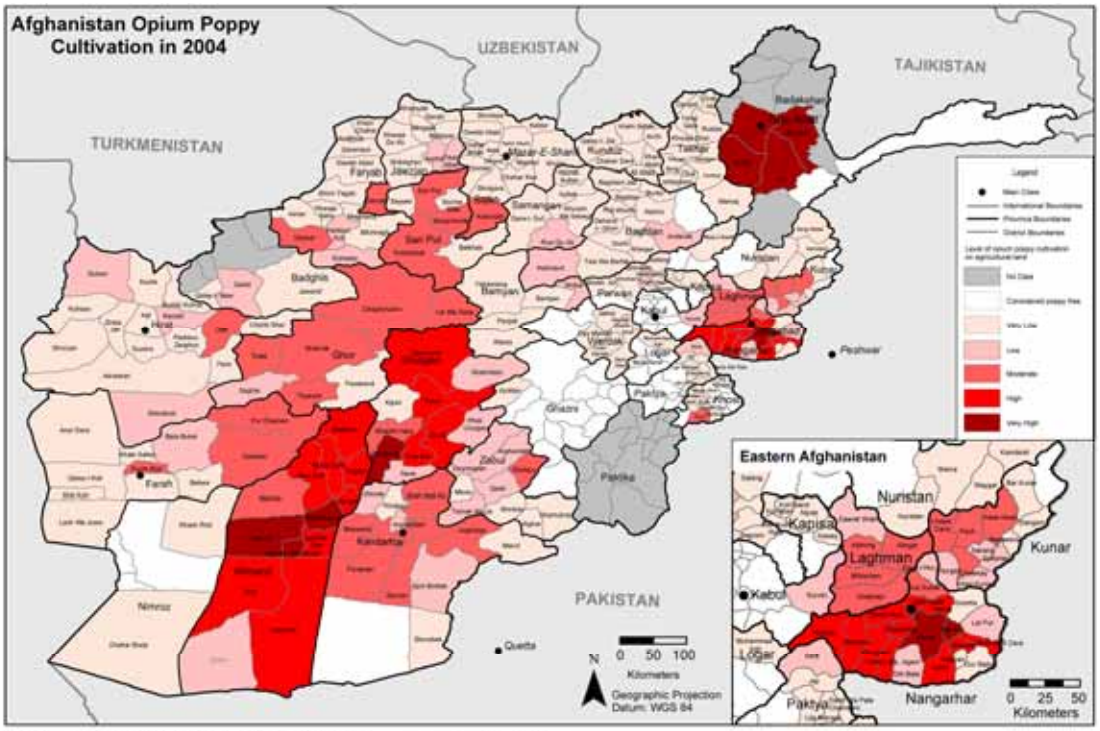

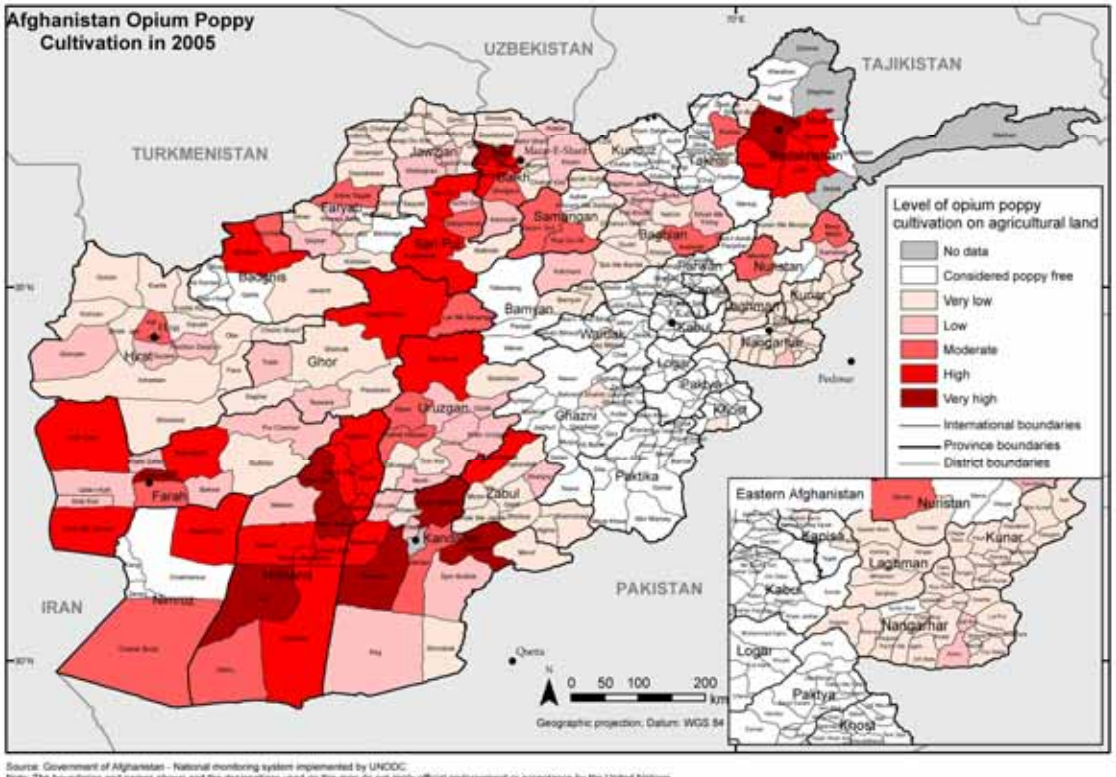

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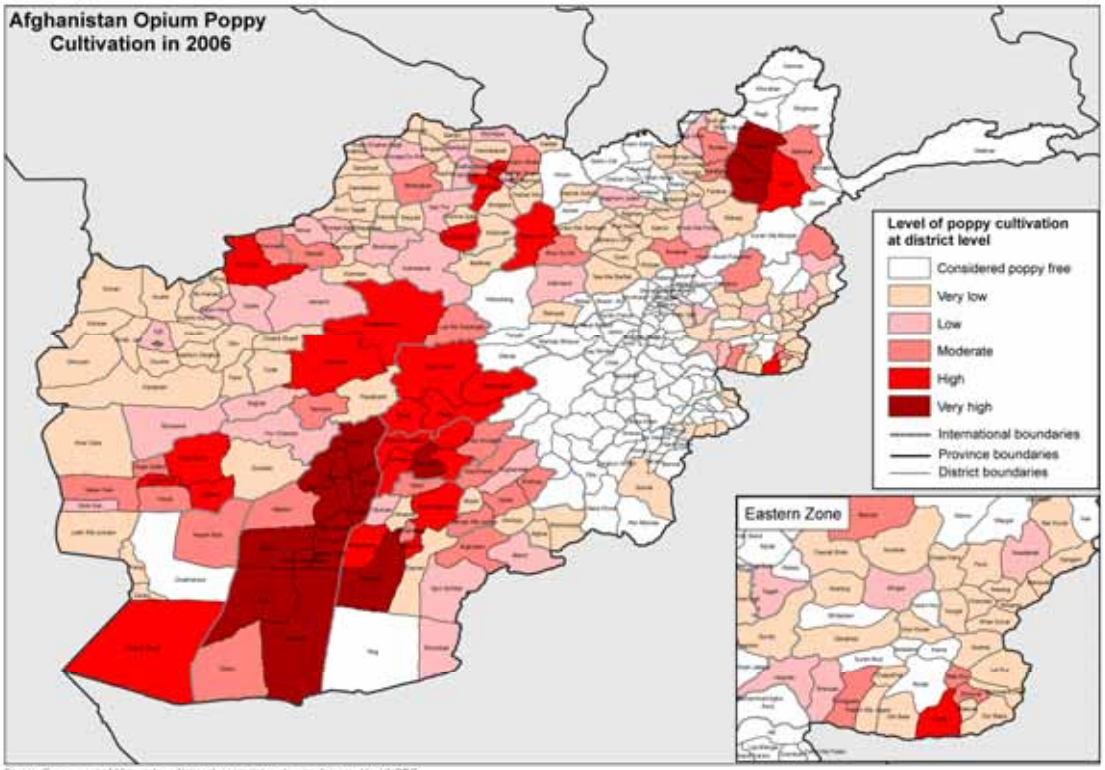

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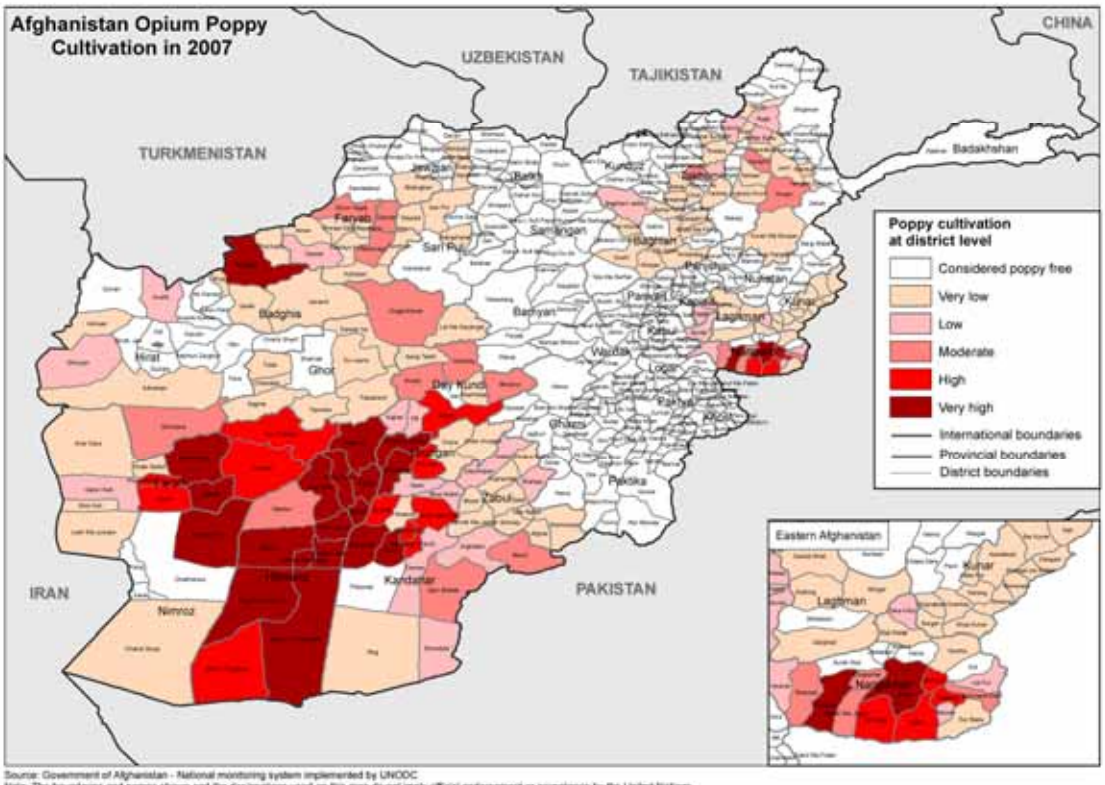

Source: Government of Afghanistan - National monitoring system implemented by UNODC
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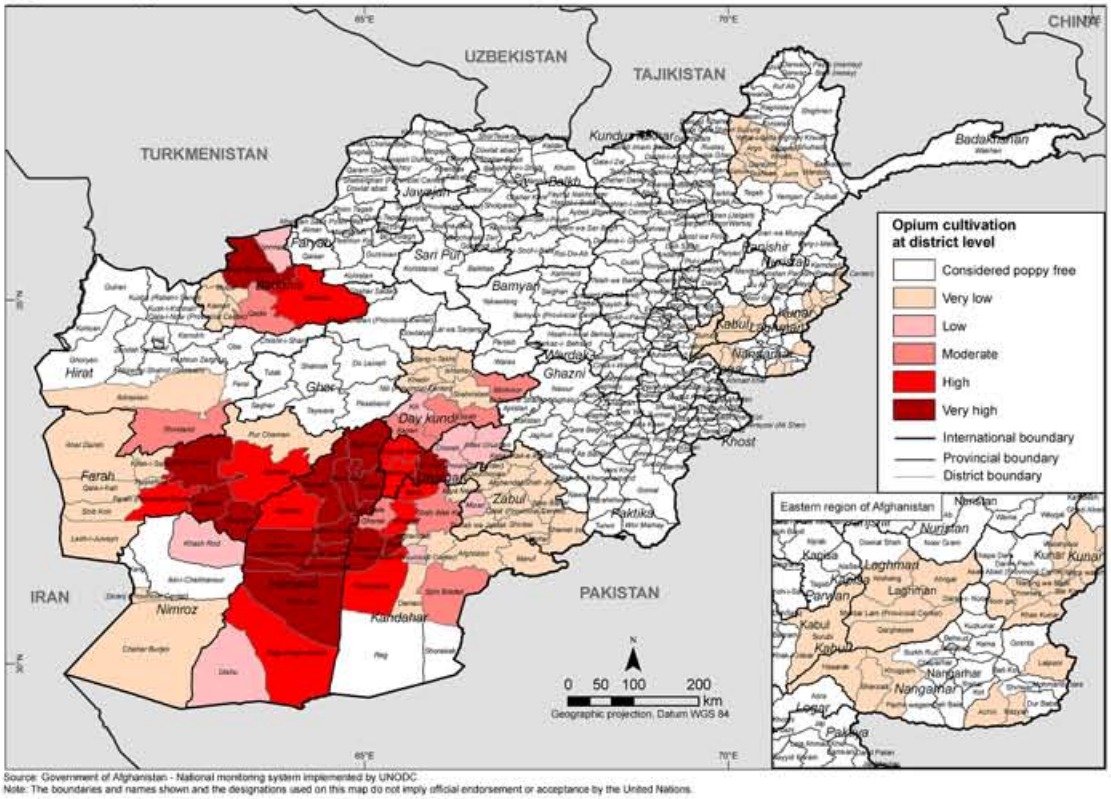
Afghanistan Opium cultivation in 2009 (at district level)



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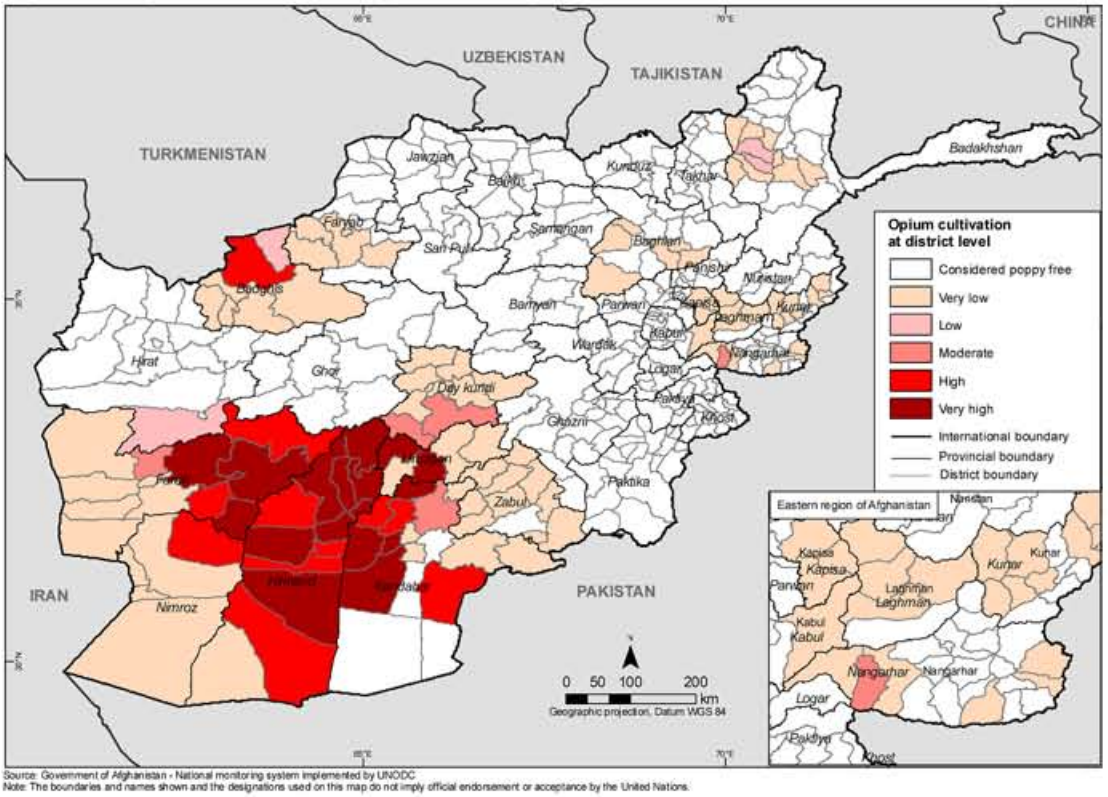
Afghanistan Opium cultivation in 2010 (at district level)



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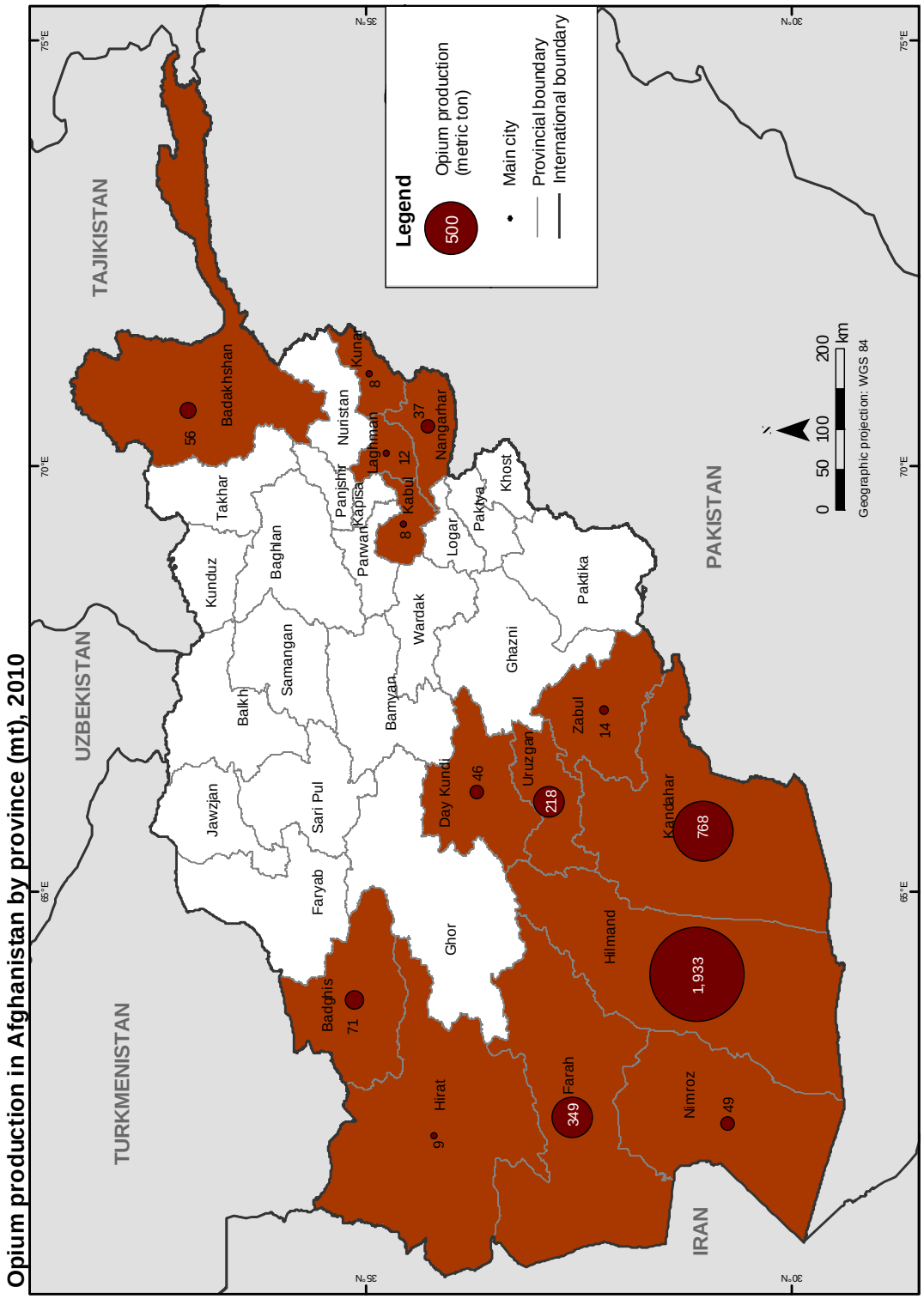
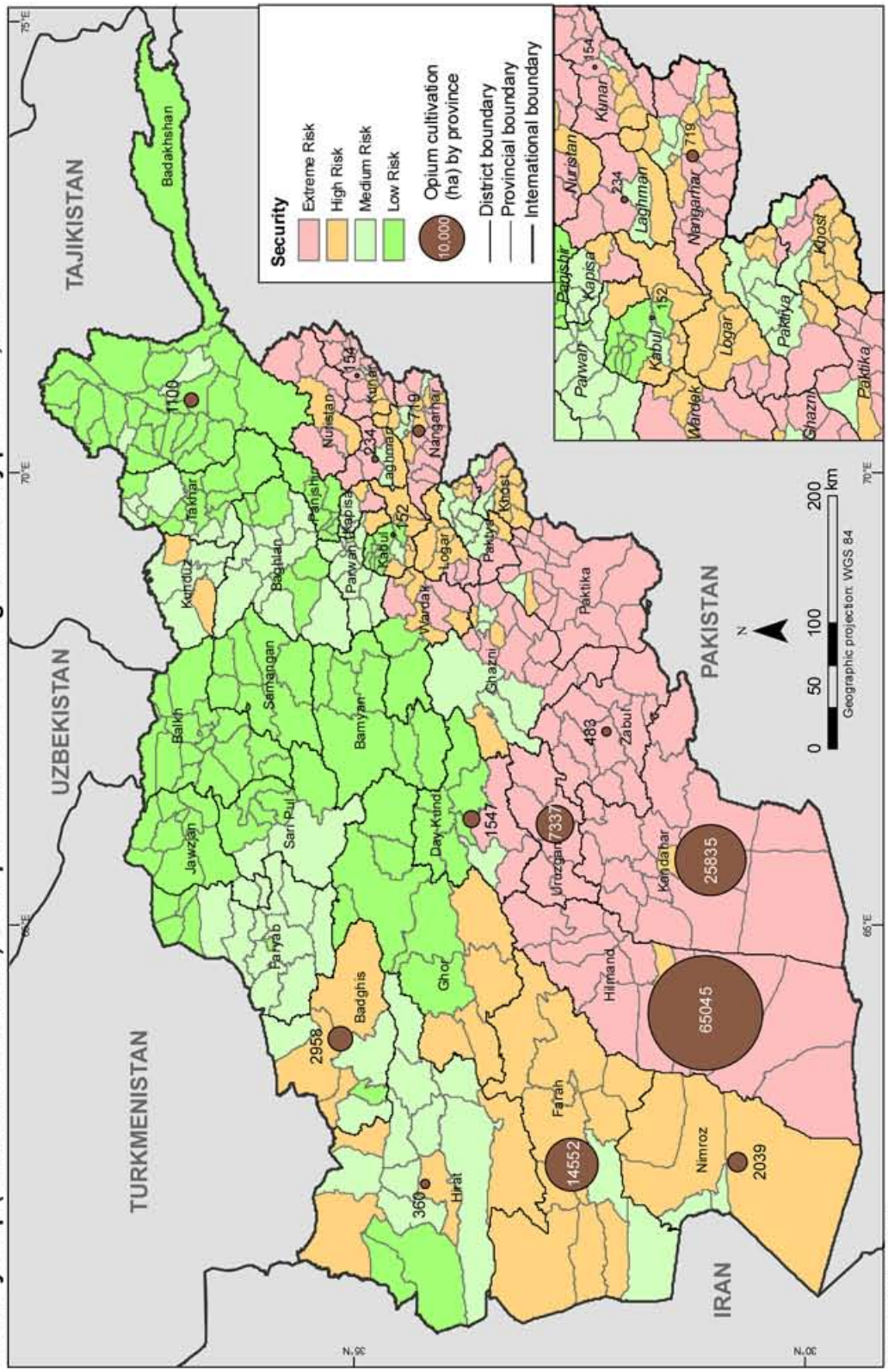
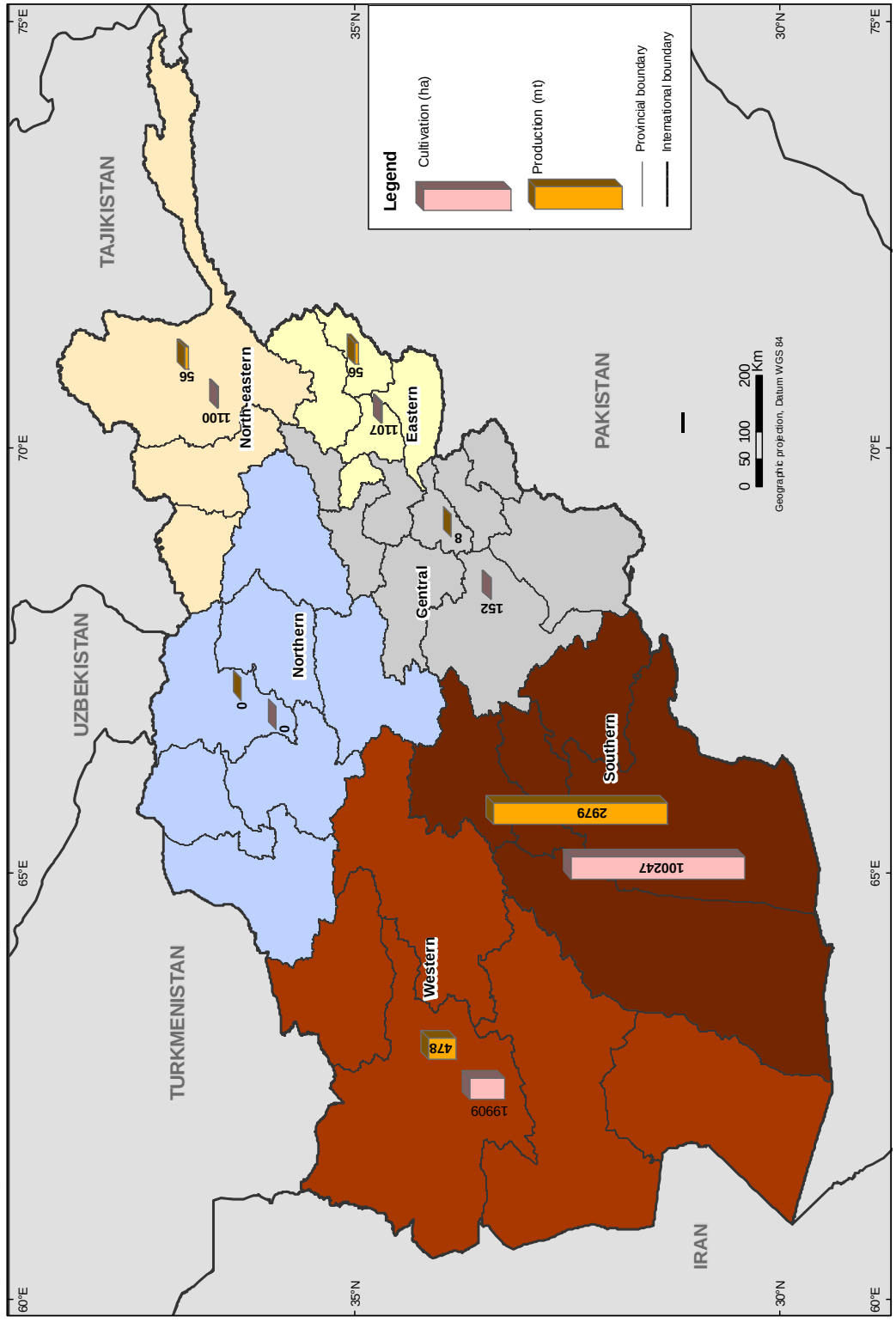

Opium production in Afghanistan by province (mt), 2010
Legend
Opium production (metric ton)
500
Main city
Provincial boundary
International boundary
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
PAKISTAN
IRAN
Badakhshan 56
Takhar
Kunduz
Baghlan
Jawzjan
Sari Pul
Faryab
Balkh
Samangan
Badghis 71
Ghor
Hirat 9
Farah 349
Nimroz 49
Hilmand 1,933
Kandahar 768
Zabul 14
Uruzgan 218
Day Kundi 46
Bamyan
Wardak
Ghazni
Paktika
Logar
Paktya
Khost
Panjshir
Parwan
Kapisa
Kabul 8
Laghman 12
Nangarhar 37
Nuristan
Kunar 8
0 50 100 200 km
Geographic projection: WGS 84
Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Security map (as at 30 March 2010) and opium cultivation in Afghanistan by province, 2010



Source security map: UNDSS
Source cultivation: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Regional opium cultivation and production in Afghanistan, 2010



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

1 INTRODUCTION

The *Afghanistan Opium Survey* is implemented annually by the United Nations Office on Drugs and Crime (UNODC) and, since 2003, in collaboration with the Afghan Government. The survey team collects and analyses information on the location and extent of opium cultivation, potential opium production and the socio-economic situation in rural areas. Since 2005, UNODC has been involved in the verification of opium eradication conducted by provincial governors and central forces. The results provide a detailed picture of the outcome of the current year's opium season and, together with data from previous years, enable the identification of medium-and long-term trends in the evolution of the illicit drug problem. This information is essential for planning, implementing and monitoring the impact of measures required for tackling a problem that has serious implications for Afghanistan and the international community.

The opium survey is implemented within the technical framework of the UNODC Illicit Crop Monitoring Programme (ICMP). The objective of ICMP is to assist the international community in monitoring the extent and evolution of illicit crops within the context of the Plan of Action adopted by the United Nations (the 53rd session of the Commission on Narcotic Drugs in March 2009). Under ICMP, monitoring activities currently supported by UNODC exist also in other countries affected by illicit crop cultivation, namely Myanmar and the Lao People's Democratic Republic in Asia, Bolivia, Colombia, Ecuador and Peru in Latin America, and Morocco in Africa.

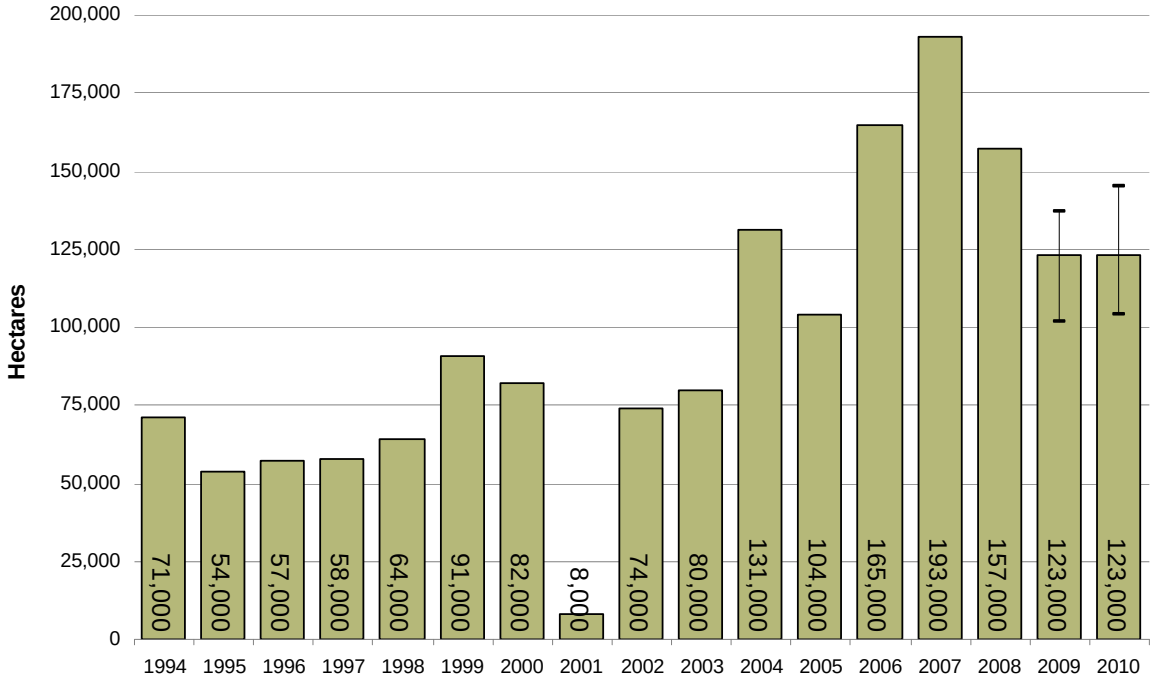
The *2010 Afghanistan Opium Survey* was implemented under project AFG/F98, "Monitoring of Opium Production in Afghanistan", and project GLO/U34, "Trends Monitoring and Analysis Programme Support (Illicit Crop Monitoring)", with financial contributions from the Governments of Germany, Norway, the United Kingdom, and the United States of America.

2 FINDINGS

2.1 Opium cultivation

The total opium poppy cultivation estimated for Afghanistan in 2010 remained unchanged from 2009 at 123,000 hectares[7]. Ninety eight per cent of the total cultivation took place in nine provinces in the Southern and Western regions[8], including the most insecure provinces in the country. This further substantiates the link between insecurity and opium cultivation observed since 2007. Hilmand still remains the dominant opium cultivating province (65,045 ha), followed by Kandahar (25,835 ha), Farah (14,552 ha), Uruzgan (7,337 ha), Badghis (2,958 ha), Day Kundi (1,547 ha) and Zabul (483 ha). In 2010, based on preliminary results from other countries, opium cultivation in Afghanistan represented about two thirds of global cultivation.

Figure 1: Opium cultivation in Afghanistan (ha), 1994-2010



Sources: UNODC and UNODC/MCN opium surveys 1994-2010. The high-low lines represent the upper and lower bounds of the 95% confidence interval.

Of the 34 provinces in the country, 20 remained poppy-free, as last year[9] . This compared to 18 provinces in 2008 and 13 in 2007. Kapisa (Eastern region), Baghlan and Faryab (both Northern region) provinces became poppy-free for the first time in 2009.

Although at national level the total number of hectares under poppy cultivation did not change, different trends were observed at sub-national level. In the Central region, cultivation increased by 15% while in the North-eastern region there was an alarming increase of 97%. In 2009, for the first time in almost a decade, all the provinces in the Northern region (Baghlan, Balkh, Bamyan, Faryab, Jawzjan, Samangan and Sari Pul provinces) were poppy-free and they remained poppy free in 2010. Most of these provinces, except Balkh, sustained moderate levels of opium

[7] This confirms the results of the Opium Winter Assessment Survey 2010 which in February anticipated a stable situation in opium cultivation (UNODC, Afghanistan Opium Winter Rapid Assessment Report, February 2010).

[8] Regions as designated by UNODC for analytical purposes. Please refer to Table 2 for a full list.

[9] A province is defined as poppy-free when it is estimated to have less then 100 ha of opium cultivation.

cultivation in the past. Balkh emerged as a major opium cultivating province in 2005 and 2006 (10,837 ha and 7,232 ha respectively), whereas the rest of the provinces contributed between 2,000 and 3,000 ha each. The decline in opium cultivation in the Northern region started with strict law enforcement and counter-narcotic initiatives. Nangarhar province became poppy-free for the first time in 2008. In 2009, however, 294 ha of opium poppy were detected, despite 226 ha being eradicated. In 2010, due to tough resistance of the AGE, proper eradication did not happen and cultivation increased to 719 ha (a 145% increase as compared to 2009). Nangarhar, traditionally a large opium growing province, was the only province that lost its poppy-free status in 2009. In the last six years the level of opium cultivation in Nangarhar province has been erratic. In 2004, cultivation was at 28,213 ha, the following year it dropped drastically to 1,093 ha and was confined to remote parts of the province. In 2006, it increased to 4,872 ha and in 2007 again increased to 18,739 ha before becoming poppy-free in 2008. Laghman and Kunar provinces of the Eastern region were virtually poppy-free with negligible amounts of cultivation (135 ha and 164 ha respectively) in 2009.

Table 1: Number of provinces by opium cultivation trends, 2006-2010

Opium cultivation trend	Number of provinces				
	2006	2007	2008	2009	2010
Increase	14	8	1	6	7
Decrease	2	11	11	7	7
Stable	12	2	4	1	0
Poppy-free	6	13	18	20	20

The regional divide of opium cultivation between the south, the west and the rest of the country continued to exist in 2010. Most opium cultivation is confined to the provinces of Hilmand, Kandahar, Uruzgan, Day Kundi, Badghis, Farah and Nimroz of the Southern and Western regions, which are dominated by insurgency and organized criminal networks. This mirrors the sharper polarization of the security situation between the lawless south and the relatively stable north of the country. This clearly highlights the strong link between opium cultivation and the lack of security.

Table 2: Regional distribution of opium cultivation, 2009-2010

Region	2009 (ha)	2010 (ha)	Change 2009-2010	2009 (ha) as % of total	2010 (ha) as % of total
Southern	103,014	100,247	-3%	84%	82%
Western	18,800	19,909	6%	15%	16%
North-eastern	557	1,100	97%	0.5%	1%
Eastern	593	1,107	87%	0.5%	1%
Central	132	152	15%	0.1%	0.1%
Northern	Poppy-free	Poppy-free	NA	NA	NA
Rounded Total	**123,000**	**123,000**	**0%**	**100%**	**100%**

The total opium production in 2010 is estimated to be 3,600 metric tons (mt), a 48% reduction compared to 2009, mainly due to the impact of a late-onset disease affecting the Southern region. 83% of the production (83%) took place in the five provinces where cultivation is concentrated. The other provinces contributed only 17% of total opium production in the country.

The gross income for farmers who cultivated opium is estimated at US$ 605 million in 2010. This is an increase from 2009, when farm-gate income for opium was estimated at US$ 438 million.

The high level of income from poppy was due to the very high price of opium observed in 2010 (US$ 169/kg).

Cultivation in the south decreased by 3%. However, the Southern region continued to account for 82% of total opium cultivated as in 2009. Due to security problems in the south and west since 2006, so-called anti-government elements (AGEs) have encouraged farmers to cultivate opium poppy and have threatened those who were reluctant to do so. The total area under opium cultivation in the Southern region in 2010 (100,247 ha) was very close to the total national opium cultivation in 2005 (104,000 ha). Eradication campaigns carried out by governors did not prevent opium cultivation in that region.

Table 3: Main opium cultivating provinces in Afghanistan, 2006-2010

Province	2006	2007	2008	2009	2010	Change 2009-2010	2010 (ha) as % of total	Cumulative %
Hilmand	69,324	102,770	103,590	69,833	65,045	-7%	53%	53%
Kandahar	12,619	16,615	14,623	19,811	25,835	+30%	21%	74%
Farah	7,694	14,865	15,010	12,405	14,552	+17%	12%	86%
Uruzgan	9,703	9,204	9,939	9,224	7,337	-20%	6%	92%
Badghis	3,205	4,219	587	5,411	2,958	-45%	2%	94%
Day Kundi	7,044	3,346	2,273	3,002	1,547	-48%	1%	96%
Nimroz	1,955	6,507	6,203	428	2,039	+376%	2%	97%
Rest of the country	53,428	35,455	5,028	2,982	3,202	+7%	3%	100%
Rounded Total	**165,000**	**193,000**	**157,000**	**123,000**	**123,000**	**0%**	**100%**	

Figure 2: Global opium cultivation (ha), 1996-2010

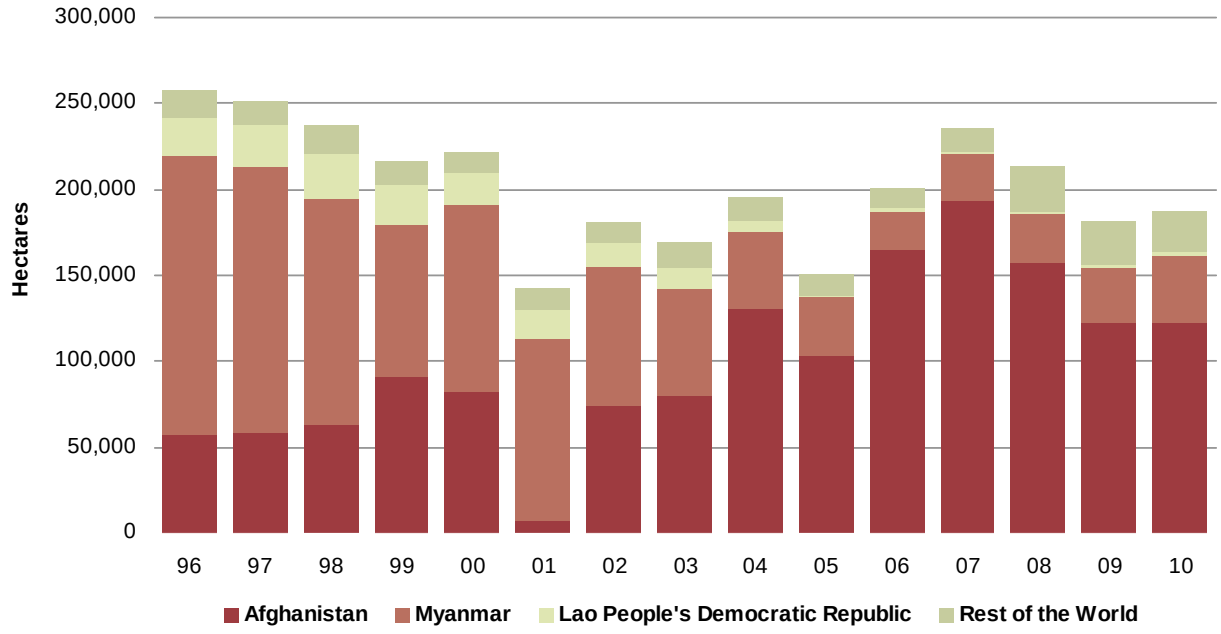


Table 4: Opium cultivation (2007-2010) and eradication (2009-2010) in Afghanistan

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Estimation method 2010	Eradication 2009 (ha)	Eradication 2010 (ha)
Kabul	500	310	132	152	15%	T	1.35	0.48
Khost	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Logar	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Paktya	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Panjshir	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Parwan	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Wardak	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Ghazni	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Paktika	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Central Region	**500**	**310**	**132**	**152**	**15%**		**1.35**	**0.48**
Kapisa	835	436	Poppy free	Poppy free	0%	T	31	1
Kunar	446	290	164	154	-6%	T	11	0
Laghman	561	425	135	234	73%	T	0	10
Nangarhar	18,739	Poppy free	294	719	145%	T	226	16
Nuristan	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Eastern Region	**20,581**	**1,151**	**593**	**1,107**	**87%**		**269**	**27**
Badakhshan	3,642	200	557	1,100	97%	T	420	302
Takhar	1,211	Poppy free	Poppy free	Poppy free	0%	V	0	12
Kunduz	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
N.-eastern Region	**4,853**	**200**	**557**	**1,100**	**97%**		**420**	**314**
Baghlan	671	475	Poppy free	Poppy free	0%	T	0	0
Balkh	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Bamyan	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Faryab	2,866	291	Poppy free	Poppy free	0%	T	261	0
Jawzjan	1,085	Poppy free	Poppy free	Poppy free	0%	V	0	0
Samangan	Poppy free	Poppy free	Poppy free	Poppy free	0%	V	0	0
Sari Pul	260	Poppy free	Poppy free	Poppy free	0%	T	0	0
Northern Region	**4,882**	**766**	**Poppy free**	**Poppy free**	**0%**		**261**	**0**
Hilmand	102,770	103,590	69,833	65,045	-7%	S	4,119	1,602
Kandahar	16,615	14,623	19,811	25,835	30%	S	69	0
Uruzgan	9,204	9,939	9,224	7,337	-20%	S	74	15
Zabul	1,611	2,335	1,144	483	-58%	S	0	0
Day Kundi	3,346	2,273	3,002	1,547	-48%	S	27	0
Southern Region	**133,546**	**132,760**	**103,014**	**100,247**	**-3%**		**4,289**	**1,617**
Badghis	4,219	587	5,411	2,958	-45%	S	0	0
Farah	14,865	15,010	12,405	14,552	17%	S	43	198
Ghor	1,503	Poppy free	Poppy free	Poppy free	0%	T	0	0
Hirat	1,525	266	556	360	-35%	T	67	159
Nimroz	6,507	6,203	428	2,039	376%	S	0	0
Western Region	**28,619**	**22,066**	**18,800**	**19,909**	**6%**		**110**	**357**
Total (rounded)	**193,000**	**157,000**	**123,000**	**123,000**	**0%**		**5,351**	**2,316**

Area estimation method: S=sample survey, T=target survey, V=village survey and field observation. Cf. Methodology chapter for detailed description of methods used.

A province is defined as poppy-free when it is estimated to have less then 100 ha of opium cultivation.

Due to administrative boundary changes, the 2009 estimates for Farah and Nimroz were calculated considering parts of Khash Rod district, the main opium cultivating district in Nimroz, as being part of Farah province. The 2008 figures include all of Khash Rod district in Nimroz province.

Southern region

(Hilmand, Kandahar, Uruzgan, Zabul, Day Kundi)

In 2010, opium cultivation in the Southern region decreased by 3% while opium production decreased by 51%. A total of 100,247 ha of opium poppy were cultivated in the Southern region, equivalent to 82% of the total cultivation in Afghanistan. A total of 2,979 metric tons of opium was produced, representing 83% of the entire 2010 production in Afghanistan.

Table 5: Opium cultivation and eradication in the Southern region (ha) (2006-2010)

PROVINCE	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Eradication in 2009 (ha)	Eradication in 2010 (ha)
Hilmand	69,324	102,770	103,590	69,833	65,045	-7%	4,119	1,602
Kandahar	12,619	16,615	14,623	19,811	25,835	+30%	69	0
Uruzgan	9,703	9,204	9,939	9,224	7,337	-20%	74	15
Zabul	3,210	1,611	2,335	1,144	483	-58%	0	0
Day Kundi	7,044	3,346	2,273	3,002	1,547	-48%	27	0
Southern Region	**101,900**	**133,546**	**132,760**	**103,014**	**100,247**	**-3%**	**4,289**	**1,617**

Table 6: Potential opium production in the Southern region (mt), 2009-2010

PROVINCE	Production 2009 (mt)	Production 2010 (mt)	Change 2009-2010 (mt)	Change 2009-2010 (%)
Hilmand	4,085	1,933	-2152	-53%
Kandahar	1,159	768	-391	-34%
Uruzgan	540	218	-322	-60%
Zabul	67	14	-53	-79%
Day Kundi	176	46	-130	-74%
Southern Region	**6,026**	**2,979**	**-3047**	**-51%**

Hilmand

Hilmand remains the single largest opium cultivating province with 65,045 ha (53% of the total cultivation in Afghanistan) despite a 7% decrease from 2009. This is the fifth consecutive year for a bumper cultivation of opium in the province. In 2009, opium cultivation in Hilmand was estimated at 69,833 ha, 7% more than in 2010. Between 2002 and 2008, cultivation in Hilmand province more than tripled. Hilmand accounted for 53% of the country's total opium cultivation in 2010, compared to 57% in 2009, 53% in 2007, 42% in 2006, 25% in 2005, 23% in 2004 and 19% in 2003.

Information gathered during field work indicates that levels of cultivation are higher in the districts of Nad Ali, Naher-i-Sarraj, Musa Qala, Garmser (Hazarjuft), Baghran. Only 2% of the estimated opium cultivation was eradicated in 2010.

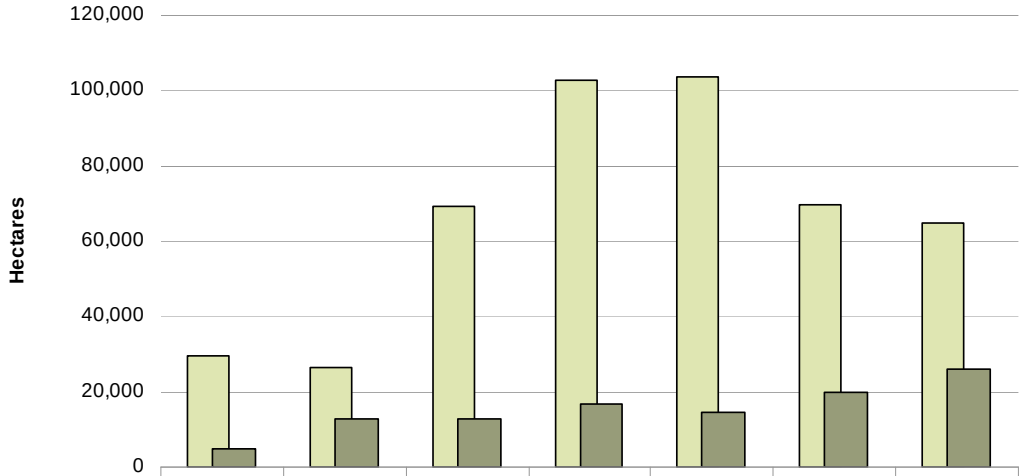
A total of 1,602 ha of Governor-led opium poppy eradication were verified by MCN/UNODC in 2010.

Kandahar

In Kandahar province, opium cultivation was 25,835 ha in 2010, an increase of 21% from 2009. The increase in opium cultivation started after 2004, when only 4,959 ha were cultivated. Since then, the area under opium poppy has increase more than five times. Significant increases happened in Panjwayee (91%) and Maiwand (52%). The main opium cultivation districts in 2010 were Panjwayee, Maiwand, and Zhire. Opium production decreased by 34%, reaching 768 mt, which is equivalent to 21% of the total 2010 production in Afghanistan.

No eradication was carried out in Kandahar in 2010.

Figure 3: Opium cultivation in Kandahar and Hilmand provinces (ha), 2004-2010



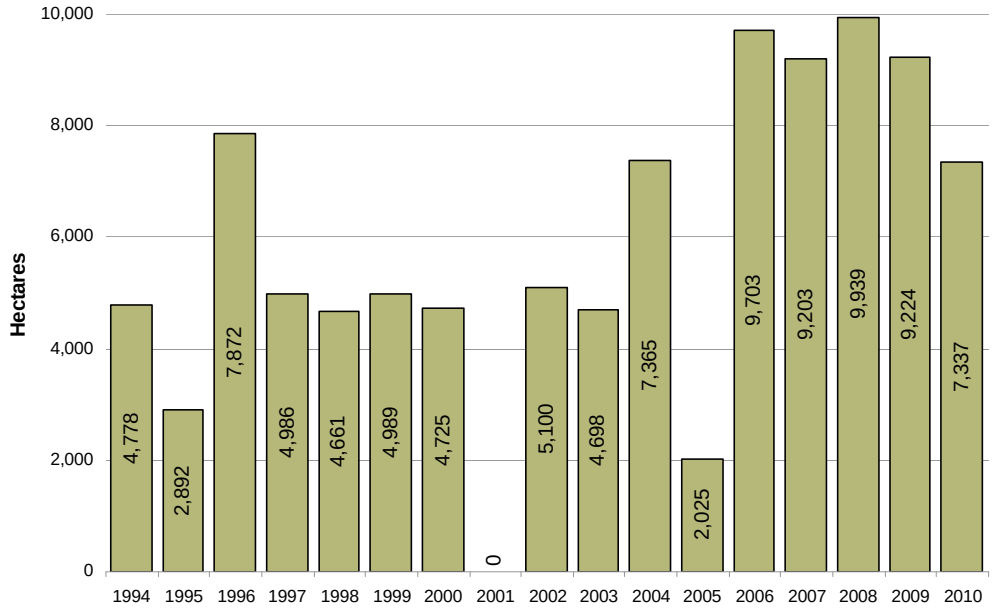
	2004	2005	2006	2007	2008	2009	2010
Hilmand	29,353	26,500	69,323	102,770	103,590	69,833	65,045
Kandahar	4,959	12,989	12,619	16,615	14,623	19,811	25,835

Uruzgan

Opium cultivation in Uruzgan province decreased by 20% in 2010 and accounted for 6% of the total Afghan opium cultivation.

Tirin Kot (Provincial center) and Shahidi Hassas were the top opium poppy cultivating districts in Uruzgan province. They are adjacent to Hilmand and Kandahar provinces. In Dehraud district there was a significant decrease in opium cultivation, down from 2,038 ha in 2009 to 145 ha in 2010. Cultivation in other districts was negligible. Only 15 ha of opium crops were eradicated in this province in 2010.

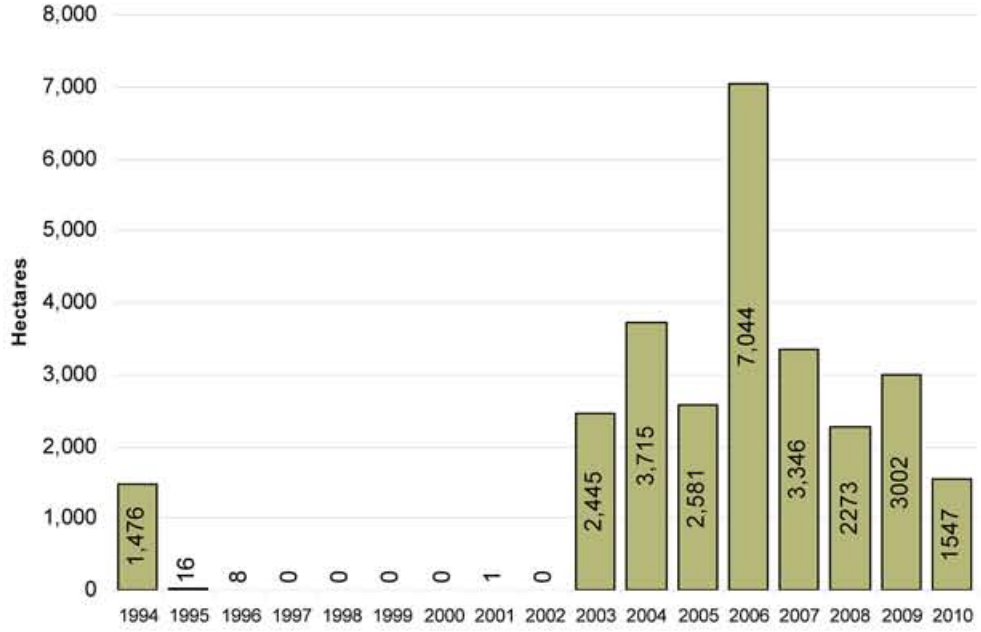
Figure 4: Opium cultivation in Uruzgan province (ha), 1994-2010



Day Kundi

2010 opium cultivation decreased significantly (48%) to 1,547 ha compared to 3,002 ha in 2009 and 3,346 ha in 2007. Governor-led eradication forces did not operate in this province. Security was very poor in most parts of southern Day Kundi.

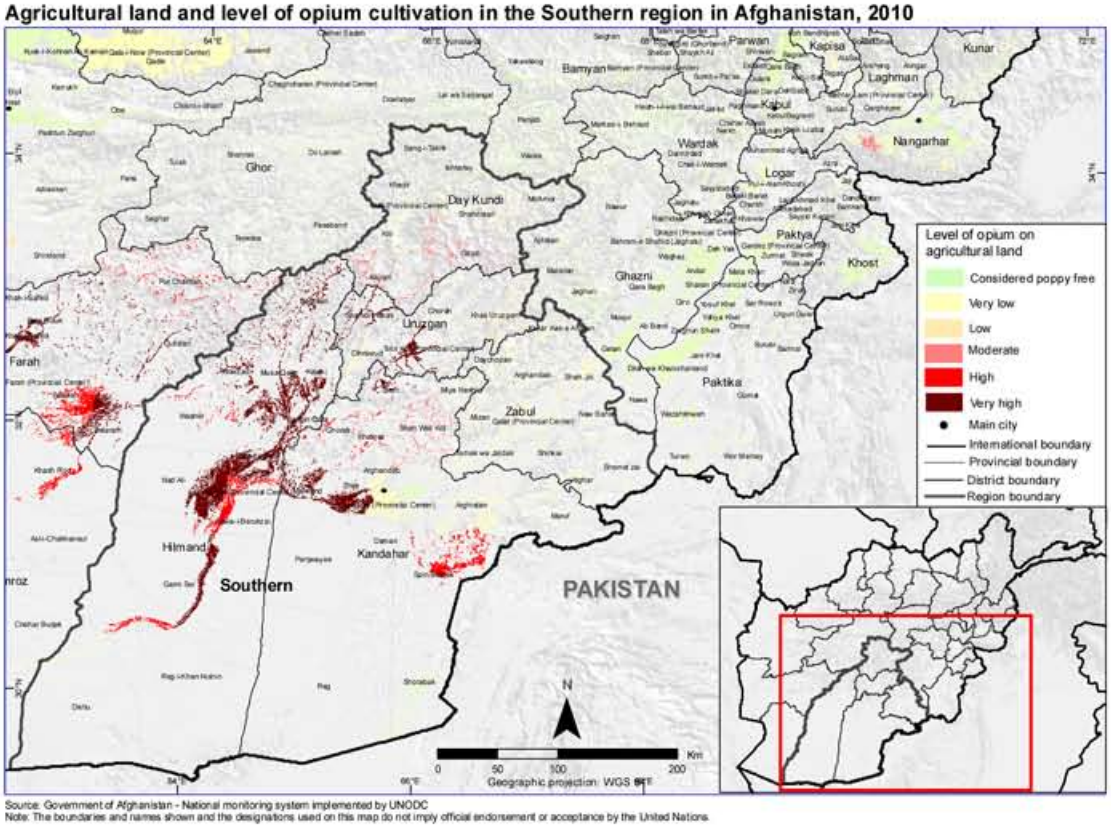
Figure 5: Opium cultivation in Day Kundi province, 1994-2100



Zabul

Opium cultivation in Zabul decreased significantly (58%) in 2010, down from 1,144 ha in 2009 to 483 ha. Prior to 2007, cultivation in this province ranged between 2,000 and 3,000 ha.

Agricultural land and level of opium cultivation in the Southern region in Afghanistan, 2010



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Eastern region

(Kapisa, Kunar, Laghman, Nangarhar, Nuristan)

While accounting for a very small proportion of opium cultivation (1% of the total area cultivated in Afghanistan), the Eastern region experienced a steep increase in 2010 (87%). A total of 1,107 ha of opium poppy were cultivated in 2010 compared to 593 ha in 2009, which accounted for 1% of the total opium cultivation that year. Opium production, increased in 2010 by 163%, from 21 mt in 2009 to 56 mt in 2010.

A total of 27 ha of Governor-led opium poppy eradication were verified by MCN/UNODC in 2010.

Table 7: Opium cultivation and eradication in the Eastern region (ha), 2006-2010

PROVINCE	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Eradication in 2009 (ha)	Eradication in 2010 (ha)
Kapisa	282	835	436	Poppy-free	Poppy-free	NA	31	1
Kunar	932	446	290	164	154	-6%	11	0
Laghman	710	561	425	135	234	+73%	0	10
Nangarhar	4,872	18,739	Poppy-free	294	719	+145%	226	16
Nuristan	1,516	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Eastern Region	**8,312**	**20,581**	**1,151**	**593**	**1,107**	**+87%**	**269**	**27**

Table 8: Opium production in the Eastern region (mt), 2009-2010

PROVINCE	Production 2009 (mt)	Production 2010 (mt)	Change 2009-2010 (mt)	Change 2009-2010 (%)
Kapisa	Poppy-free	Poppy-free	NA	NA
Kunar	6	8	2	+32%
Laghman	5	12	7	+144%
Nangarhar	11	37	26	+245%
Nuristan	Poppy-free	Poppy-free	NA	NA
Eastern Region	**21**	**56**	**35**	**163%**

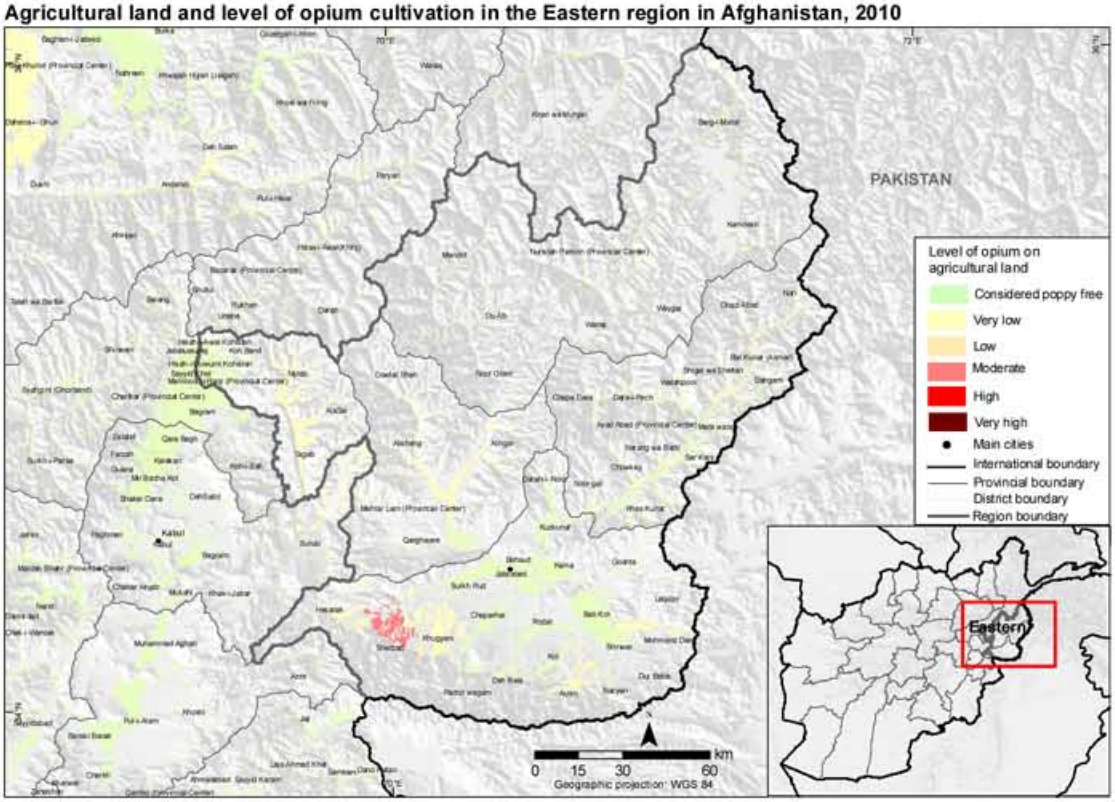
Nangarhar

Traditionally, Nangarhar was a large poppy-growing province, and in 2007, it was estimated to have 18,739 ha of opium cultivation. In 2008, Nangarhar province became poppy-free for the first time. In 2009, however, 294 ha of opium poppy were detected, despite 226 ha being eradicated. In 2010 security continued to deteriorate and opium cultivation increased by 145%, from 294 ha in 2009 to 719 ha in 2010. Due to tough resistance of the AGE, Governor-led eradication could not be fully implemented in Nangarhar.

In the last six years, the level of opium cultivation in Nangarhar has been erratic. In 2004, cultivation was at 28,213 ha, the following year it dropped drastically to 1,093 ha and was confined to remote parts of the province. In 2006, it increased to 4,872 ha, increasing again in 2007 to 18,739 ha, before becoming poppy-free in 2008.

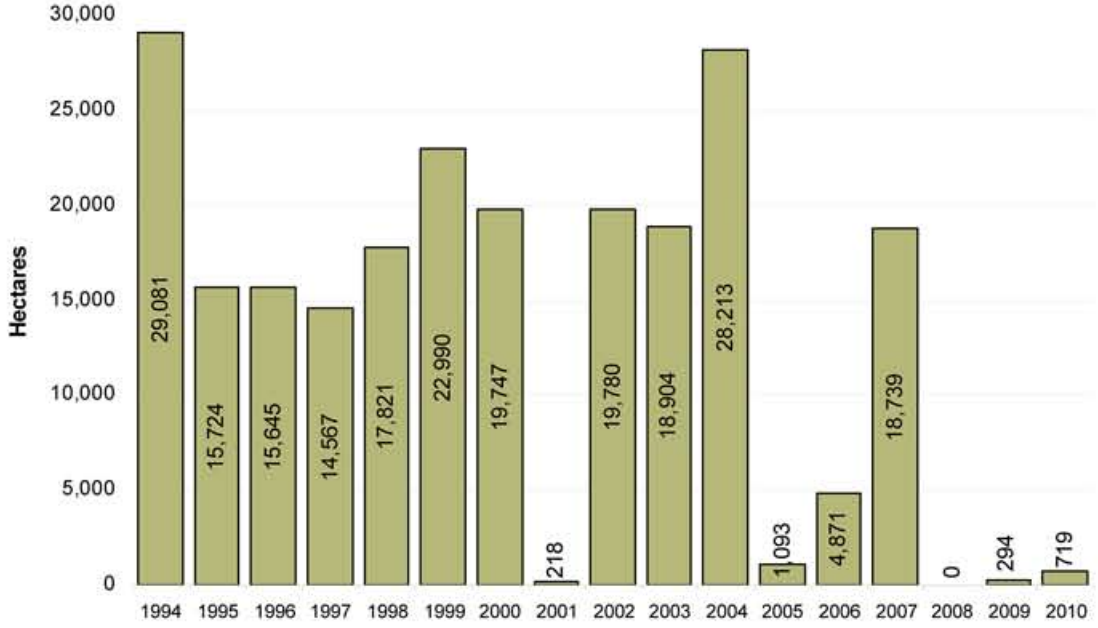
In 2010 only 16 ha of opium cultivation were eradicated by Governor-led eradication forces since eradication teams were strongly resisted by the AGE.

Agricultural land and level of opium cultivation in the Eastern region in Afghanistan, 2010



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Figure 6: Opium cultivation in Nangarhar province (ha), 1994-2010

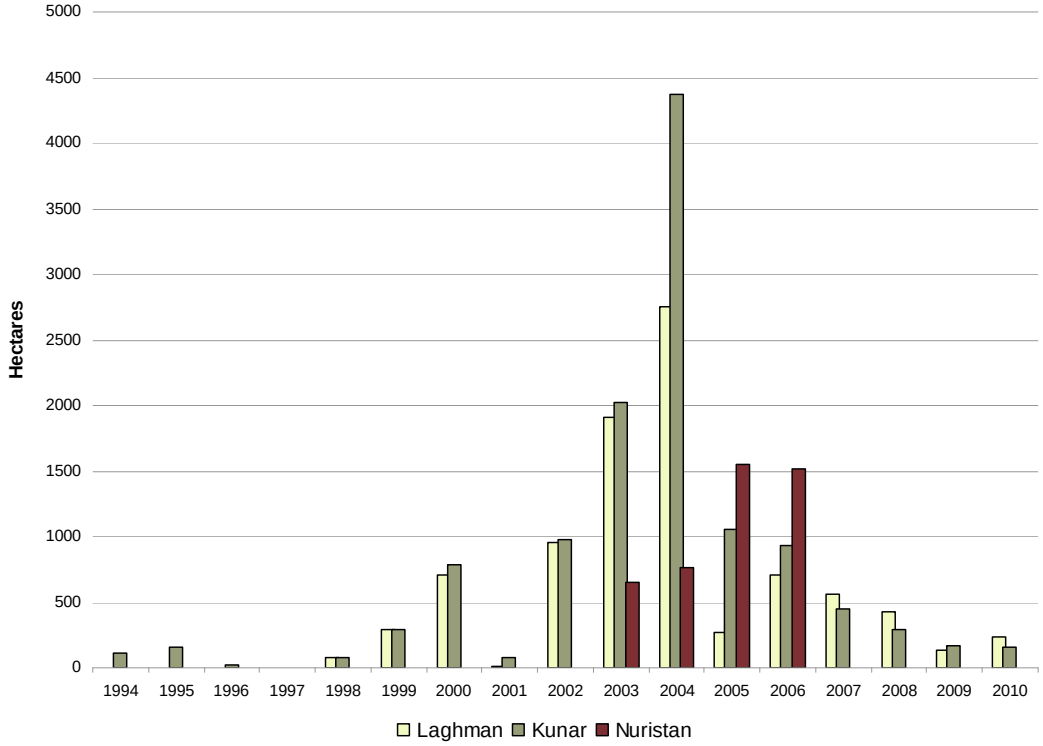


Laghman, Kunar, Kapisa and Nuristan

In 2010, Laghman and Kunar provinces of the Eastern region were close to gaining poppy-free status having only small amounts of cultivation (154 ha and 234 ha respectively). No Governor-led eradication took place in Kunar province.

Kapisa province remained poppy-free for the second year and Nuristan also maintained the poppy-free status achieved in 2007. Only 1 ha of opium cultivation was eradicated by Governor-led eradication forces as verified by MCN/UNODC in Kapisa province.

Figure 7: Opium cultivation in Lagman, Kunar and Nuristan provinces (ha), 1994-2010



North-eastern region

(Badakhshan, Kunduz and Takhar)

Opium cultivation in the North-eastern region reached 1,100 ha in 2010, an increase of 97% from the 593 ha in 2009. This increase happened only in Badakhshan province since the two other provinces in the region - Takhar and Kunduz - are poppy-free.

Opium production also increased by 193% to 56 mt in 2010 compared to 19 mt in 2009.

A total of 314 ha of Governor-led eradication of opium poppy were verified by MCN/UNODC in 2010.

Table 9: Opium cultivation and eradication in the North-eastern region (ha), 2006-2010

PROVINCE	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Eradication in 2009 (ha)	Eradication in 2010 (ha)
Badakhshan	13,056	3,642	200	557	1,100	+97%	420	302
Takhar	2,178	1,211	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0	12
Kunduz	102	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0	0
N.-eastern Region	**15,336**	**4,853**	**200**	**557**	**1,100**	**+97%**	**420**	**314**

Table 10: Opium production in the North-eastern region (mt), 2009-2010

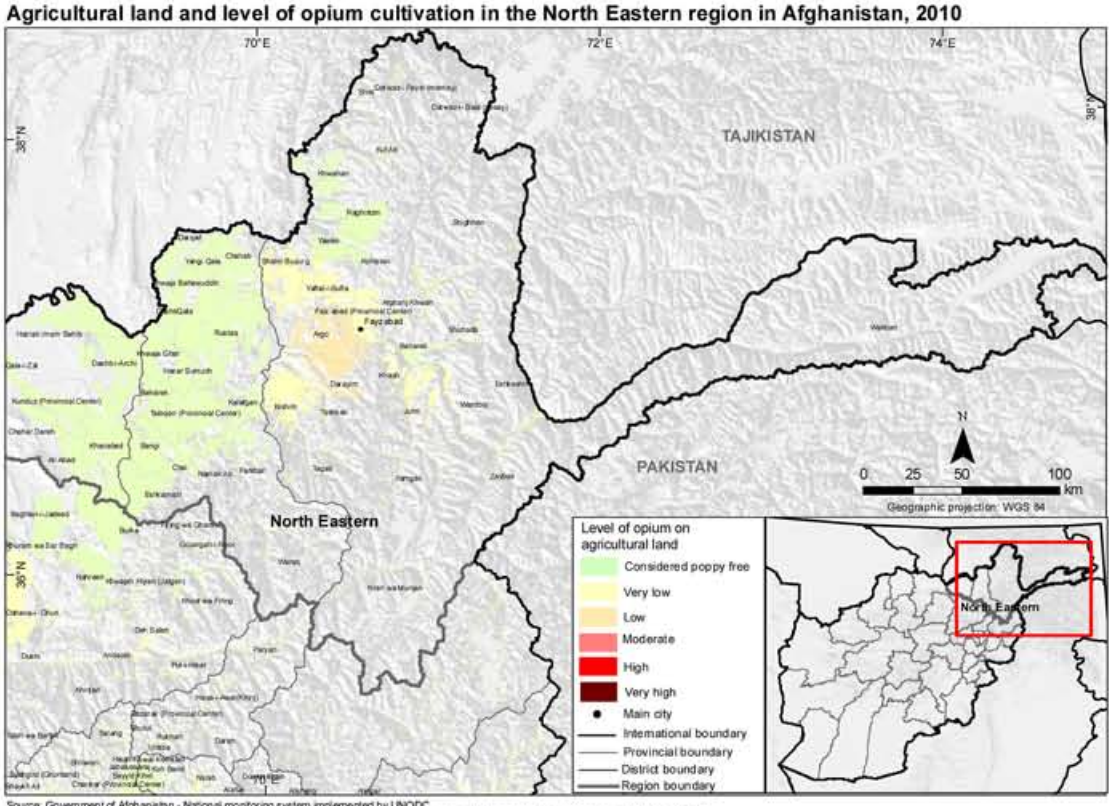
PROVINCE	Production 2009 (mt)	Production 2010 (mt)	Change 2009-2010 (mt)	Change 2009-2010 (%)
Badakhshan	19	56	37	+193%
Takhar	Poppy-free	Poppy-free	NA	NA
Kunduz	Poppy-free	Poppy-free	NA	NA
North-eastern Region	**19**	**56**	**37**	**193%**

Badakhshan

Opium cultivation in Badakhshan increased by 97% in 2010, to 1,100 ha from 557 ha in 2009. In 2008, cultivation was 200 ha and in 2007 it was 3,642 ha. Cultivation was confined mostly to rain-fed areas which are cultivated in spring. A total of 302 ha of opium cultivation were eradicated by Governor-led eradication forces as verified by MCN/UNODC in Badakhshan province.

Opium production also increased by 193% to 56 mt in 2010 compared to 19 mt in 2009.

Agricultural land and level of opium cultivation in the North Eastern region in Afghanistan, 2010



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Figure 8: Opium cultivation in Badakhshan province (ha), 1994-2010

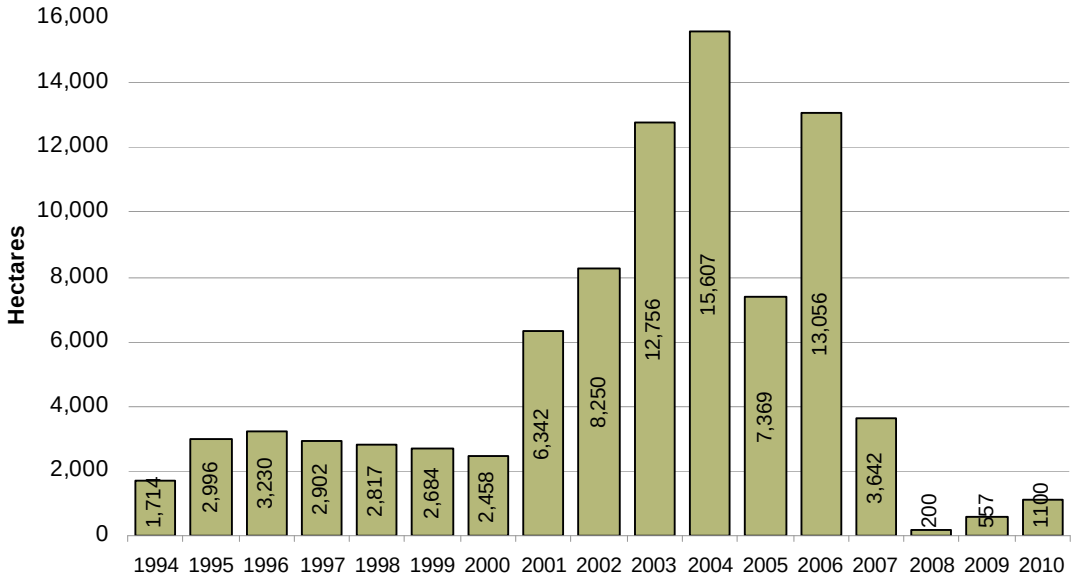
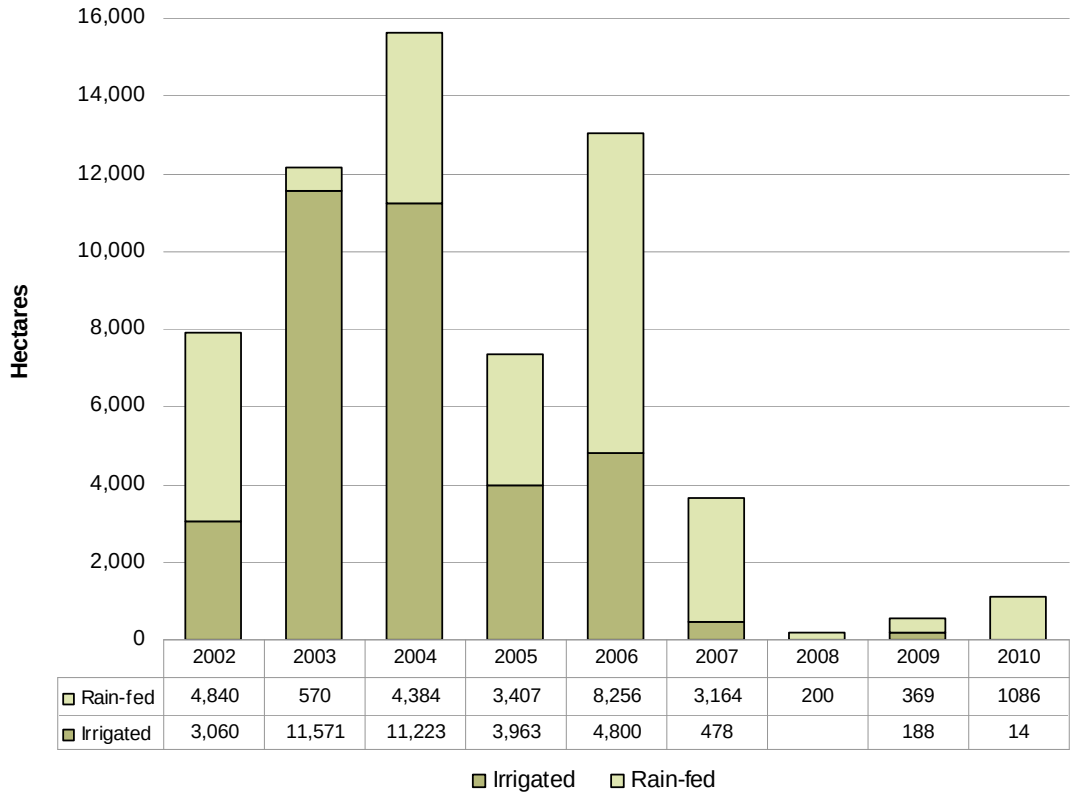


Figure 9: Distribution of irrigated and rain-fed opium cultivation in Badakhshan (ha), 2002-2010



	2002	2003	2004	2005	2006	2007	2008	2009	2010
Rain-fed	4,840	570	4,384	3,407	8,256	3,164	200	369	1086
Irrigated	3,060	11,571	11,223	3,963	4,800	478		188	14

Takhar

Takhar province was poppy-free in 2010, 2009 and 2008. In 2006 and 2007, opium cultivation in Takhar was 2,178 ha and 1,211 ha, respectively.

Kunduz

Kunduz was poppy-free in 2009 and 2008 and remained so in 2010. An insignificant amount of cultivation was observed in this province during recent years. However, the province maintained the cultivation under 100 ha which is the threshold for obtaining the poppy free status. The province is well known for growing a wide range of crops, from vegetables and fruits to cotton.

Northern region

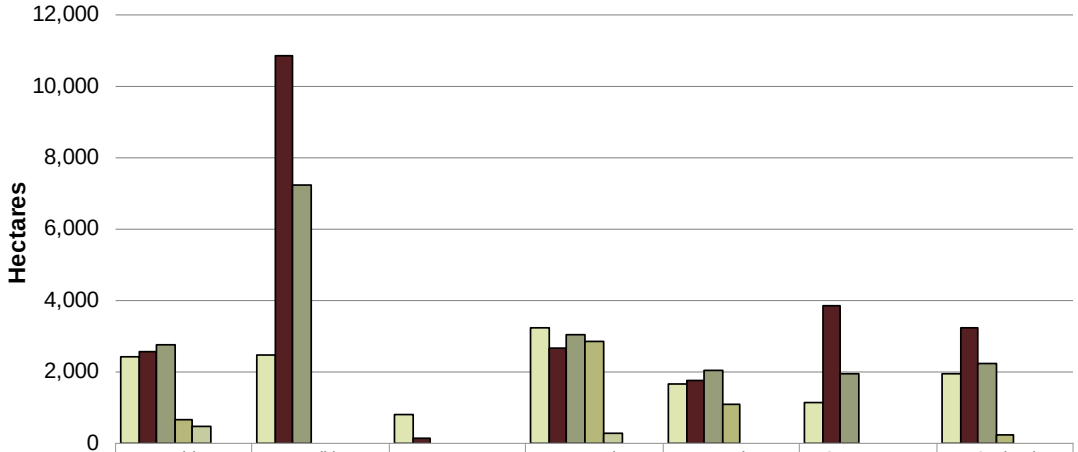
(Baghlan, Balkh, Bamyan, Faryab, Jawzjan, Samangan, Sari Pul)

All provinces of the Northern region remained poppy-free for the second year. Most of these provinces sustained moderate levels of opium cultivation in the past except Balkh. This province emerged as a major opium cultivating province in 2005 and 2006 (10,837 ha and 7,232 ha respectively), whereas the rest of the provinces contributed in the range of 2,000 to 3,000 ha each. This decline in opium cultivation in the Northern region started with strict law enforcement and counter-narcotic initiatives. In 2008, poppy cultivation in these provinces was already negligible and Balkh has remained poppy-free since 2007. In 2007, three provinces (Balkh, Bamyan and Samangan) became poppy-free. In 2008, Sari Pul province also became poppy-free.

Table 11: Opium cultivation and eradication in the Northern region (ha), 2006-2010

PROVINCE	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Eradication in 2009 (ha)	Eradication in 2010 (ha)
Baghlan	2,742	671	475	Poppy-free	Poppy-free	NA	0	0
Balkh	7,232	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Bamyan	17	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Faryab	3,040	2,866	291	Poppy-free	Poppy-free	NA	261	0
Jawzjan	2,024	1,085	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Samangan	1,960	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Sari Pul	2,252	260	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Northern Region	**19,267**	**4,882**	**766**	**Poppy-free**	**Poppy-free**	**NA**	**261**	**0**

Figure 10: Opium cultivation in the Northern region (ha), 2004-2010



	Baghlan	Balkh	Bamyan	Faryab	Jawzjan	Samangan	Sari Pul
2004	2,444	2,495	803	3,249	1,673	1,151	1,974
2005	2,563	10,837	126	2,665	1,748	3,874	3,227
2006	2,742	7,232	17	3,040	2,024	1,960	2,252
2007	671	poppy-free	poppy-free	2,866	1,085	poppy-free	260
2008	475	poppy-free	poppy-free	291	poppy-free	poppy-free	poppy-free
2009	poppy-free	poppy-free	poppy-free	poppy-free	poppy-free	poppy-free	poppy-free
2010	poppy-free	poppy-free	poppy-free	poppy-free	poppy-free	poppy-free	poppy-free

Balkh

Balkh province remained poppy-free for the fourth year in a row. Opium cultivation was introduced in the province in 1996 (1,065 ha), but Balkh was not a major producer of opium until 2004. A high level of cultivation (10,837 ha) was recorded in 2005 and again in 2006 (7,232 ha).

Faryab

Faryab province remained poppy-free for the second consecutive year. There was 291 ha of opium cultivation in Faryab in 2008 and 2,866 ha in 2007.

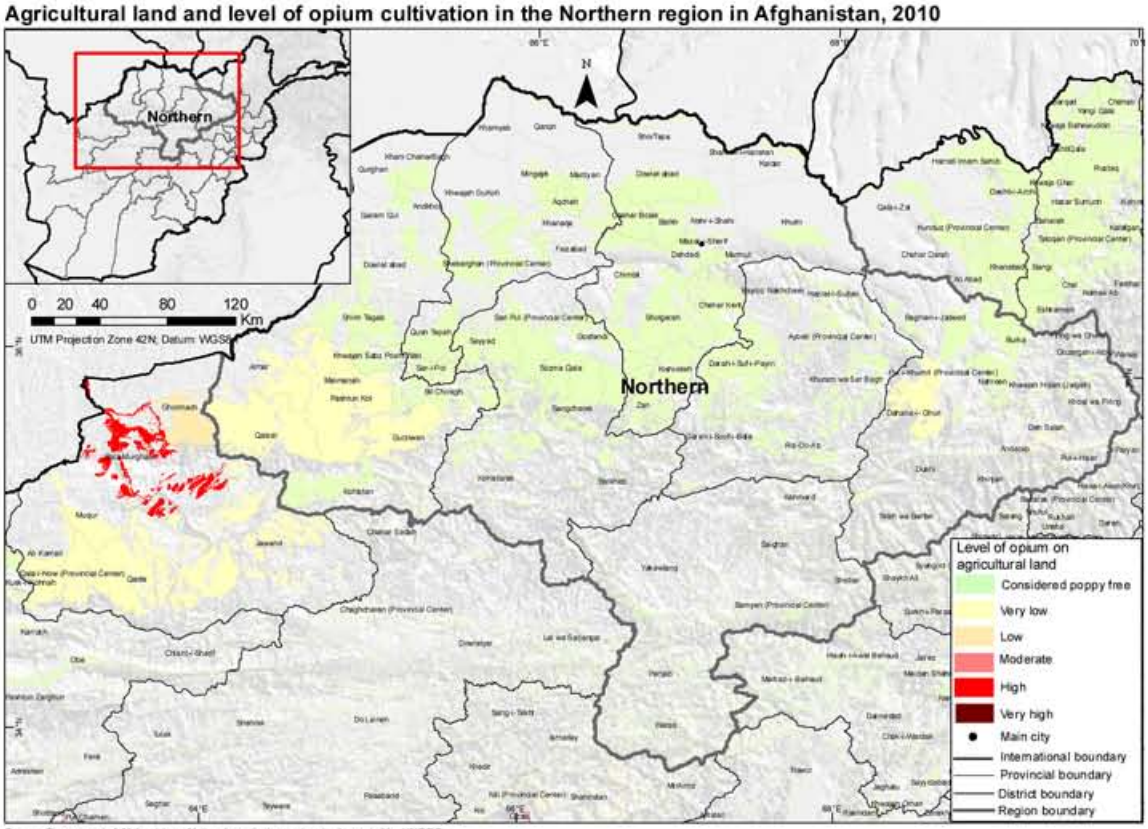
Samangan, Bamyan and Sari Pul

Samangan and Bamyan have been poppy-free in 2007, 2008, 2009 and 2010. Sari Pul was poppy-free in 2008, 2009 and 2010. In the past, cultivation in Bamyan was negligible. Opium cultivation in Samangan province ranged between 1,000 and 4,000 ha from 2004 to 2006.

Jawzjan and Baghlan

Jawzjan province was found to be poppy-free in 2008, 2009 and 2010. Baghlan became poppy-free in 2009 for the first time and remained poppy-free in 2010, compared to 2008 when there was 475 ha of cultivation concentrated in Andarab district only. Cultivation in Baghlan province was at lower levels since 2007. Cultivation in both provinces ranged between 1,500 and 3,000 ha from 2004 to 2006.

Agricultural land and level of opium cultivation in the Northern region in Afghanistan, 2010



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Central region

(Ghazni, Kabul, Khost, Logar, Paktika, Paktya, Parwan, Panjshir Wardak)

Opium cultivation in the Central region increased by 15% in 2010. The total area cultivated remained negligible (152 ha) and was limited to the Uzbeen valley of Surobi district in Kabul province. All other provinces aside from Kabul were poppy-free in 2008,2009 and 2010.

Table 12: Opium cultivation and eradication in the Central region (ha), 2006-2010

PROVINCE	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Eradication in 2009 (ha)	Eradication in 2010 (ha)
Kabul	80	500	310	132	152	+15%	1.35	0.48
Khost	133	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Logar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Paktya	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Panjshir	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Parwan	124	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Wardak	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Ghazni	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Paktika	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Central Region	**337**	**500**	**310**	**132**	**152**	**+15%**	**1.35**	**0.48**

Table 13: Opium production in the Central region (mt), 2009-2010

PROVINCE	Production 2009 (mt)	Production 2010 (mt)	Change 2009-2010 (mt)	Change 2009-2010 (%)
Kabul	7	8	0.4	+5%
Khost	Poppy-free	Poppy-free	NA	NA
Logar	Poppy-free	Poppy-free	NA	NA
Paktya	Poppy-free	Poppy-free	NA	NA
Panjshir	Poppy-free	Poppy-free	NA	NA
Parwan	Poppy-free	Poppy-free	NA	NA
Wardak	Poppy-free	Poppy-free	NA	NA
Ghazni	Poppy-free	Poppy-free	NA	NA
Paktika	Poppy-free	Poppy-free	NA	NA
Central Region	**7**	**8**	**0.4**	**5%**

Western region

(Farah, Ghor, Hirat, Nimroz, Badghis)

Opium cultivation in the Western region increased to 19,909 ha in 2010 from 18,800 ha in 2009, an increase of 6%. Only 357 ha of opium poppy eradication took place in 2010 due to unfavorable security conditions in Farah province. Due to administrative boundary changes, the 2009 and later estimates for Farah and Nimroz were calculated with parts of Khash Rod district, the main opium cultivating district in Nimroz, included as part of Farah province. 2008 figures and earlier include all of Khash Rod district in Nimroz province.

The Western region consistently shows very high opium cultivation. Insecurity continues to be a major problem as it compromises the rule of law from the legitimate Government and it limits counter-narcotic interventions.

Opium production in this region decreased by 42% from 825 mt in 2009 to 478 mt in 2010.

Table 14: Opium cultivation and eradication in the Western region (ha), 2006-2010

PROVINCE	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Change 2009-2010 (%)	Eradication in 2009 (ha)	Eradication in 2010 (ha)
Badghis	3,205	4,219	587	5,411	2,958	-45%	0	0
Farah	7,694	14,865	15,010	12,405	14,552	+17%	43	198
Ghor	4,679	1,503	Poppy free	Poppy free	Poppy free	NA	0	0
Hirat	2,287	1,525	266	556	360	-35%	67	159
Nimroz	1,955	6,507	6,203	428	2,039	+376%	0	0
Western Region	**19,820**	**28,619**	**22,066**	**18,800**	**19,909**	**+6%**	**110**	**357**

Table 15: Opium production in the Western region (mt), 2009-2010

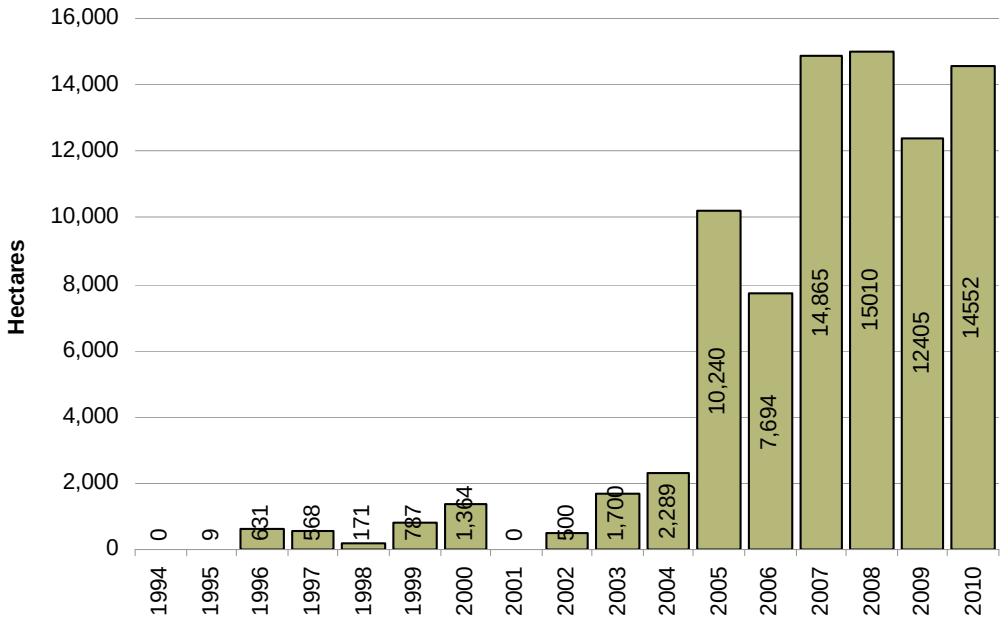
PROVINCE	Production 2009 (mt)	Production 2010 (mt)	Change 2009-2010 (mt)	Change 2009-2010 (%)
Badghis	238	71	-167	-70%
Farah	545	349	-195	-36%
Ghor	Poppy-free	Poppy-free	NA	NA
Hirat	24	9	-16	-65%
Nimroz	19	49	30	+160%
Western Region	**825**	**478**	**-348**	**-42%**

** Due to administrative boundary changes, the 2009 and 2010 estimates for Farah and Nimroz were calculated considering parts of Khash Rod district, the main opium cultivating district in Nimroz, as being part of Farah province.*

Farah

Opium cultivation in Farah province rose to 14,552 ha in 2010 from 12,405 in 2009, an increase of 17%.

Figure 11: Opium cultivation in Farah province (ha), 1994-2010



Due to administrative boundary changes, the 2009 and 2010 estimates for Farah and Nimroz were calculated considering parts of Khash Rod district, the main opium cultivating district in Nimroz, as being part of Farah province. The 2008 figures include all of Khash Rod district in Nimroz province.

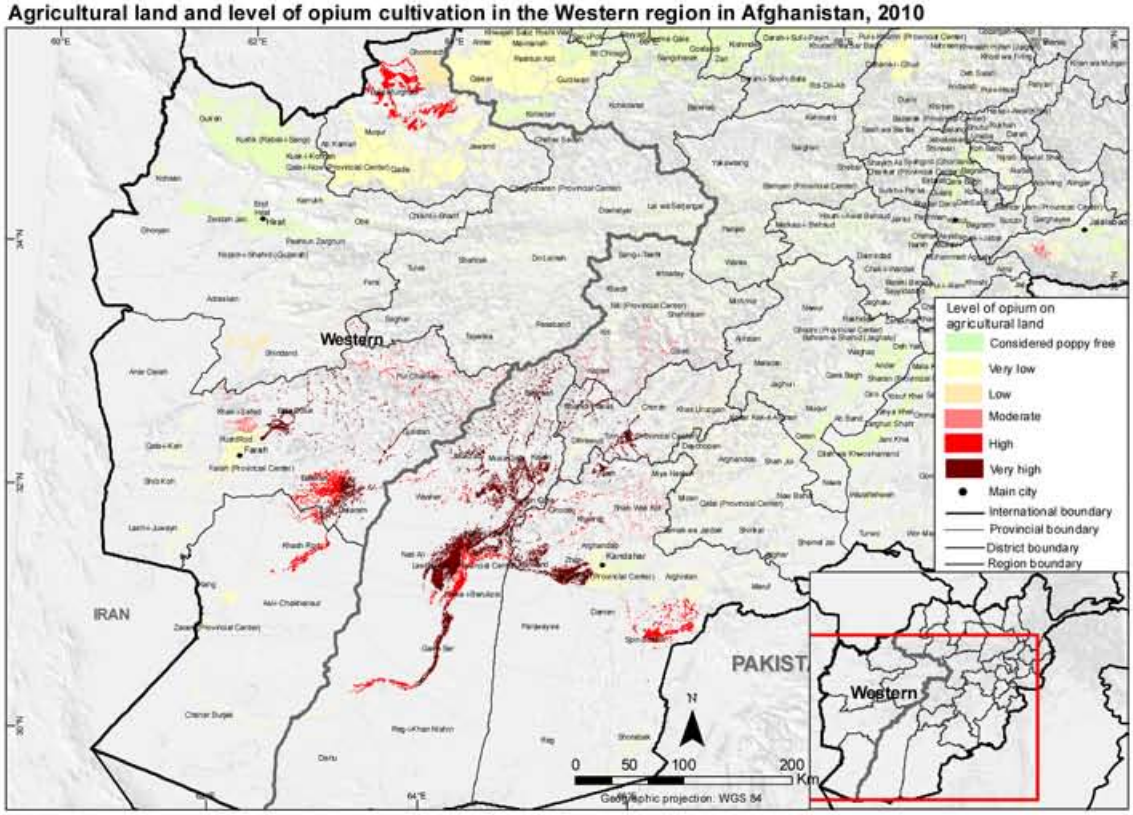
Nimroz

Opium poppy cultivation in Nimroz province in the Western region increased to 2,039 ha in 2010 from 428 ha in 2009, a steep 376% rise.

Hirat and Ghor

Opium cultivation decreased in Hirat province to 360 ha in 2010 from 556 ha in 2009, a decrease of 35%. The main opium cultivation district in Hirat is Shindand district. Ghor remained poppy-free in 2010.

Agricultural land and level of opium cultivation in the Western region in Afghanistan, 2010



Source:MCN - UNODC Afghanistan Opium Survey 2008
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Badghis

Opium poppy cultivation in Badghis fell to 2,958 ha in 2010 from 5,411 ha in 2009, a significant 45% decline. This is noteworthy given that opium cultivation level in Badghis province has been rising steadily since 2004. In 2008, cultivation was expected to be high, but the total failure of rain-fed crops resulted in a drop in opium cultivation. In 2009, good rainfall resulted in extensive cultivation in rain-fed areas of this province, enabling farmers to grow more poppy. This contributed to a large increase in opium cultivation from 587 ha in 2008 to 5,411 ha in 2009. Most cultivation took place in areas difficult to access. With the exception of the drought year 2008 and the year 2010, Badghis has experienced a continuous increase in opium cultivation since 2004.

2.2 Eradication

In 2010, eradication of opium fields totalled 2,316 ha. Only Governor-led eradication was implemented. There was no PEF eradication in 2010.

This year, MCN/UNODC field surveyors verified 6,876 poppy fields in 402 villages of 11 provinces. Quality control using high resolution satellite image was carried out to authenticate the figures reported by the surveyors from the field, particularly in Badakhshan, Farah, Hilmand and Hirat provinces.

In 2009, MCN/UNODC verifiers visited 412 villages (6,262 poppy fields) in 12 provinces where eradication had been carried out by Governor-led eradication teams. In 2009, the total verified eradication area led by Governors was 2,687 ha.

Table 16: GLE eradication figures (by province), 2010

Province	Eradication (ha) verified	No. of fields eradication reported	No. of villages eradication reported
Badakhshan	302	1,760	103
Farah	198	431	35
Hilmand	1,602	3,573	178
Hirat	159	741	42
Kabul	0.48	9	1
Kapisa	1	28	11
Laghman	10	27	4
Nangarhar	16	45	5
Nimroz	0.43	14	2
Takhar	12	51	7
Uruzgan	15	197	14
Grand Total	**2,316**	**6,876**	**402**

Figure 12: Percentage of total opium poppy eradication by province, 2010

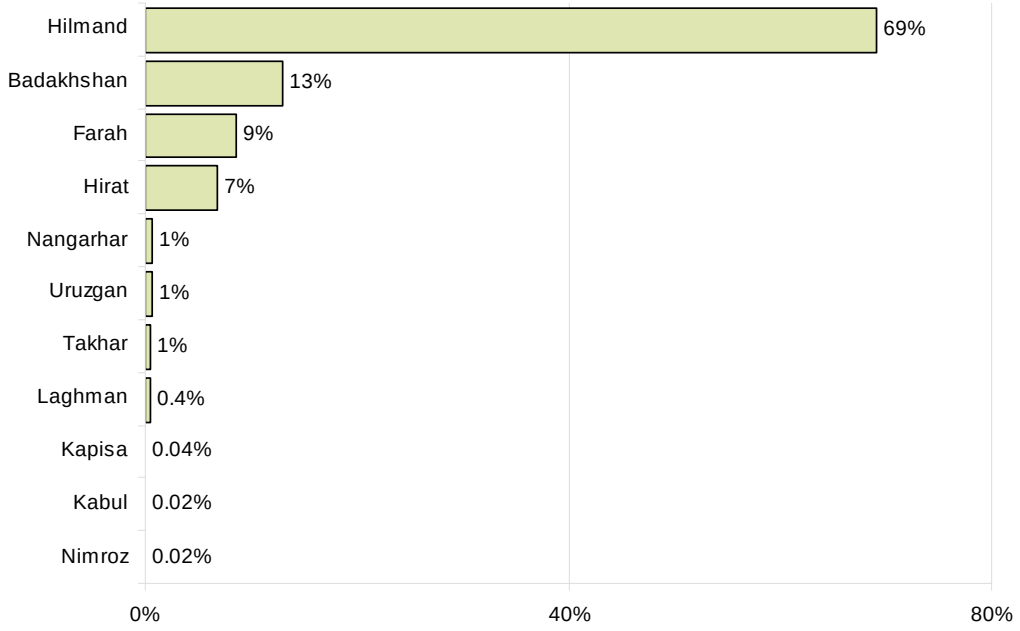
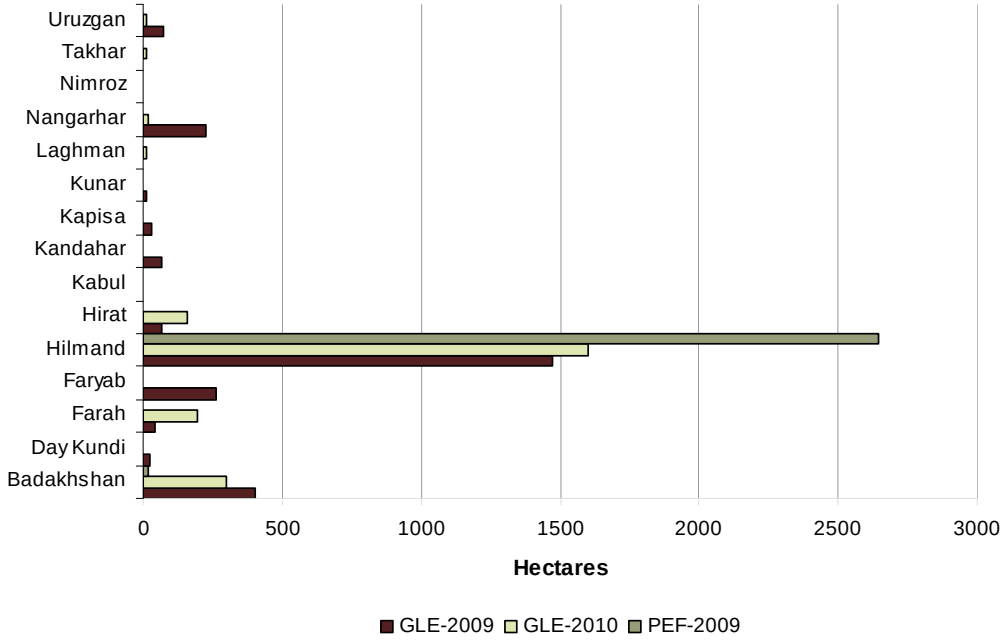


Figure 13: Eradication in 2009 and 2010 by province



Note: In 2010, no PEF eradication took place.

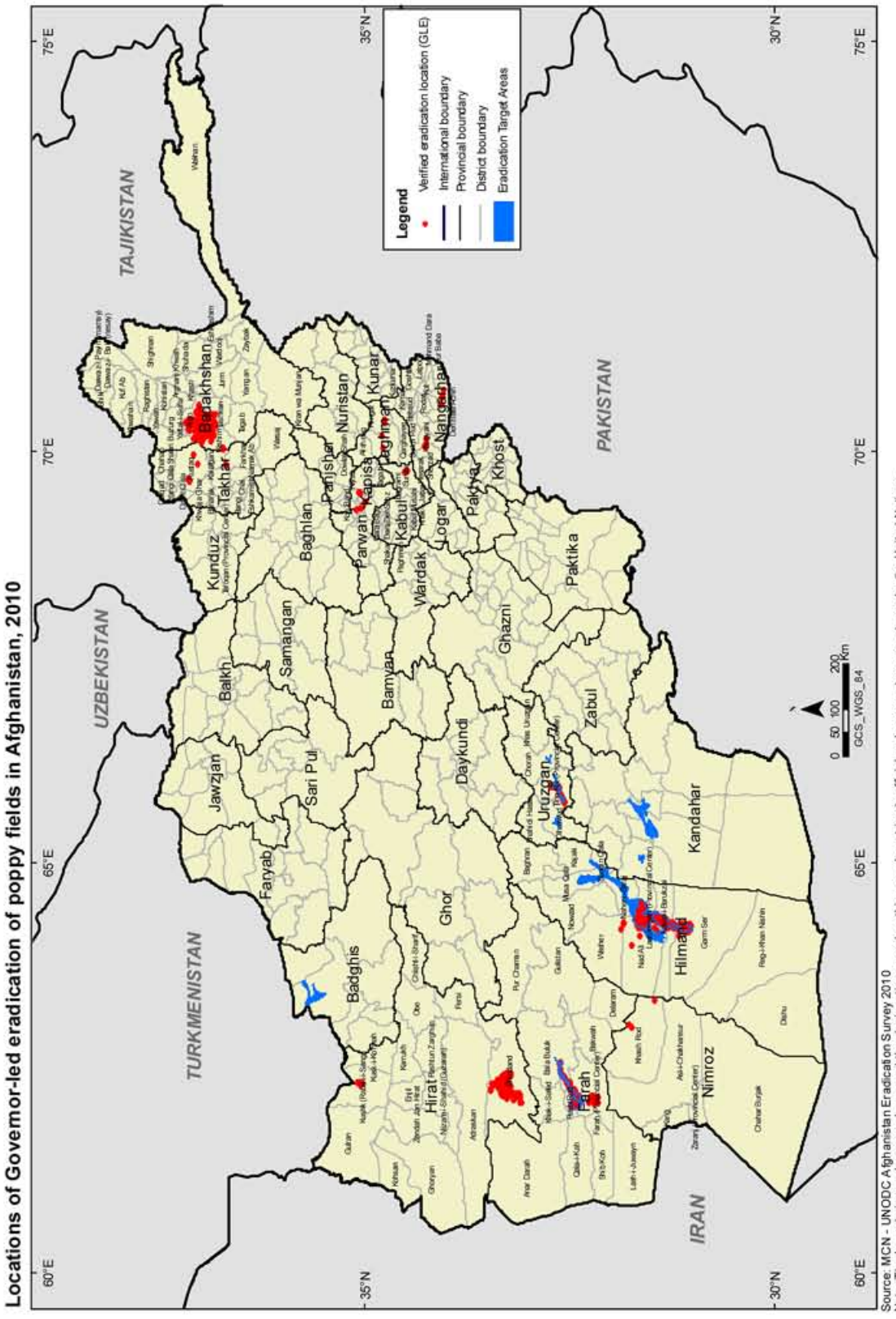
Table 17: Eradication and cultivation in Afghanistan (ha) 2005-2010

Year	2005	2006	2007	2008	2009	2010
GLE (ha)	4,000	13,050	15,898	4,306	2,687	2,316
PEF (ha)	210	2,250	3,149	1,174	2,663	-
Total (ha)	**4,210**	**15,300**	**19,510**	**5,480**	**5,351**	**2,316**
Opium cultivation (ha)*	104,000	165,000	193,000	157,000	123,000	123,000
Eradication as % of net opium cultivation	4%	9%	10%	3%	4%	2%

** Net opium cultivation after eradication. In 2010, no PEF eradication took place.*

The total 2,316 ha eradicated in 2010 in 11 provinces compared to 5,351 ha eradicated in 12 provinces in 2009. Major observations on eradication campaigns in 2009 and 2010 are given below:

- Eradication campaigns started in February 2010 in Hilmand and Farah provinces. In 2009, eradication started at the same time in Hilmand and Hirat provinces.
- Eradication progressed at a slower pace in 2010 compared to 2009 throughout the country.
- Eradication campaigns were mostly active in South, West, and North-eastern regions in 2010 while there was more eradication in the Eastern region last year. This year eradication in Nangarhar province was not intense due to frequent attacks on eradication teams.
- In 2010, security incidents were fewer than in 2009. GLE teams were attacked 12 times in 2010 compared to 34 attacks on GLE teams in 2009. However, the number of fatalities increased. This year about 28 eradication campaign-related-fatalities were reported compared to 21 such fatalities in 2009.



Locations of Governor-led eradication of poppy fields in Afghanistan, 2010

Source: MCN - UNODC Afghanistan Eradication Survey 2010
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

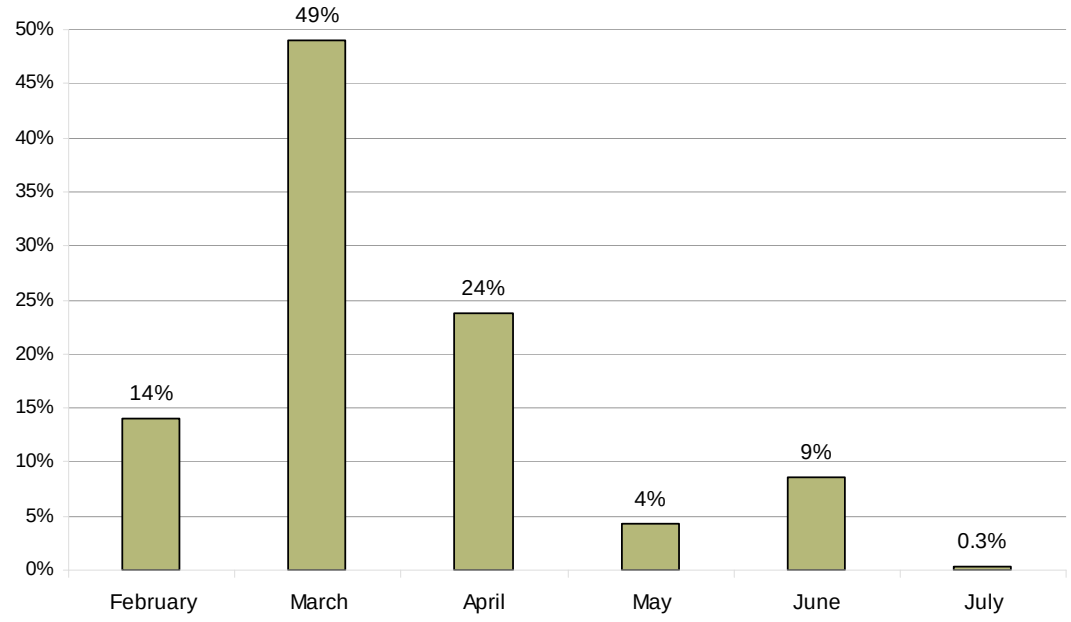
Methods used for eradication

Governor-led eradication teams used several methods including tractor, manual eradication (using sticks) and animal plough. Eighty-six per cent of Governor-led eradication was carried out by tractor, 13% by manual (sticks, uprooting) and 1% by animal plough.

Timing and percentage of eradication by month

The graph below shows timing and percentage of Governor-led eradication by month. Eighty-six per cent of eradication was carried out between February 2010 and April 2010, mostly in Hilmand province.

Figure 14: Total area of opium poppy eradication in each month (as % of total), 2010



Governor-led eradication started in February in Hirat and Hilmand provinces and continued till June in Badakhshan, Day Kundi and Kapisa. The table below shows the start and end dates of eradication in each provinces.

Table 18: Start and end dates of governor-led eradication

Region	Province	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Eradication (ha)
Central	Kabul				05-May 06-May			0.48
	Kapisa				05-May	20-Jun		1
East	Laghman			11-Apr	02-May			10
	Nangarhar			16-Apr	05-May			16
North-east	Badakhshan			15-Apr			08-Jul	302
	Takhar					05-June 10-June		12
South	Hilmand	15-Feb		16-Apr				1,602
	Uruzgan			18-Apr	04-May			15
West	Farah	21-Feb		05-Apr				198
	Hirat		16-Mar		06-May			159
	Nimroz		24-Mar 25-Mar					0.43

Eradication and security

Security incidents in Badakhshan, Farah, Hilmand, Hirat, Laghman, Nangarhar, and Uruzgan provinces included direct attack, mine explosions, flooding poppy fields by water and demonstrations which resulted in the death of 28 persons (24 Police and 4 farmers). This year there were many casualties from land mines/explosive devises which were planted in poppy fields in Nad Ali district of Hilmand province.

A summary of farmer's resistance/security incidents is provided in the table below.

Table 19: Summary of security incidents during opium poppy eradication, 2010

Province	Number of incidents	Number of personnel injured	Number of persons killed	Eradication (Ha)
Badakhshan	4	7	13	302
Farah	19	0	0	198
Hilmand	8	10	6	1602
Hirat	11	1	0	159
Kabul	No incident	0	0	0.48
Kapisa	No incident	0	0	1
Laghman	1	0	0	10
Nangarhar	2	18	9	16
Nimroz	No incident	0	0	0.43
Takhar	No incident	0	0	12
Uruzgan	10	0	0	15
Total	**55**	**36**	**28**	**2,316**

A tractor damaged by land-mine during GLE operations in Nad Ali district of Hilmand province

Farmer resistance against GLE operations in Hilmand province (flooding poppy fields)

Land-mines discovered in poppy fields in Nad Ali district of Hilmand province during GLE operations

Road-side mine explosion on Zabul governor-led eradication team

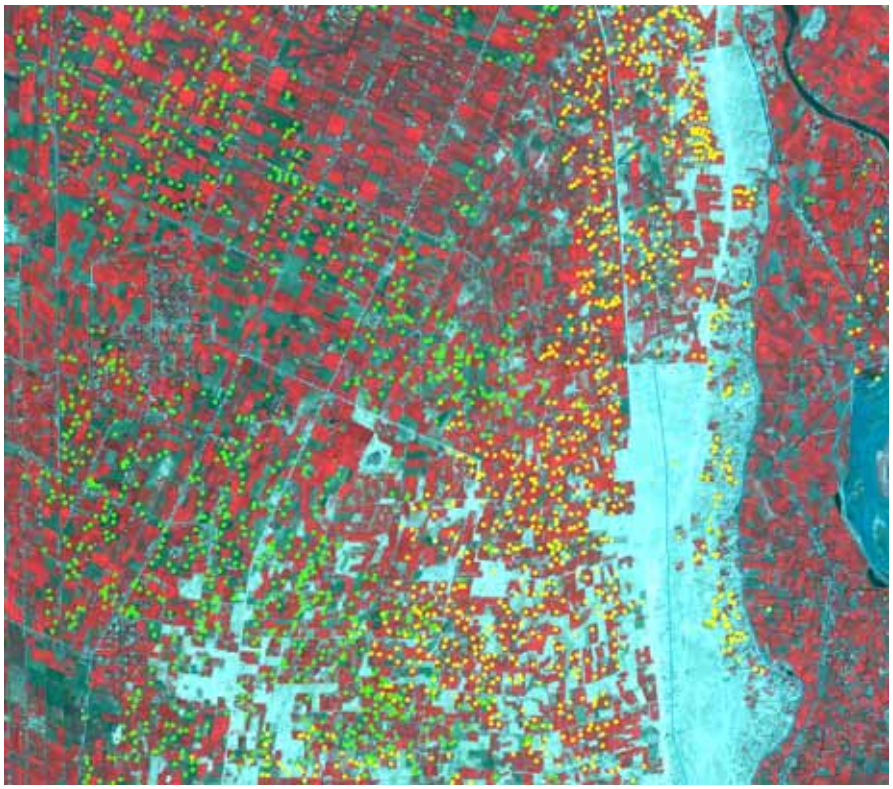
Quality control of eradicated fields by using satellite images

Cross checking of eradication verification was done using high resolution satellite images. UNODC procured satellite images based on the GPS readings recorded by verifiers in the eradicated poppy fields to validate authenticity of the reported eradication area by GLE in Hilmand, Farah, Hirat and Badakhshan provinces.

Satellite images of eradicated fields were interpreted and compared with the figures available from the ground. Generally, a good match was observed between eradicated areas calculated from satellite images and those measured on the ground by verifiers.

Hilmand Province

In Hilmand province, however, there were very minor differences observed between the satellite images and ground measurements of eradication. The total area of eradication reported by the verifiers from fields in Hilmand province was 1,665 ha. After quality checks with satellite images, total eradication was reduced to 1,602 ha.



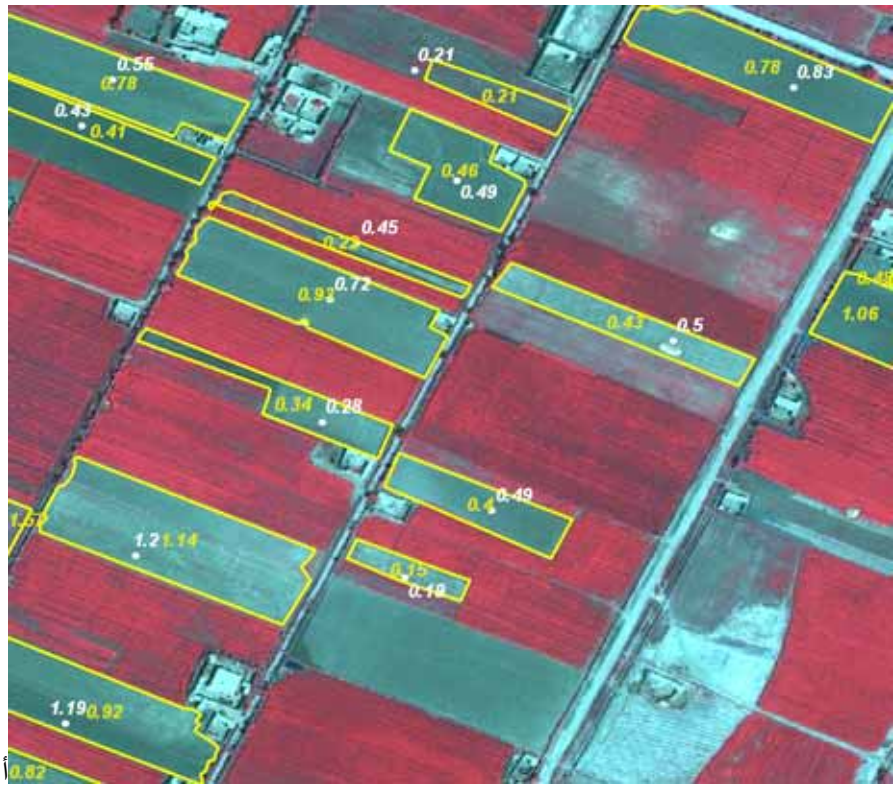
Comparison of GLE 2010 with 2009

Nad Ali district, Hilmand province

GLE 2010- Green dots

GLE 2009- Yellow dots

GLE in 2010 in more intense cultivated areas compared to GLE 2009



Village name: Haji Obaidullah, **Nad Ali district, Hilmand province**

Date of eradication: 22 Mar 2010

The area (in ha) of eradicated fields, measured by verifiers on ground (white text)

The area (in ha) of eradicated fields, from satellite image interpretation (yellow text)

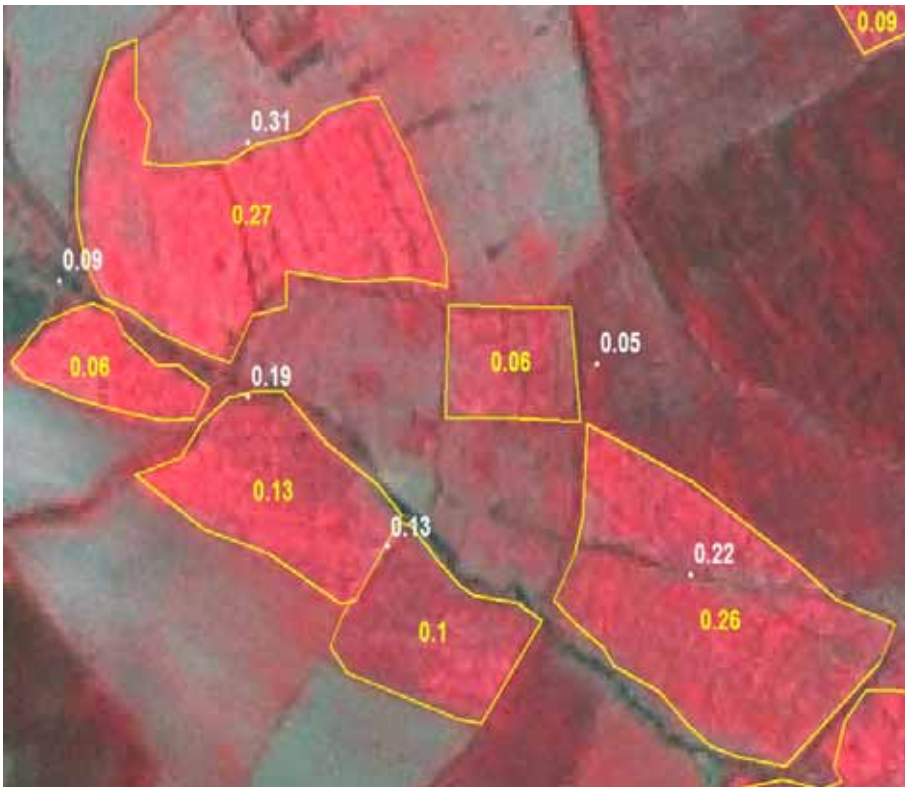
Good match between satellite image and ground verification

Badakhshan Province

An area of 368 ha of eradication was reported by verifiers in Badakhshan province. Satellite images were used for authenticating the reported eradication. The eradicated area reported from fields and the area measured on satellite images was compared for most eradicated poppy fields.

There were very minor differences in the verification figures reported from the fields and that checked with satellite images. Total area of eradication reported from fields in Badakhshan province was 368 ha. After quality checks with satellite images, the total area of eradication was reduced to 302 ha.

Snapshot of satellite data showing a good match between field verification and satellite image in Kishim district of Badakhshan province.



Village name: Gandom Qul, **Kishim district, Badakhshan province**

Date of eradication: 15 June 2010

The area (in ha) of eradicated fields, measured by verifiers on ground (white text)

The area (in ha) of eradicated fields, from satellite image interpretation (yellow text)

Good match between satellite image and ground verification

(Eradication method- Manual stick)

Farah and Hirat Provinces

The eradication verification figures reported for fields were verified with satellite images in Farah and Hirat provinces and very minor differences were observed.

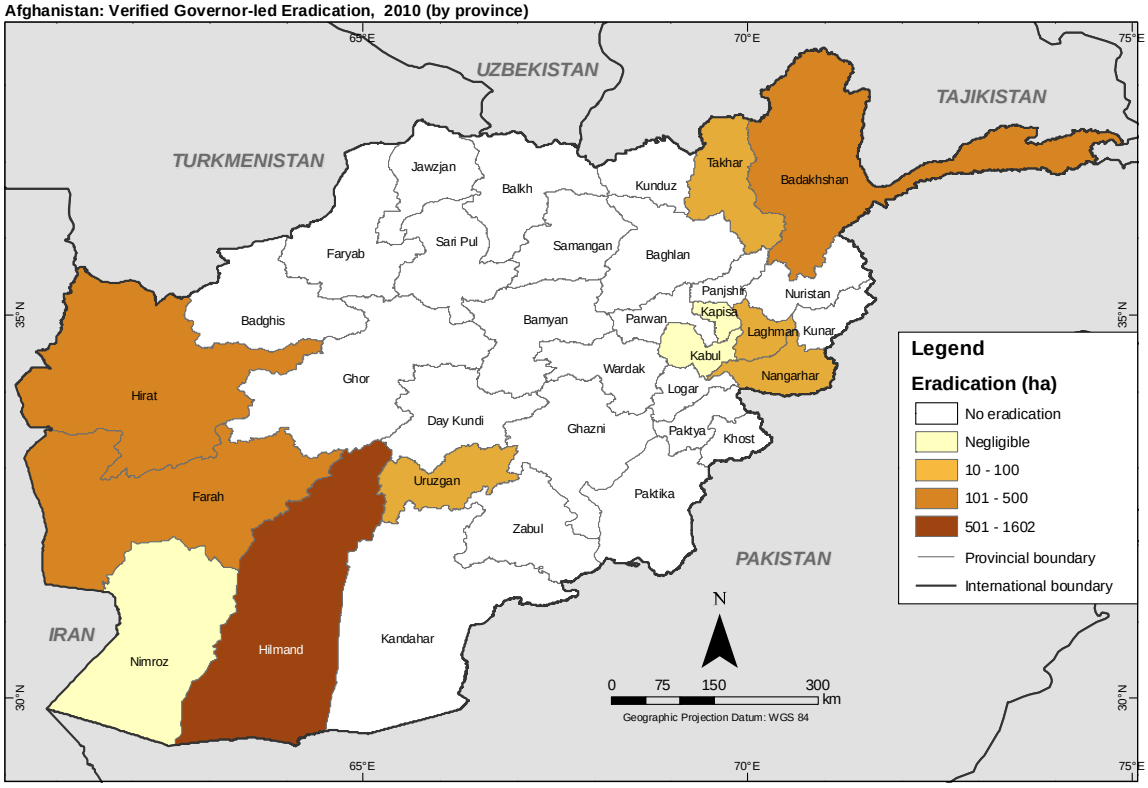
Farah province reported 218 ha of eradication by verifiers in the field whereas satellite images reduced that figure to 198 ha.

Similarly, 169 ha of eradication were reported in Hirat province by field verifiers while 159 ha were verified by satellite images.

Table 20: Total area of eradication, 2005-2010 (no PEF eradication in 2010)

Year	Eradication (ha)	No. of provinces with eradication
2005	4,007	11
2006	13,378	19
2007	15,898	26
2008	4,306	17
2009	5,351	12
2010	2,316	11

Afghanistan: Verified Governor-led Eradication, 2010 (by province)



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Regional findings

Eastern region (Nangarhar, Kunar, Laghman and Kapisa):

- Nangarhar: A total of 16 ha of poppy eradication were verified in 5 villages..
- Laghman: A total of 10 ha of poppy eradication were verified in 4 villages.
- Kapisa: A total of 1 ha of poppy eradication was verified in 11 villages.
- Kunar: No eradication was carried out.

Governor-led eradication in Khugyani district of Nangarhar province

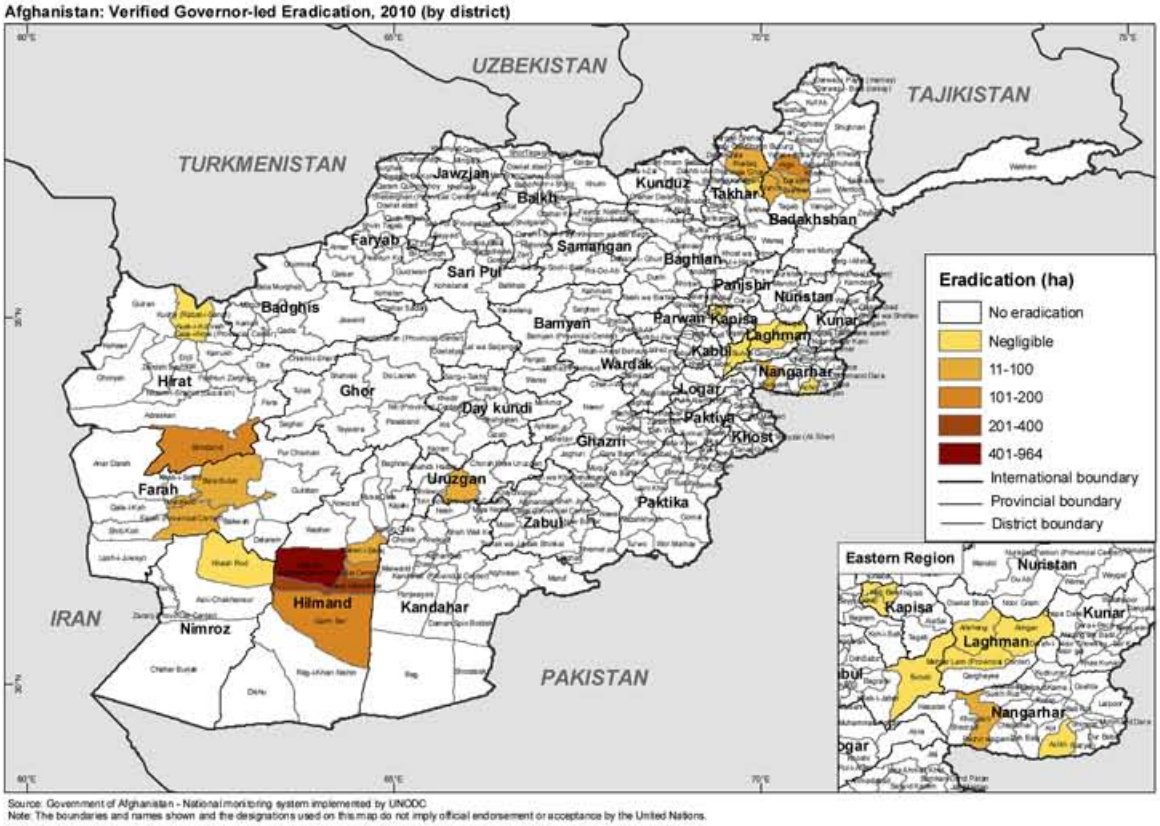
Governor-led eradication in Alishing district of Laghman province

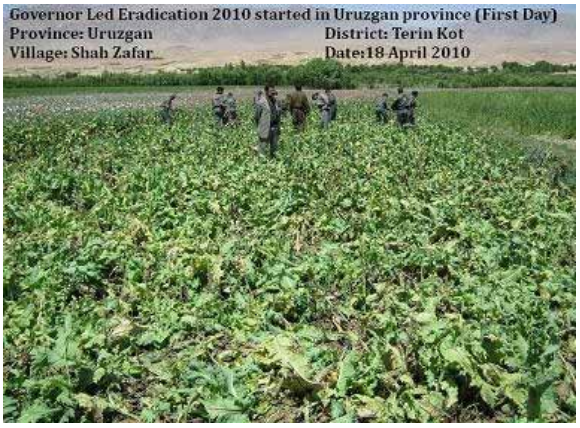
Southern region (Day Kundi, Hilmand, Kandahar, Uruzgan, Zabul):

- Hilmand: A total of 1,602 ha of poppy eradication were verified by MCN/UNODC verifiers in 178 villages based on satellite data analysis and field reports.
- Uruzgan: A total of 15 ha of poppy eradication were verified by MCN/UNODC verifies in 14 villages.
- Day Kundi, Kandahar and Zabul: No eradication was carried out.

Governor-led eradication in Nawa-i-Barukzai district of Hilmand province

Governor-led eradication in Lashkar Gah district of Hilmand province





Governor-led Eradication on diseased field in Tirin Kot district of Uruzgan province

Governor-led Eradication in Nad-Ali district of Hilmand province

Governor-led Eradication in Garamser district of Hilmand province

Governor-led Eradication in Nad Ali district of Hilmand province

Governor-led Eradication in Nawa-i-Barukzai district of Hilmand province

Governor-led Eradication in Lashkargah district of Hilmand province

Western region (Badghis, Ghor, Farah, Hirat, Nimroz):

- Farah: A total of 198 ha of poppy eradication were verified by MCN/UNODC verifiers in 35 villages.
- Hirat: A total of 159 ha of poppy eradication were verified by MCN/UNODC verifiers in 42 villages.
- Nimroz: A total of 0.43 ha of poppy eradication were verified by MCN/UNODC verifiers in 2 villages.
- Badghis and Ghor: No eradication was carried out.

Governor-led eradication in Shindand district of Hirat province

Governor-led eradication in Psht Rud district of Farah province

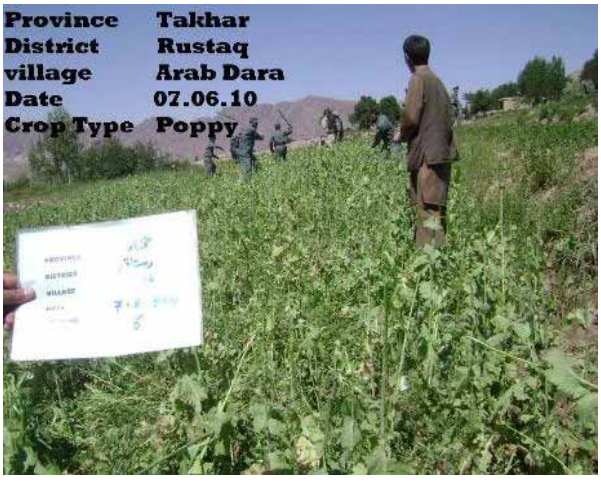
Northern region (Baghlan, Balkh, Faryab, Jawzjan, Samangan, Sari Pul):

- No eradication was carried out.

North-eastern region (Badakhshan, Takhar):

- Badakhshan: A total of 302 ha of poppy eradication were verified by MCN/UNODC verifiers in 103 villages based on satellite data analysis and field reports.
- Takhar: A total of 12 ha of poppy eradication were verified by MCN/UNODC verifiers in 7 villages.

Governor-led eradication in Argo district of Badakhshan province



Governor-led eradication in Rustaq district of Takhar province

Central region (Kabul):

- Kabul: A total of 0.48 ha of poppy eradication was verified by MCN/UNDOC verifiers in 1 village.

Governor-led eradication in Surobi district of Kabul province

2.3 Opium yield

The average oven-dry opium yield (weighted by cultivation area) for Afghanistan in 2010 was 29.2 kg/ha, a 48% reduction from the 56.1 kg/ha estimated in 2009. As a consequence, potential opium production decreased by 48% to 3,600 mt. This reduction was partly due to the significantly smaller size of opium poppy capsules as well as their smaller number per square meter in the Western and Southern regions. A more important factor, however, was the spread of diseases in major growing areas that affected opium plants at a late stage of development. The diseased plants exhibited wilt symptoms with leaves yellowing, drooping and finally desiccating completely, indicative of a collar (stem/root interface) and/or upper root rot. These symptoms are consistent with those observed previously in the region for fungal infestations.

Table 21: Opium yield by region (kg/ha), 2009 - 2010

Region	2009 average yield (kg/ha)	2010 average yield (kg/ha)	% Change
Eastern	36.2	NA	NA
North-eastern	34.3	NA	NA
Southern (average) *	58.5	29.7	-49%
Southern (disease affected area)	NA	10.1	NA
Southern (other areas)	NA	44.1	NA
Western	43.9	24.0	-45%
Central, Eastern, North-eastern, Northern	NA	51.0	NA
Weighted national average	**56.0**	**29.2**	**-48%**

In 2009, no yield figures for the Central and Northern regions were calculated due to a low number of yield measurements in this region. In 2010, due to a low number of yield measurements, Central, Eastern, North-eastern and Northern regions were grouped into one yield region. For these regions, direct region-by-region comparison with yields in 2009 is not possible. Although all provinces in the Northern region had less than 100 ha of poppy cultivation and were considered poppy-free in 2009 and 2010, some pockets of poppy cultivation continue to exist and contributed to the 2010 yield estimate.

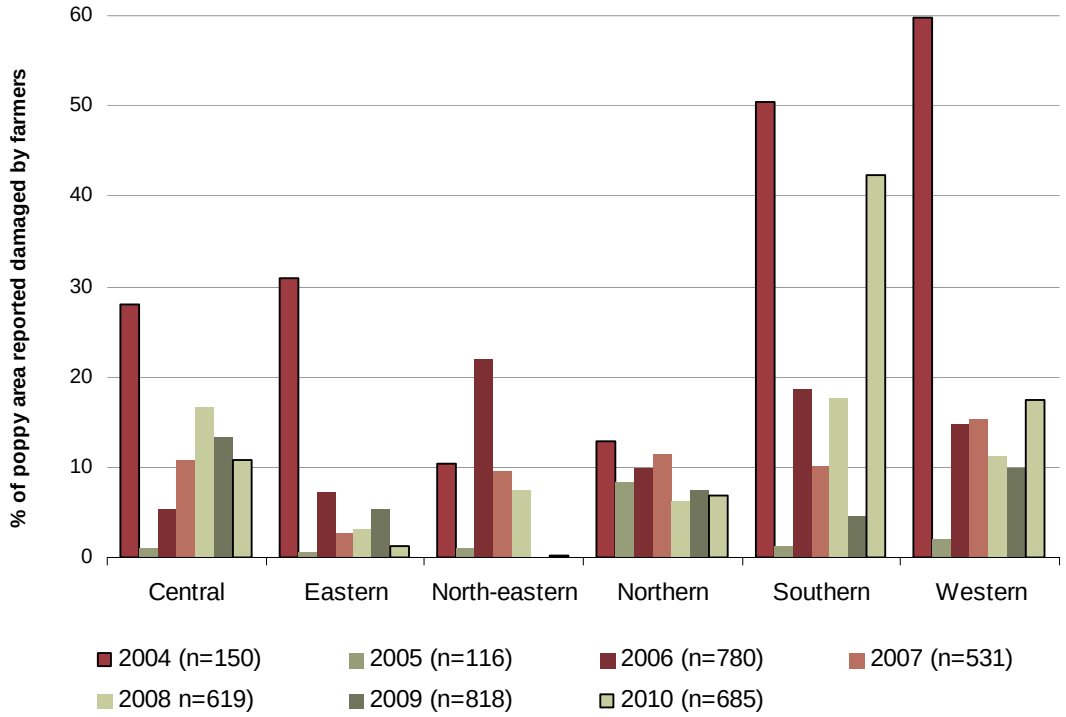
* In 2010, due to the widespread occurrence of disease, two separate yield figures were calculated for the Southern region, one for areas not affected by disease and one for disease-affected areas. The impact of disease on opium yield was estimated by combining different approaches. This introduces an additional uncertainty to the estimate.

Disease pattern in 2010

While opium poppy diseases are a normal occurrence in Afghanistan, the disease that affected opium plants in 2010 caused an exceptional damage similar to the one observed in 2004. Farmers reported varying degrees of damage to their crops in practically all years and regions since systematic yield surveys started. Reported causes of the damage farmers observed on their poppy fields include various local names for plant diseases, frost or drought conditions and different pest including aphids/insects and worms. Use of agrochemicals to fight plant diseases or pests is the exception in Afghanistan. While this information on crop damage is based on farmers' assessment and not on scientific investigations, the comparison of farmers' damage assessment from 2004 to 2010 clearly shows the difference between "normal" levels of crop damage and the extraordinary high levels reached in 2004 and 2010. Both in 2004 and 2010, the Southern and Western regions were the most affected, according to farmers' assessment. In 2004, other regions, which at that time still had relatively high levels of cultivation, were also affected, while this did not happen in 2010.

The pattern of diseases and other damage reported by farmers in 2010 differs clearly between the Southern and Western regions and the rest of the country. A large proportion of farmers in the Western region (39%) reported healthy opium plants. Those who reported damage to opium crops blamed frost as the most frequent cause The frost damage reported by farmers may well have contributed to plant death or damage at earlier stages of plant development, resulting in low yields, which were reflected in the results of the yield survey.

Figure 15: Proportion of damage to opium cultivation area reported by farmers, 2004-2010



In the Southern region, almost all farmers reported some kind of damage to their opium crops. Most causes of damage were reported by farmers as "yellowish" (35%) or "fungal disease" (7%) and could be related to a collar (stem/root interface) and/or upper root rot described above.

In 2010, the main effect of the late onset of diseases in the Southern region was different from past years as many fields capsules had already been formed. Poppy plants dried up much faster than normal. This greatly reduced the amount of opium that could be harvested as the traditional lancing method relies on opium gum, the plant juice, oozing out of small incisions made into the capsules. Once the plant dried, opium gun could not be extracted.

Estimating the impact of disease

The extraordinary damage of the disease in the Southern region was confirmed by reports from the field, a sudden jump in farm-gate opium prices, plus an interview-based rapid assessment. In 2010, a normal yield calculation, using the capsule volume-based yield survey without adjustments for the impact of diseases, would have led to a gross over-estimate of opium yield in the Southern region.

Given the nature of the damage affecting opium plants, the measurement of the opium yield required additional information to complement the standard information collected in the field through the yield survey. The standard method estimates opium yield on the basis of capsule volume of poppy plants[10] which is measured in a random sample of opium fields. Regular diseases and other damaging events which affect plant growth and capsule development are captured by the normal yield survey as they would result in a lower number of capsules and / or smaller capsule volumes which lead to a lower opium yield estimate.

The effect of the 2010 disease in the opium yield was estimated through an opium yield harvest experiment conducted on 18 fields in different provinces of Afghanistan. The experiment calculated opium yield using two methods: one based on capsule volume (which is used in the regular yield survey) and one based on actual weight of opium harvested from the selected fields. The measures obtained by the two methods could be used to understand the correlation between capsule volume and opium yield under the different circumstances of the field. Diseases as

[10] See Methodology chapter: Yield for more details.

described above affected six of the experimental fields, three in Hilmand and three in Kandahar. The difference in yield between the two different methods (weight of harvested opium and yield based on capsules volume) was used to estimate the average reduction of opium yield in disease-affected fields. The average reduction compared to the calculated capsule volume yield was 77%.

Not all fields were affected by this disease pattern, and not all fields were affected to the same extent. To estimate the affected area, farmers' responses from the normal yield survey were used. Farmers reported the type of damage and proportion of field affected by any type of damage. Farmers' responses from the South pointed to the disease pattern observed throughout the region, a wilting of leaves and subsequent drying of the plant at a very late stage of plant development. Thus, farmers' responses from the Southern region on whether diseases affected their fields and the proportion of affected area were used to calculate an average proportion of poppy area affected in the region. In the Southern region, farmers reported that 42% of their poppy area was affected by the disease.

A reduction factor of 77% was applied to the yield estimate derived from capsule measurements for the Southern region which resulted in a yield estimate of 10.1 kg/ha for the disease-affected poppy fields. This yield estimate was used to estimate opium production on 42% of the area under opium poppy cultivation for the Southern region. The normal yield estimate for the Southern region of 44.1kg/ha was used to estimate production on the remainder 56% of the area.

While the results from the opium yield experiment, disease survey and farmers' interviews helped to understand the impact of the disease, the extrapolated yield reduction factor can only be considered as an indicative approximation.

Harvest conditions

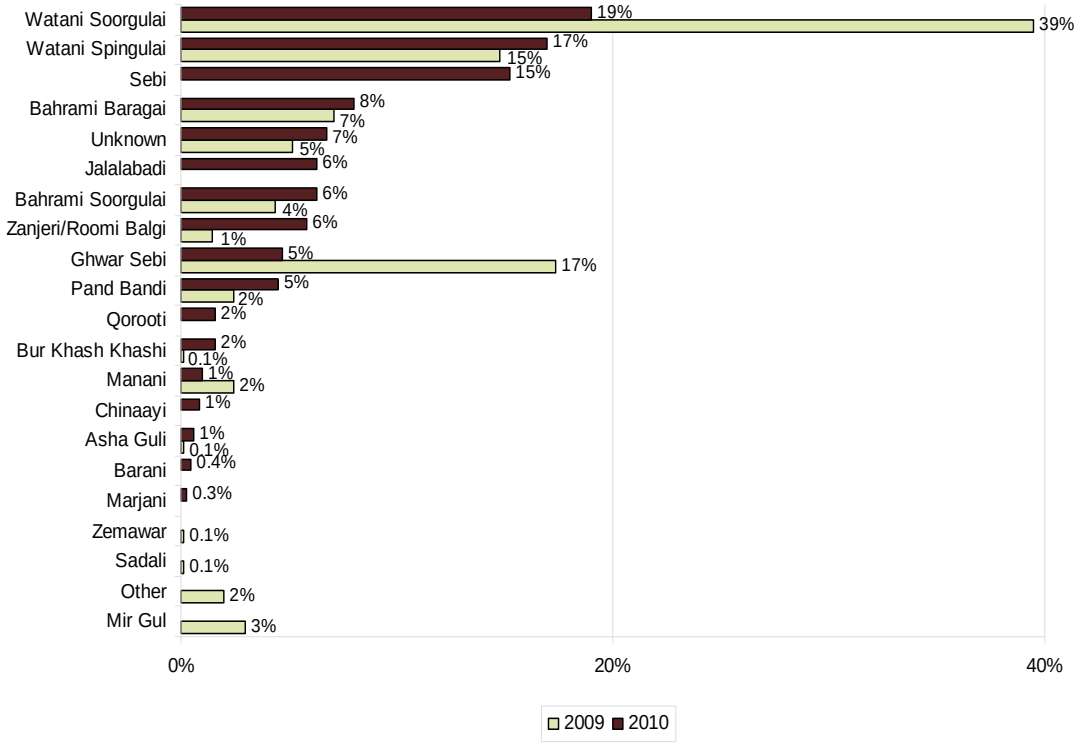
All regions in 2010 experienced rain during harvest and to a certain extent labour shortages. In the Southern region, a shortage of labourers and rain during harvest were reported, despite the reduced yield on disease-affected fields. However, daily wages for lancing increased less than wages for other types of labour compared to 2009. This indicates that lancers were less in demand than in other years probably an effect of the lower number of lancing rounds in disease affected fields.

Opium poppy varieties

Farmers usually make a selection of poppy varieties depending on soil conditions, weather conditions that govern the maturation date, resistance to disease and the need for inputs such as water, fertilizer and labour requirements. As observed during the 2010 yield survey, *Watani Soorgulai* remained the variety reported by most farmers (19%); however, the proportion of this variety was much higher in 2009 (39%) while in 2008, *Sebi* was the most common variety reported (31.3%). The second most common variety planted in 2010 was *Watani Spingulai* (17%), a variety reported in 2009 as third most common (15%). In 2010, *Watani Spingulai* was closely followed by *Sebi* (15%).[11]

[11] A separate study aimed at developing an inventory of opium poppy varieties in Afghanistan was carried out in 2007 with the assistance of botanists. The results are summarized in the Afghanistan Opium Survey 2007 published by UNODC.

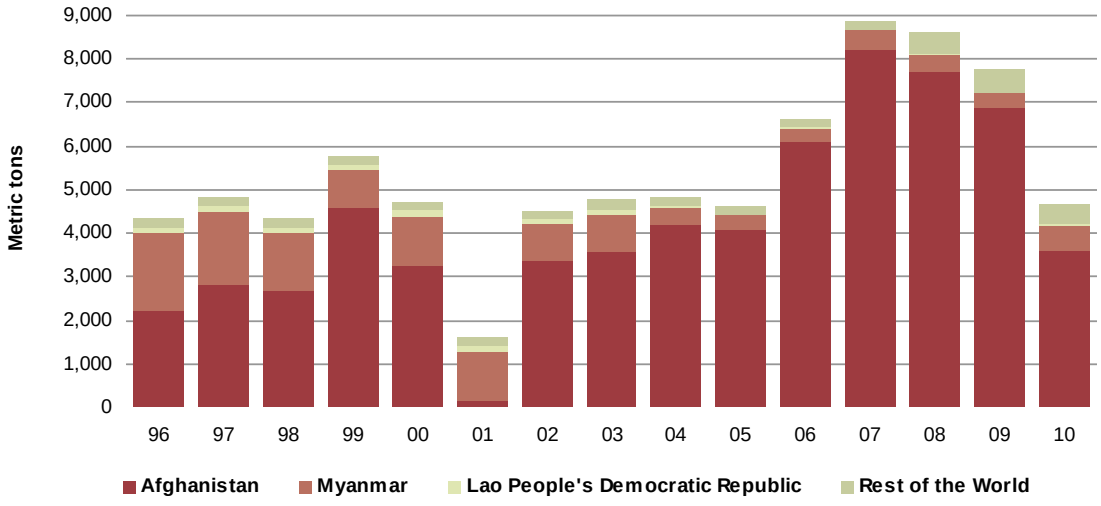
Figure 16: Reported opium poppy varieties by farmers in 2009 and 2010 (as % of farmers' responses)



2.4 Potential opium production

Even though opium cultivation remained the same as last year (123,000 ha), the 2010 potential opium production was 48% less (3,600 metric tons (mt) compared to 6,900 mt in 2009). This drop in production was mainly due to a low yield (29.2 kg/ha was the national average) in disease-affected poppy fields in the Southern and Western regions as well as to unfavourable climatic conditions.

Figure 17: Global opium production (mt), 1996 - 2010

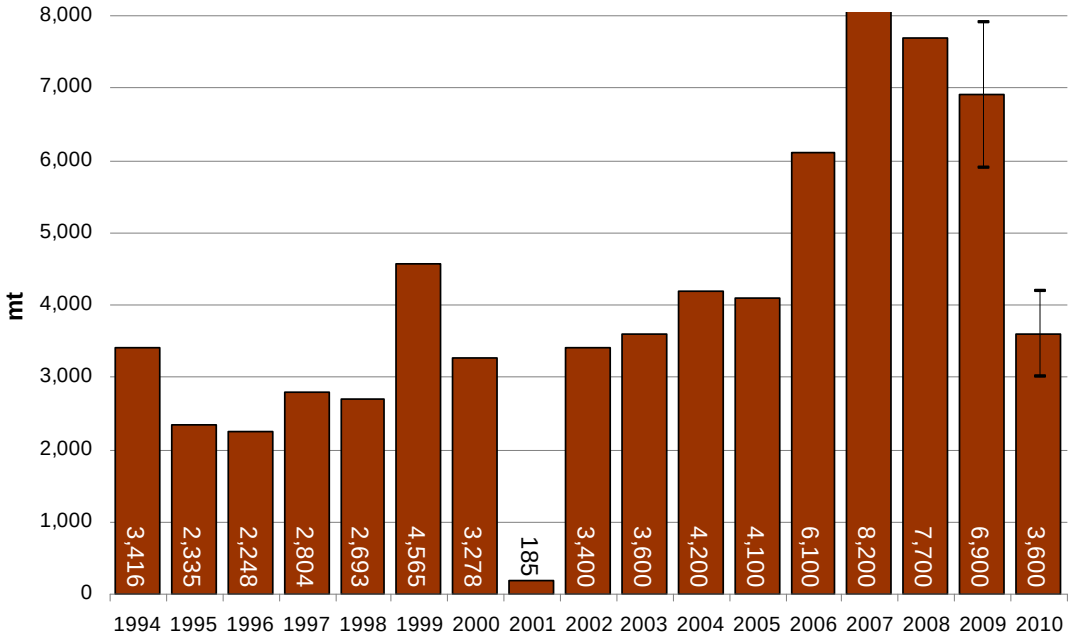


Source: UNODC, World Drug Report 2010. 2010 results for Rest of the World are preliminary. Figures refer to oven-dry opium.

Based on preliminary results from other countries, in 2010, opium production in Afghanistan represented less than 80% of global opium production.

Due to diseases and adverse climatic conditions, opium production in the Southern and Western regions decreased considerably, despite a relatively stable area under poppy cultivation. At the same time, opium production in the rest of the country increased. The immediate effect of this unexpected drop in production was a steep increase in the price of opium between April and September 2010, mostly in the Southern, Western and Eastern regions.

Figure 18: Potential opium production in Afghanistan (mt), 1994 - 2010



Sources: UNODC and UNODC/MCN opium surveys, 1994-2010. The high-low lines represent the upper and lower bounds of the estimate. Figures refer to oven-dry opium.

Within Afghanistan, the Southern region accounts for 83% of the 2010 national opium production. In 2009, Hilmand province alone produced 54% of all Afghan opium. Four provinces in the south and west of Afghanistan – Hilmand, Kandahar, Uruzgan and Farah – account for 91% of the national opium production.

Table 22: Opium production by region with ranges (mt), 2010

	Best estimate	Lower bound	Upper bound
Central	8	7	8
Eastern	56	54	59
North-eastern	56	54	58
Southern	2,984	2,439	3,529
Western	476	259	694
National	3,580	2,972	4,189
National (rounded)	**3,600**	**3,000**	**4,200**

The opium production estimate in the Southern region takes into account the impact of disease on opium yield by combining different estimation approaches. This introduces an additional uncertainty, which is not expressed by the estimation range, which is based on confidence intervals.

Table 23: Main opium producing provinces (% of total production), 2009-2010

Province	2009	2010
Hilmand	59%	54%
Kandahar	17%	21%
Uruzgan	8%	6%
Farah	8%	10%

Table 24: Potential opium production by province and region, 2009-2010

PROVINCE	Production 2009 (mt)	Production 2010 (mt)	Change 2009-2010 (mt)	Change 2009-2010 (%)
Kabul	7	8	0.4	5%
Khost	Poppy-free	Poppy-free	NA	NA
Logar	Poppy-free	Poppy-free	NA	NA
Paktya	Poppy-free	Poppy-free	NA	NA
Panjshir	Poppy-free	Poppy-free	NA	NA
Parwan	Poppy-free	Poppy-free	NA	NA
Wardak	Poppy-free	Poppy-free	NA	NA
Ghazni	Poppy-free	Poppy-free	NA	NA
Paktika	Poppy-free	Poppy-free	NA	NA
Central Region	**7**	**8**	**0.4**	**5%**
Kapisa	Poppy-free	Poppy-free	NA	NA
Kunar	6	8	2	32%
Laghman	5	12	7	144%
Nangarhar	11	37	26	245%
Nuristan	Poppy-free	Poppy-free	NA	NA
Eastern Region	**21**	**56**	**35**	**163%**
Badakhshan	19	56	37	193%
Takhar	Poppy-free	Poppy-free	NA	NA
Kunduz	Poppy-free	Poppy-free	NA	NA
North-eastern Region	**19**	**56**	**37**	**193%**
Baghlan	Poppy-free	Poppy-free	NA	NA
Balkh	Poppy-free	Poppy-free	NA	NA
Bamyan	Poppy-free	Poppy-free	NA	NA
Faryab	Poppy-free	Poppy-free	NA	NA
Jawzjan	Poppy-free	Poppy-free	NA	NA
Samangan	Poppy-free	Poppy-free	NA	NA
Sari Pul	Poppy-free	Poppy-free	NA	NA
Northern Region	**Poppy-free**	**Poppy-free**	**NA**	**NA**
Hilmand	4,085	1,933	-2,152	-53%
Kandahar	1,159	768	-391	-34%
Uruzgan	540	218	-322	-60%
Zabul	67	14	-53	-79%
Day Kundi	176	46	-130	-74%
Southern Region	**6,026**	**2,979**	**-3047**	**-51%**
Badghis	238	71	-167	-70%
Farah	545	349	-195	-36%
Ghor	Poppy-free	Poppy-free	NA	NA
Hirat	24	9	-16	-65%
Nimroz	19	49	30	160%
Western Region	**825**	**478**	**-348**	**-42%**
Total (rounded)	**6,900**	**3,600**	**-3,300**	**-48%**

2.5 Security

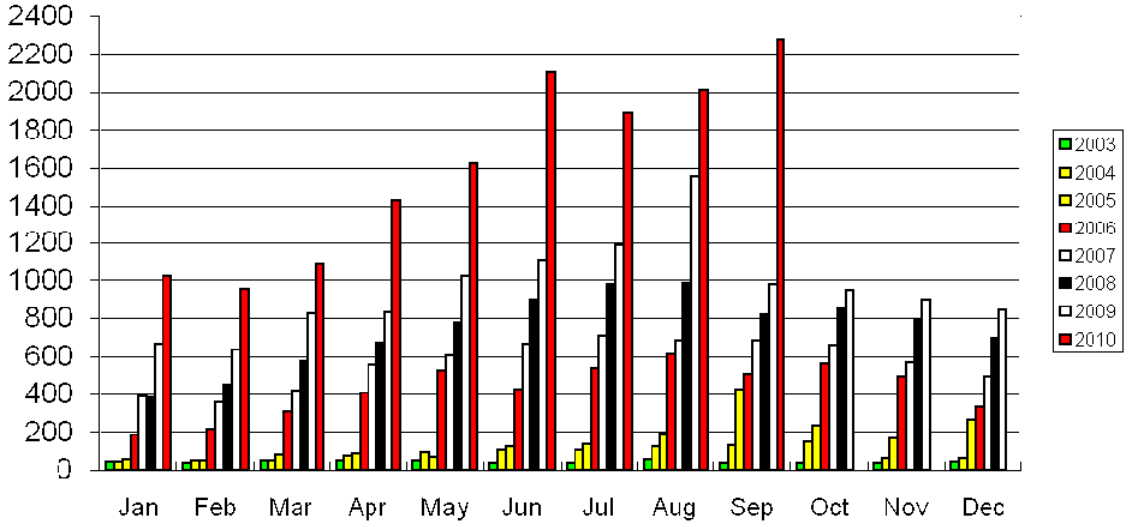
Eighty two per cent of opium cultivated in 2010 was concentrated in Hilmand, Kandahar, Uruzgan, Day Kundi, and Zabul provinces in the Southern region. These are the most insecure provinces in the country, where security conditions are classified as high or of extreme risk by the United Nations Department of Safety and Security (UNDSS). Most of the districts in this region were inaccessible to the UN and NGOs.

Farah, Nimroz and Badghis, which are insecure provinces in the Western region, contributed to 16% of cultivation. The Southern and Western regions cultivate 98% of all opium. Anti-government elements (AGE) as well as drug traders are very active in the Western region. Provinces in the south are the strongholds of AGEs, while provinces in the west (Farah, Badghis and Nimroz) are known to have organized criminal networks. The link between lack of security and opium cultivation was also evident in Nangarhar province (Eastern region), where cultivation was concentrated in districts classified as having a high or extreme security risk. Also, in Kabul, opium cultivation was concentrated in the Uzbeen valley of Surobi distrct , an area of extreme security risk.

Security incidents in Afghanistan have risen every year since 2003, especially in the South and South-western provinces. The number of security incidents increased sharply in 2006, in parallel with the increase in opium cultivation. In 2010, there was a further sharp increase in security incidents. Most security incidents that arose during the eradication verification survey in 2009 were due to insurgency. In 2010, resistance to eradication forces resulted in 28 deaths, mostly of policemen.

The chart below shows security incidents from January 2003 to September 2010, as recorded by the UNDSS. Security incidents increased sharply after 2005, particularly in the South and South-western provinces. Since 2007, levels of opium cultivation were the highest (over 80%) in Hilmand, Kandahar, Uruzgan, Day Kundi, Farah and Nimroz provinces, where security is very poor. Most of the districts in this region cannot be reached by UN agencies or NGOs due to the activity of anti-government elements and drug traders. The security map (page 37) shows higher risk areas in the Northern and Southern provinces.

Figure 19: Number of security incidents between January 2003 and September 2010



Source: UNDSS, Afghanistan

2.6 Farmers who cultivate opium

In 2010, the annual village survey collected data on the number of households cultivating opium poppy in Afghanistan. At the national level, it was estimated that 248,700 households were

involved in opium cultivation, compared to 245,200 in 2009 − an increase of only 1%. Based on an average of 6.2 members per household, 248,700 households represent an estimated total of 1.5 million persons or 6% of the country's total population of 24.5 million[12].

Figure 20: Number of households involved in opium cultivation in Afghanistan, 2003-2010

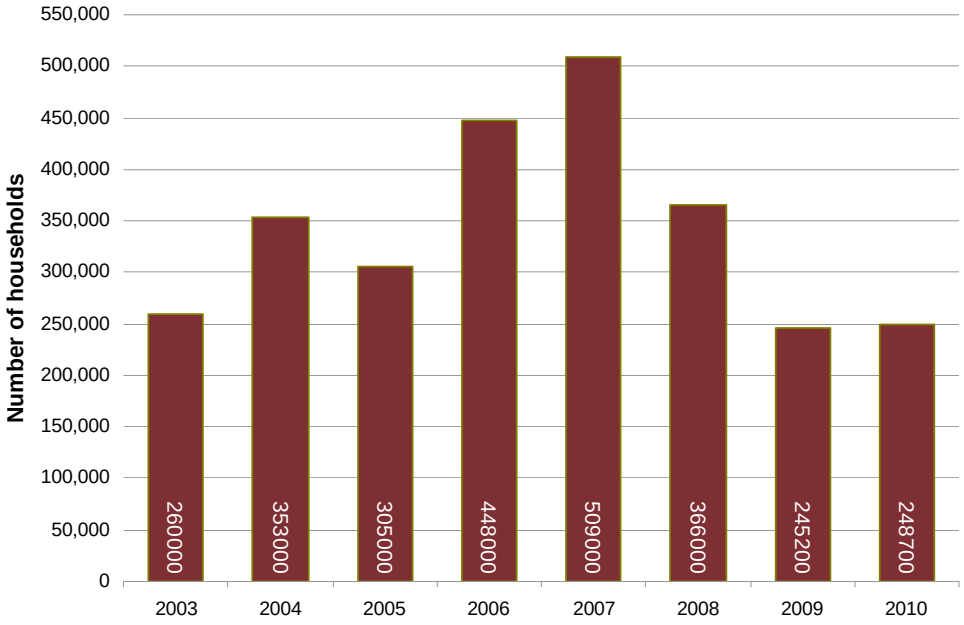


Table 25: Number of households involved in opium cultivation, 2010

Region	Opium cultivation (ha)	Total no. of households growing opium poppy	Percentage of opium poppy-growing households over total number of households	Average size of opium poppy fields per poppy growing household (ha)
Central	152	619	0.2%	0.25
Eastern	1,107	32,233	13%	0.03
North-eastern	1,100	816	0.3%	1.35
Northern	Poppy-free	Poppy-free	Poppy-free	Poppy-free
Southern	100,247	179,584	72%	0.56
Western	19,909	35,151	14%	0.56
Total (rounded)	**123,000**	**248,700**	**100%**	**0.49**

The average area of land dedicated to opium cultivation per household in 2010 was 0.49 ha, virtually the same as in 2009 (0.5 ha). In the main opium-producing regions (Southern and Western), the average area under opium cultivation per household was 0.56 ha. In the North-eastern region, the average area under opium cultivation per household increased from 0.2 ha in 2009 to 1.35 ha in 2010. In other regions, the average poppy area per household was well below 0.3 ha.

Under normal conditions, three people can harvest 1 jerib (0.2 ha) of opium poppy in 21 days. If all harvesting took place at the same time, a total of 1.6 million people (man-days) would be needed to reap the entire opium harvest in Afghanistan in 2010. Hilmand province alone would

[12] Source: Afghanistan Central Statistical Office.

require 0.8 million man-days for harvest. The number of skilled persons available in opium poppy-cultivating households (248,700) was not sufficient to harvest the total of 123,000 ha of crops cultivated. Therefore, extra labour was needed for harvesting, especially in southern Afghanistan. Labourers, attracted by harvesting wages, travelled from all over the country to the Southern region for employment in lancing jobs. Average daily lancing wages rose to US$ 9.3 per day, higher than any other daily wage labour in the country. However, lancing wages rose much less than wages for other daily wages, probably due to lower than normal demand for lancers as a result of the low yield in the South. In comparison, the daily lancing wage in 2009 was US$ 8.7 per day.

Table 26: Daily wage rates for different activities in Afghanistan, 2010

Activity	Daily wage rate (US$) 2009	Daily wage rate (US$) 2010	Change on 2009
Labor (Roads, construction, etc.)	3.6	4.7	31%
Lancing / Gum collection	8.7	9.3	7%
Poppy weeding	3.6	5.4	50%
Wheat harvesting	4.3	5.4	26%

2.7 Reasons for opium cultivation

As part of the annual village survey, 4,359 farmers in 1,529 villages across Afghanistan were asked why they cultivated opium or, if applicable, why they had stopped cultivating.

Farmers cited the high sale price as the most important reason (47%) for cultivating opium poppy in 2010. Provision of basic food and shelter for family, improving living conditions and high income from little land were other important reasons given. In 2009, the high sale price was cited as the most important reason (61%) by the farmers. The other important reason in 2009 were Provision of basic food and shelter for the family, High demand of opium and Easy way to earn more money.

Figure 21: Reasons for cultivating opium, 2009 - 2010 (n=392 farmers in 2010)

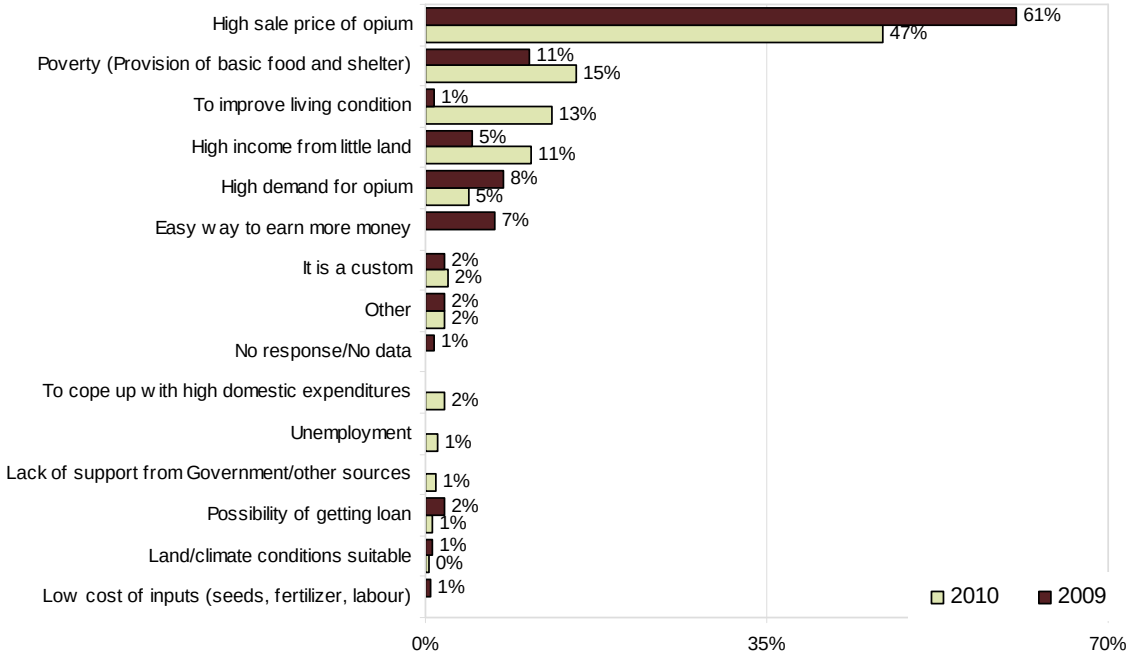
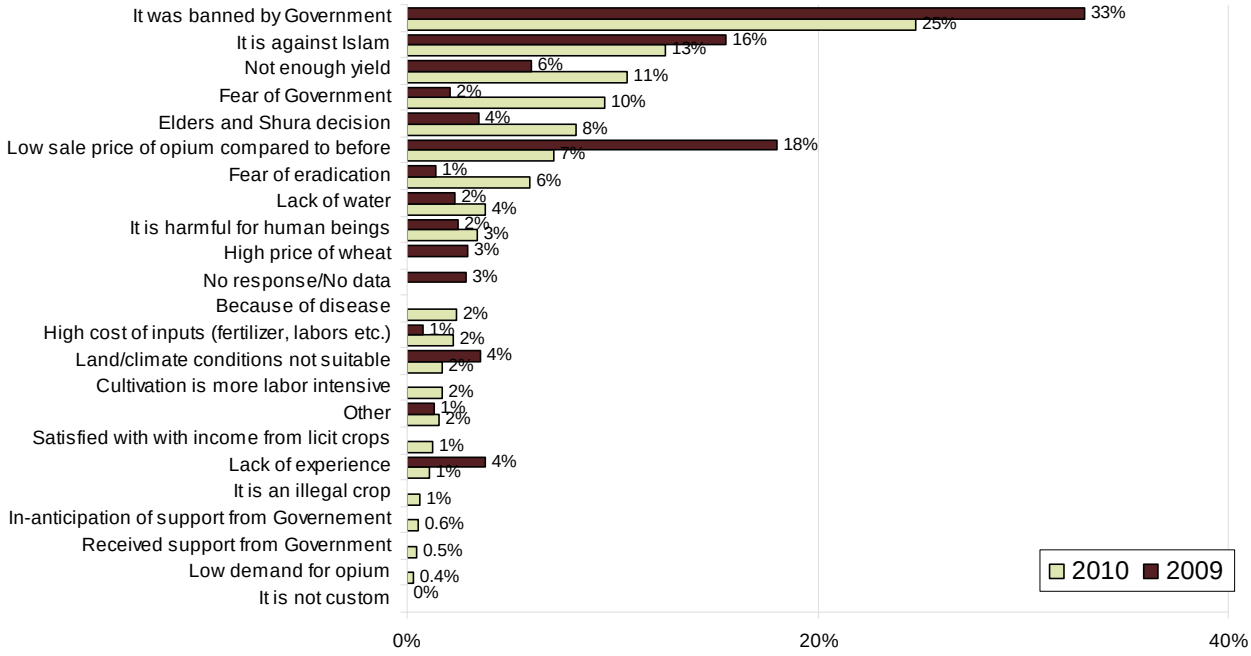
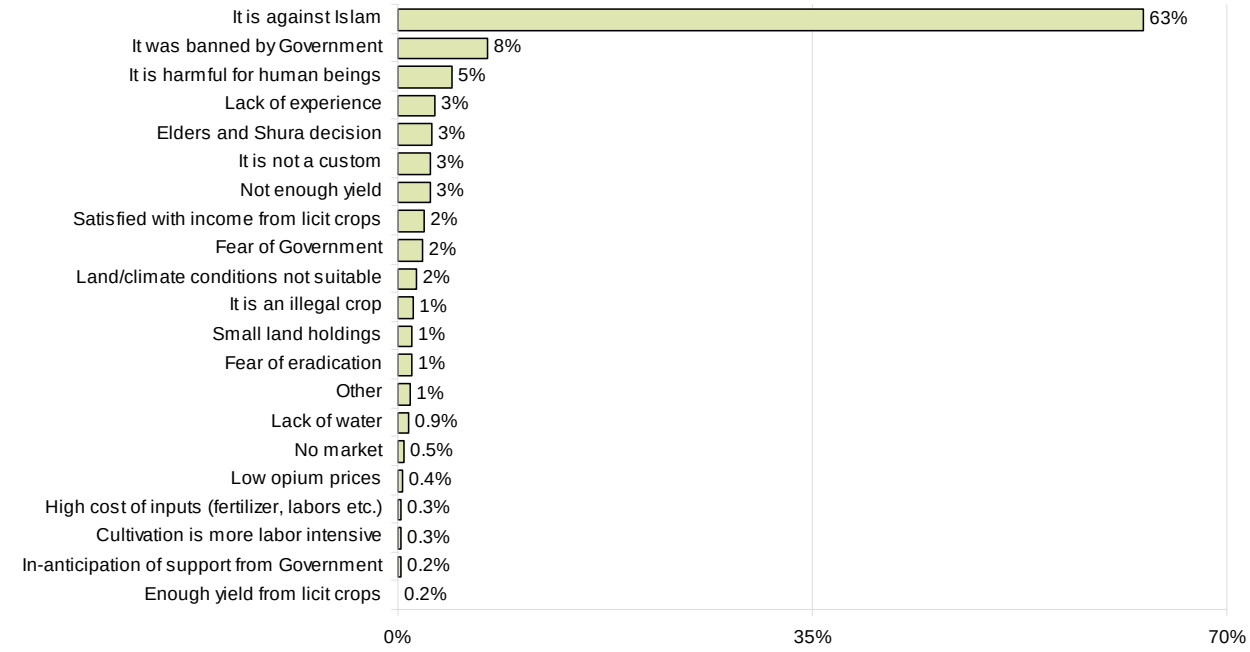


Figure 22: Reasons for stopping opium cultivation in or before 2010 (n=1507 farmers)



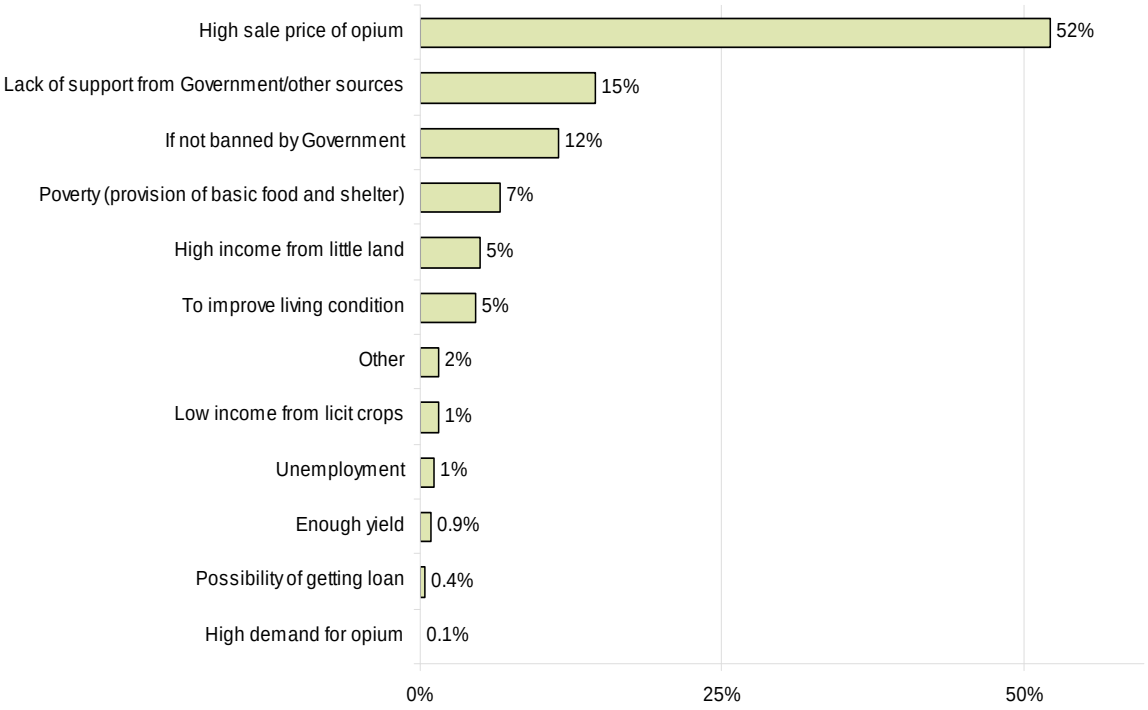
In 2010, farmers who stopped cultivating opium in 2010 or before were asked about their major reasons for doing so. Respondents mentioned the Government ban on opium cultivation most frequently (25%). The second most mentioned reason (13%) was that Islam forbids opium cultivation. Farmers also mentioned (7%) the low opium price as a reason for stopping cultivation. This figure is a decrease from the 18% cited in 2009 and it reflects farmers' decision made during planting season (November 2009 in the main cultivating areas) when opium prices were still relatively low.

Figure 23: Reasons for never cultivating opium (n=2460 farmers)



Sixty-three per cent of farmers who never grew opium reported that they did not do so because it is forbidden (haraam) in Islam, making religious belief the most dominant reason. The Government ban was another main reason farmers said they never cultivated opium poppy.

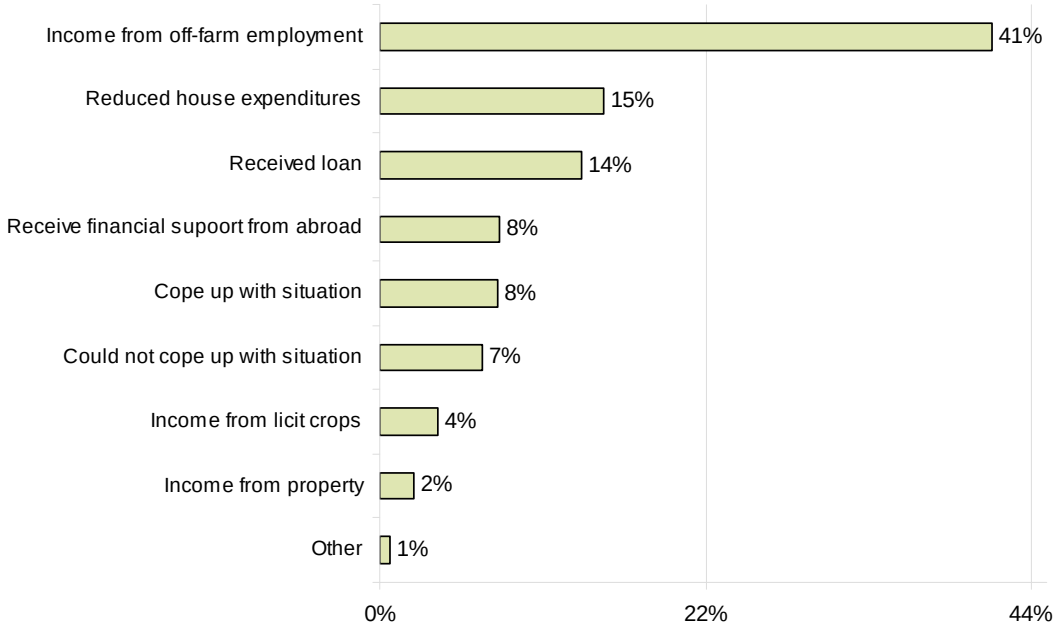
Figure 24: Reasons for returning to opium cultivating (farmers who stopped opium cultivation in or before 2010)



Seventeen per cent of the farmers who stopped opium cultivation in or before 2010, wanted to resume opium cultivation. The high sale price of opium was the most dominant reason cited for returning to opium poppy cultivation but 15% of farmers reported a lack of support from Government and other sources for going back to opium cultivation.

Farmers who stopped opium cultivation in or before 2010, were asked whether their income had increased or decreased. From 1,507 respondents, 58% reported no change, 6% an increase and 35% a decrease in their income. Those who reported a decrease, were then asked how they coped with their situation. Forty-one per cent of those who reported a decrease in income, said they coped by earning income from off-farm wage labour. Fifteen per cent reported that they reduced their house expenditures and another 14% received loans.

Figure 25: Coping with decreased income after stopping opium cultivation (n=530)



This question was asked to farmers who stopped opium cultivation in or before 2010.

2.8 Opium cultivation and distance to agricultural markets

In 2010, village headmen were asked about the distance to the nearest agricultural market both in terms of kilometres and the time it takes to reach that market. This question is important in order to understand how difficult it is for farmers to sell cash crops other than opium, especially when those crops are perishable and difficult to transport, e.g. vegetables. Usually, farmers in Afghanistan have to transport their crops to agricultural markets if they want to sell them. It is not common for traders to come to villages to buy crops and then transport them. The exception of course is opium, which is commonly sold at the farm-gate. The survey did not attempt to verify the distances reported by headmen. The analysis is exclusively based on reported information, that is, on a subjective assessment of what an agricultural market is and how far it is from the village.

Out of 1,453 village headmen interviewed, 704 responded to the question – 119 from opium-growing villages and 585 from non-opium-growing villages.

Overall, opium-growing villages were significantly farther away from the nearest agricultural market in terms of distance (kilometres). In the Southern region, contrary to the finding for the whole country, opium-growing villages were significantly closer to the next agricultural than non-opium-growing villages. Outside the Southern region, similar to the result for the national level, poppy-growing villages were significantly farther away from agricultural markets than non-poppy-growing villages.

The 2010 survey was the first survey to ask this question on distances and time it takes to reach the nearest agricultural market. Due to a lack of comparative data from previous years, it is too early to draw strong conclusions. While the findings suggest that distance plays a role, it is not clear why the same relationship was not found with travelling time.[13] A possible reason is that travel time does not only depend on distance but also on the means of transport and road conditions. Similarly, it was not clear if headmen in villages always differentiated between the closest agricultural market, one located within the village at 0 km distance, or the nearest market to the village. Indeed, for certain reasons, a further market might be preferable for selling goods. More information on types of agricultural markets in different regions of Afghanistan, as well as

[13] The correlation between distance (km) and time had an r-square of 0.40.

on other factors such as transportation costs and market sizes, is needed to evaluate this question and improve it for the next survey.

Table 27: Mean distance to the next agricultural market as reported by headmen (km), 2010

	Poppy-growing villages (km)	Non-poppy-growing villages (km)	Mean distance all villages(km)
Southern region	26	37	31
Rest of the country	25	18	19
National	**26**	**21**	**22**

2.9 Opium cultivation and cannabis

In the 2010 opium survey, 4% (196) of all farmers interviewed reported having cultivated cannabis in 2009. This proportion of cannabis-growing households in the 2010 opium villages survey was relatively close to that found in the 2009 cannabis survey (about 3% in the cannabis-risk area). These results cannot be extrapolated to the national level due to the different sampling scheme of the two surveys. Still, they show that the proportion of cannabis farmers is much smaller than the proportion of poppy farmers, which was around 9% of rural households in 2010.

The 2010 opium survey also confirmed findings of the 2009 cannabis survey, which suggested cannabis farmers are likely to grow poppy as well. In both surveys, two thirds of cannabis growers had also been involved in poppy cultivation.

Among the much larger number of poppy farmers, this association was also found. Just under 20% of farmers who had ever grown poppy had also grown cannabis in the preceding season. This proportion was higher in the Southern region.

The proportion of cannabis growers was highest in the group of active poppy growers, much lower in the group who had stopped poppy cultivation and almost negligible in the group who had never grown poppy.

All in all, the 2010 opium village survey confirmed the results of the 2009 cannabis survey: a much smaller magnitude of cannabis cultivation compared to poppy and a strong association of poppy and opium farming. However, these findings should be used with caution as the 2010 opium survey was not designed to make direct comparisons between opium and cannabis cultivation.

2.10 Loans

Outstanding loans

It is important to understand the financial status of farmers in order to appreciate their reasons for opium cultivation and the dynamics in Afghanistan. To that end, as part of the annual village survey, farmers were asked whether they had any outstanding loans.

Forty-one per cent of farmers reported having outstanding loans. The percentage did not significantly change from 43% reported last year. However, the average amount of outstanding loans per farmer rose by 15% – from US$ 910 in 2009 to US$ 1,046 in 2010. This increase was most pronounced among opium-growing households, which reported on average a 72% higher loan amount than in the year before.

The average loan per farmer did not vary much across farmers who cultivated or not opium poppy. However the percentage of farmers with outstanding loans was highest among farmers who stopped cultivating opium poppy (43%) and farmers who never cultivated opium poppy (41%), while was the lowest for farmers who grew opium poppy (31%).

Table 28: Average outstanding loans held by farmers (n=4,359), 2010

	All farmers	Opium-growing farmers	Non-opium-growing farmers	
			Stopped	Never cultivated
Average loan (US$/household)	1,046	1,029	1,053	1,043
Percentage of farmers with loan	41%	31%	43%	41%

Table 29: Average outstanding loans held by farmers (n=4,781), 2009

	All farmers	Opium-growing farmers	Non-opium-growing farmers	
			Stopped	Never cultivated
Average loan (US$/household)	910	599	911	965
Percentage of farmers	43%	30%	45%	45%

Data by region show that farmers in the South had an average of US$ 1,527 loans while in other regions, farmers had an average loan of US$ 943, an amount 38% lower than in the Southern region.

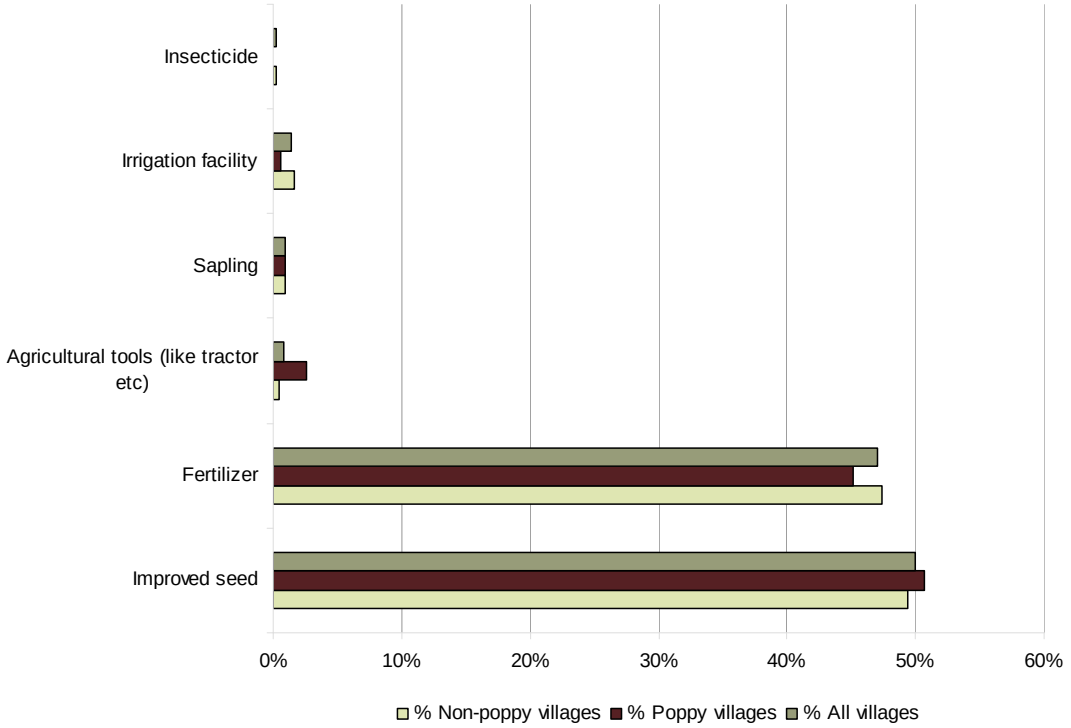
Table 30: Average outstanding loans held by farmers, by region, 2010

Region	Percentage of farmers with outstanding loans
Central	54%
Eastern	44%
North-eastern	38%
Northern	37%
Southern	25%
Western	52%

2.11 Agricultural assistance

Village headmen were interviewed in each of the 1,529 villages included in the survey. According to the information they provided, 44% of the villages received agricultural assistance. The type of assistance varied and included improved seeds/saplings (50% of receiving villages), fertilizers (47% of receiving villages), and irrigation facilities (1% of receiving villages). Only 1% received agricultural tools and another 1% received saplings.

Figure 26: Type of agricultural assistance delivered to villages as reported by headmen



Village headmen were asked if their village had received any agricultural assistance in the past year.

The statistically significant association between growing poppy and not receiving assistance was quite strong and suggests that – at the village level - the provision of agricultural assistance may have influenced whether poppy was grown or not. In 2010, villages that received some kind of agricultural assistance were less likely to grow poppy than villages that did not receive assistance. However, it is reasonable to assume that other factors also played a role, e.g. the security situation which influences whether agricultural assistance can be provided at all. In 2009, only a weak association between agricultural assistance and poppy-growing status of the village was found indicating that last year assistance did not play an important role in influencing the poppy-growing status of villages.

2.12 Income of farming households

In Afghanistan, opium is a cash crop. It is important to understand which other sources of cash income rural household use, in addition to or as an alternative to opium cultivation. Likewise, it is interesting to understand the economic importance of opium at the household level. The opium survey investigates these two issues by looking at differences in income patterns of rural households and the relative importance of different income sources. The survey is designed to investigate general differences between opium-growing and non-growing households and cannot answer how successful or unsuccessful specific patterns are. [14]

On average, poppy-growing households have a higher cash income than households that did not grow poppy. Data from the 2010 annual village survey on household income earned in 2009

[14] The survey relies on reported income, which is difficult to measure. While the absolute income figures reported may not always be reliable or complete, the proportions of different income sources are thought to be reliable enough to understand their relative importance and general differences between opium-growing and non-growing households at an aggregated level. Income in this context refers to the value of all products produced or cash income received in the last 12 months including products used for own consumption such as wheat.

shows that the average annual cash income of opium-growing households in 2009 was 17% higher than households that stopped opium cultivation and 15% higher than households that never grew opium. Differences between those who grew opium and then stopped and those who never grew opium were not pronounced.

Cash income was highest in the South for both opium-growing and non-opium-growing farmers. Non-opium-growing households in southern Afghanistan also reported higher incomes than those in other regions. The annual income of non-opium growing households was the lowest in the West.

Table 31: Reported average 2008 and 2009 annual household income by region and opium-growing and non-opium-growing status

			Average annual household income of non-opium poppy farmers in 2008		Average annual household income of non-opium poppy farmers in 2009	
Region	**Av. annual household income of opium poppy farmers in 2008 (US$)**	**Av. annual household income of opium poppy farmers in 2009 (US$)**	**Farmers who stopped (US$)**	**Farmers who never cultivated (US$)**	**Farmers who stopped (US$)**	**Farmers who never cultivated (US$)**
Eastern	2155	2394	2202	1868	2742	2573
Southern	5129	4225	3234	2934	3633	3691
Western	2366	1913	1620	1699	1795	2242
National	**4480**	**3673**	**2562**	**2399**	**3051**	**3119**

The Central, North-eastern and Northern regions were not analyzed separately because of a low number of opium-growing villages in these regions.

Comparing the 2008 and 2009 household income, it can be noted that the income divide between households that cultivated and did not cultivate opium poppy narrowed in 2009. The lowering income observed in 2009 for households that cultivated opium poppy can be a result of the opium price which reached its lowest levels in 2009.

Overall, farmers reported about one third of their household income from wheat. This proportion has been relatively stable over the years, indicating a continued importance of wheat, the main staple crop, for rural households. For opium-growing households, the overall higher households income leads to a relatively smaller proportion of income from wheat (21% in 2010).

Figure 27: Contributions to 2009 income in opium-growing households by source (data collected in 2010)

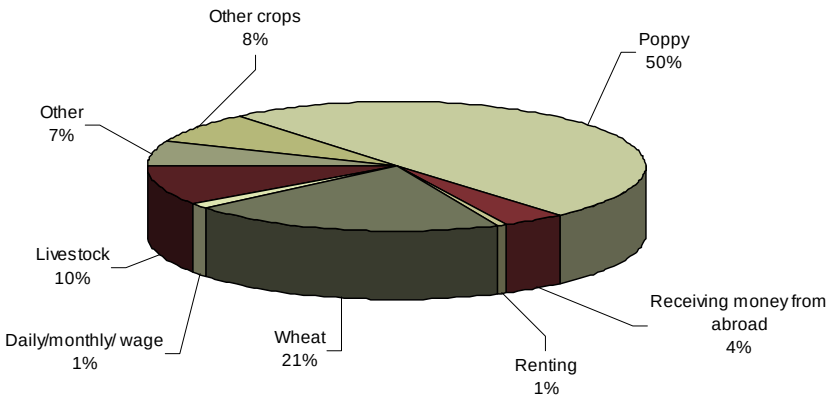
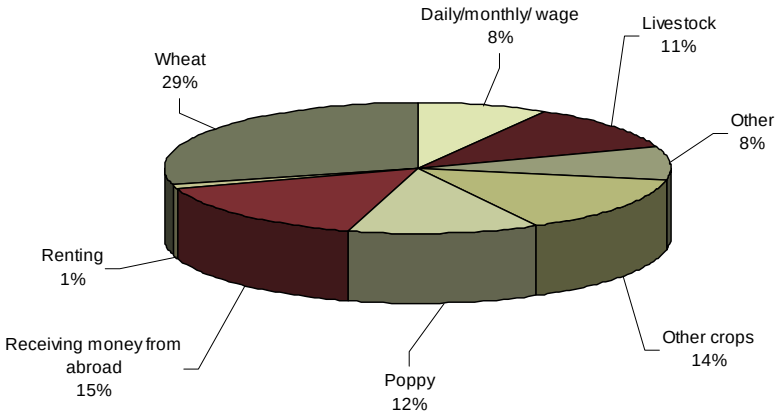
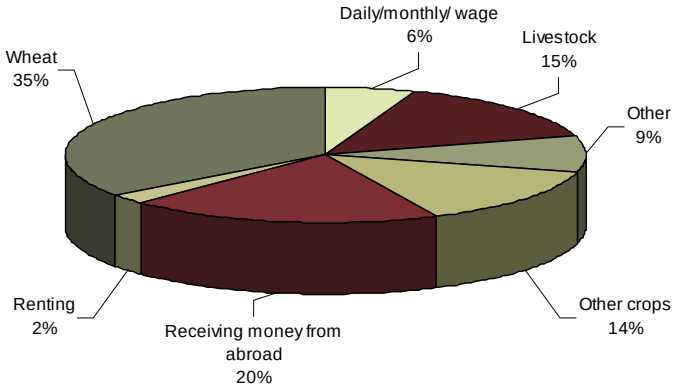


Figure 28: Contributions to 2009 income in non-opium-growing (stopped opium cultivation) households by source (data collected in 2010)



The main difference between opium-growing and non-growing households is the composition of the cash component. While opium-growing households have little cash income from sources other than opium, non-opium-growing households rely heavily on wage labour and remittances. A possible explanation for the low importance of wage labour for opium-growing households could be a trade-off between wage labour and opium: the labour-intense opium cultivation may already absorb considerable man-power which then would no longer be available for wage labour.

Figure 29: Contributions to 2009 income in non-opium-growing (never-grown farmers) households by source (data collected in 2010)



The relatively high importance of remittances for households that stopped opium cultivation (15%) and an even higher one for those who never grew (20%) is striking. It could indicate that suitable alternative cash income sources are still not sufficiently available within the country let alone close to home. Still, most farmers who stopped opium cultivation reported off-farm employment as a coping strategy (41%, see chapter Reasons for opium cultivation) and remittances were ranked only fourth (8%). A possible explanation would be that farmers are looking for off-farm employment and wage labour as an alternative cash income source but cannot get enough income from these sources. Thus, they still have to rely heavily on remittances from family members abroad.

Table 32: Sources of 2009 income for all farmers, by region (reported in 2010)

Region	Daily/monthly/ wage	Livestock	Other	Other crops	Opium	Receiving money form abroad	Renting	Wheat
Central	6%	21%	11%	8%	0.7%	24%	4%	25%
Eastern	23%	11%	8%	18%	5%	10%	2%	24%
N.-eastern	3%	10%	3%	18%	1%	9%	2%	55%
Northern	7%	12%	5%	24%	0.6%	12%	2%	37%
Southern	4%	10%	9%	11%	24%	17%	1%	25%
Western	3%	10%	4%	17%	6%	10%	1%	49%
National	**6%**	**13%**	**8%**	**13%**	**9%**	**16%**	**2%**	**31%**

2.13 Opium prices

In 2009 and 2010, prices at harvest time for all regions with the exception of the Central region[15] were derived from the opium price monitoring system[16] and refer to the month when opium harvest actually took place in the different regions of the country..

Dry opium prices as reported by farmers increased in all regions . Prices rose by 44% in the Eastern region, 21% in the North-eastern region, 63% in the Northern region, 192% in the Southern region and 50% in the Western region. The highest dry opium prices were observed in the South, Central and East regions (US$ 181/kg, US$ 133/kg and US$ 130/kg, respectively). Overall, there was a 164% increase in the price of dry opium at harvest time compared to 2009. In general, prices in the Northern-east, Northern and Western regions were lower than in other regions.

Table 33: Regional farm-gate prices of dry opium at harvest time collected from farmers through the price monitoring system (US$/kg), 2009-2010

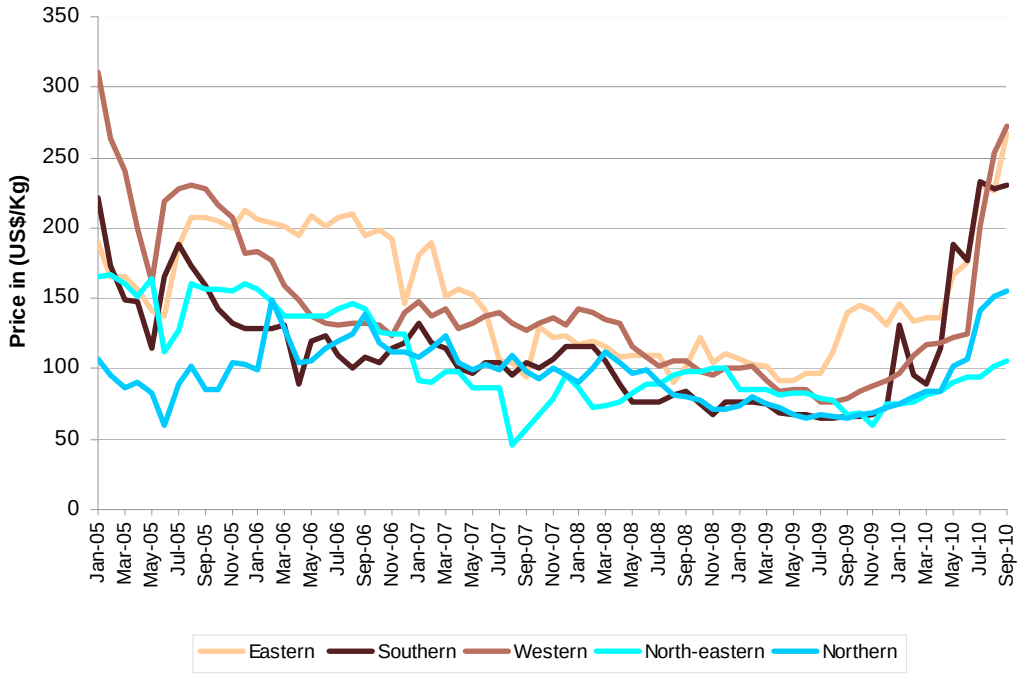
Region	Average Dry Opium Price (US$/kg) 2009	Average Dry Opium Price (US$/kg) 2010	Change on 2009
Eastern	90	130	44%
North-eastern	75	91	21%
Northern	64	104	63%
Southern	62	181	192%
Western	72	108	50%

Prices for the Central region were taken from the village survey as there is no monthly opium price monitoring in that region.

[15] Prices for the Central region were collected in the village survey and included in the national average.

[16] Monthly opium prices have been collected regularly by UNODC since 1997 in selected parts of Nangarhar (Eastern region) and Kandahar (Southern region) as part of the opium survey in Afghanistan. In recent years, prices also have been collected monthly in Badakhshan, Takhar, Farah, Nimroz, Badghis, Ghor, Hirat, Hilmand, Laghman, Kunar, Balkh, Faryab and Kunduz provinces, both from opium farmers and from local opium traders. Opium prices are currently collected in 15 provinces.

Figure 30: Regional average price of dry opium collected from traders (US$/kg), January 2005 – September 2010



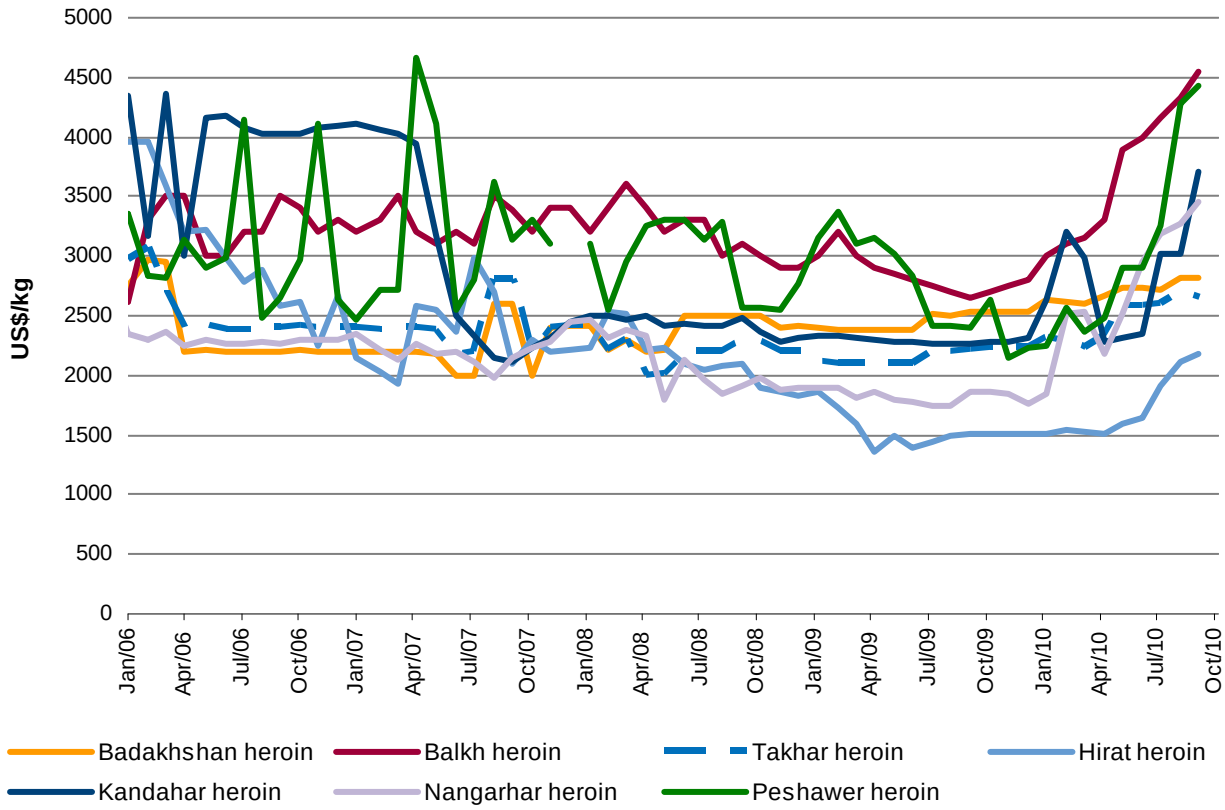
Source: MCN/UNODC Monthly Price Monitoring System

Dry opium prices reported by traders showed the same trend with an overall increase of 169% between September 2009 and September 2010. A breakdown by region shows a general increasing trend in opium prices compared to September 2009. In 2010, opium prices reacted strongly to the low opium yield in the Southern and Western regions and increased dramatically as a consequence of the greatly reduced availability of fresh opium during the harvest time from March to May. Typically, opium prices decline during harvest time, but the rising prices observed in April/May acted as an early warning system and indicated a strong yield reduction long before field surveys confirmed the sharp decline of yield. Recent information indicates that price in the Southern, Western and Eastern region has stopped its increase in October 2010 when it reached about the 2004 price level of around US$ 250/kg. This price level was high in all regions and may provide a strong incentive to farmers to restart or expand opium poppy cultivation.

Table 34: Prices of dry opium as reported by traders by region (US$/kg), September 2009 – September 2010

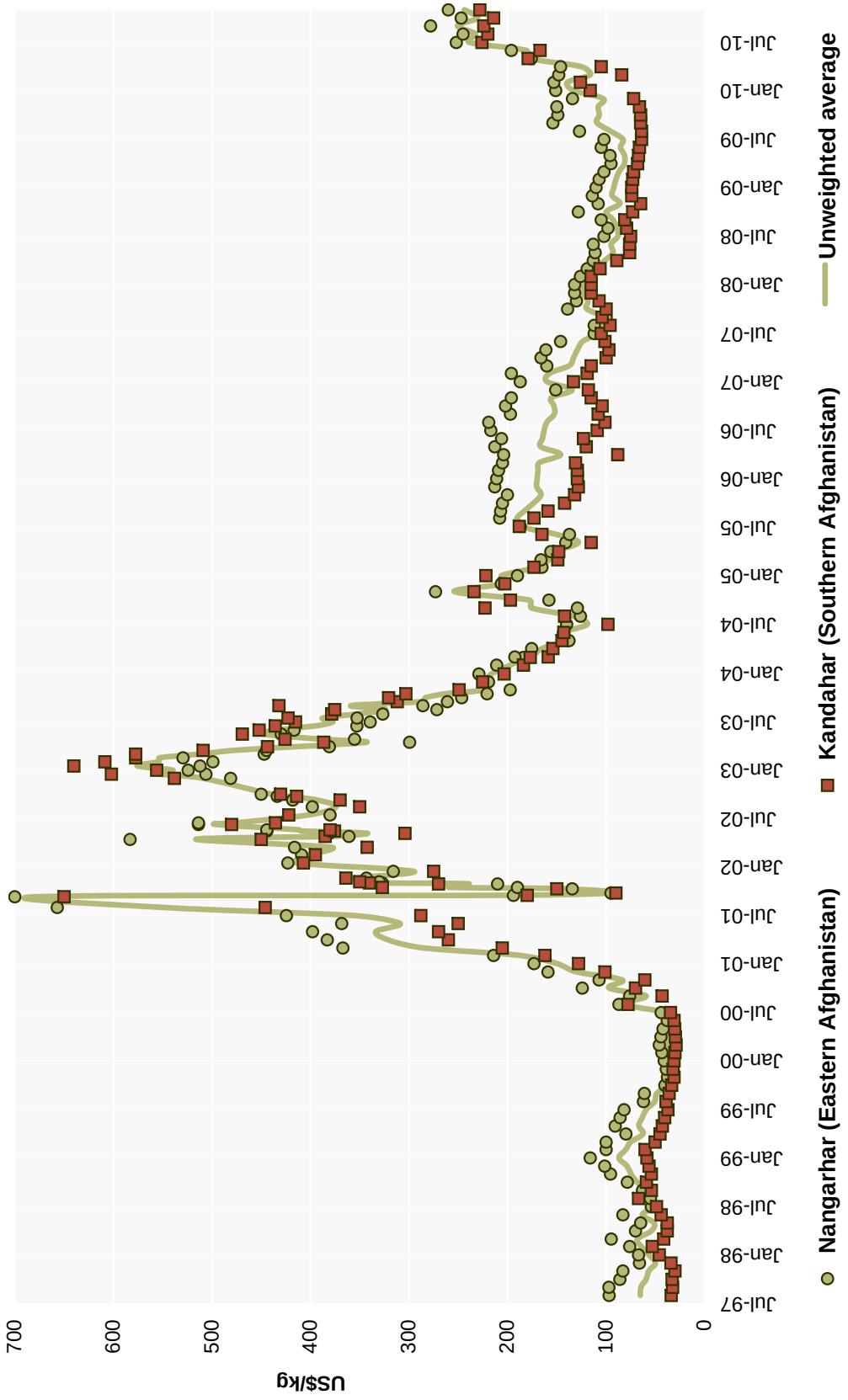
Region	Regional average price (US$/kg) September 2009	Regional average price (US$/kg) September 2010	Change on 2009
	Trader	Trader	
Eastern region (Kunar, Laghman, Nangarhar)	140	267	91%
Southern region (Hilmand, Kandahar)	66	231	250%
Western region (Badghis, Farah, Ghor, Hirat, Nimroz)	79	272	244%
North-eastern region (Badakhshan, Takhar)	68	106	56%
Northern region (Balkh, Faryab, Kunduz)	65	155	138%
Average	**84**	**226**	**169%**

Figure 31: Monthly wholesale prices of heroin of unknown quality by province (US$/kg), Jan. 2006 – Sep. 2010



Heroin prices reacted rather quickly to the opium price increase, with the exception of the Badakhshan and Takhar in the Northeastern region, where more opium was produced in 2010 than in the year before. However, the increase in heroin prices (1.4 times) was less pronounced than in opium prices (2.6 times Sept 2009 – Sep 2010), probably due to the fact that the cost of opium is only one factor influencing heroin prices. Prices for acetic anhydride, an import precursor chemical, for example, remained relatively stable.

Figure 32: Monthly prices of dry opium in Kandahar and Nangarhar province as collected from traders (US$/kg), Jul. 1997 – Nov. 2010



Source: MCN/UNODC Monthly Price Monitoring System

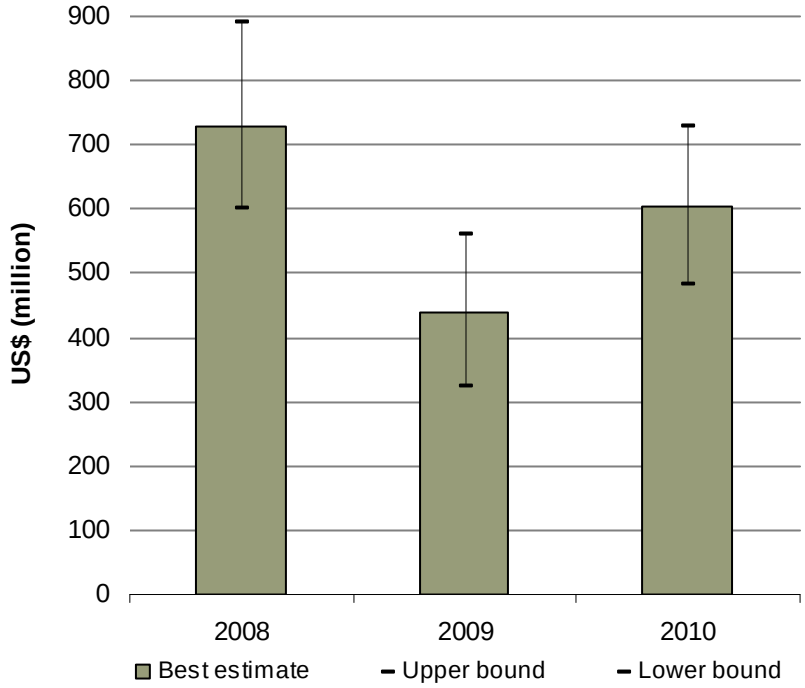
2.14 Farm-gate value of opium production and income from opium

Based on potential opium production and reported opium prices, the farm-gate value of the 2010 opium harvest amounted to US$ 605 million (range US$ 484 – US$ 728 million), an increase of 38% from 2009.[17] Opium farmers could sell their 2010 harvest at much higher prices than in 2009, which balanced off the effect of the decrease in opium production. Farmers in the Southern region accounted for close to 89% of the total income from opium production – the highest such concentration ever encountered in Afghanistan. Farmers in Hilmand, the largest opium-producing province, earned around US$ 350 million, equivalent to 73% of the total farm-gate value of opium in Afghanistan in 2009.

The farm-gate value of opium as a proportion of GDP also increased to 5% in 2010 from 4% in 2009. Despite the considerable lower amount of opium produced in 2010, the increase in opium price made the opium business overall more profitable for farmers. While many farmers in disease-affected areas lost much of their expected income from opium, other farmers not affected by disease or affected only marginally had a large increase in their profits.

The total Afghanistan's estimated licit GDP amounted to 12.7 billion in 2010.[18]

Figure 33: Farm-gate value of the opium production in Afghanistan (US$), 2008-2010



Household income from opium

The gross income from opium per household can be estimated by dividing the farm-gate value of the opium production (US$ 605 million) by the number of households cultivating poppy in 2010 (248,700). The estimated gross income based on these figures would be US$ 2,400 per household.

[17] Due to the availability of more detailed information, this figure was updated from the figure published in the Summary Findings in September 2010.

[18] Nominal GDP. Source: Gov. of Afghanistan, Central Statistical Office.

Table 35: Gross household income of opium-growing households from opium, 2003-2010

	2003	2004	2005	2006	2007	2008	2009	2010
Farm-gate value (US$ million)	$1,020	$600	$560	$760	$1,000	$732	$438	$605
Estimated number of opium growing households	264,000	356,000	309,000	448,000	509,000	366,500	245,200	248,700
Average annual income from opium per opium-growing household	$3,864	$1,685	$1,813	$1,696	$1,965	$1,997	$1,786	$2,433
Av. annual income from opium per opium-growing household (rounded)	**$3,900**	**$1,700**	**$1,800**	**$1,700**	**$2,000**	**$2,000**	**$1,800**	**$2,400**

Note: Figures are not corrected for inflation.

Per hectare income from opium

The expenditure per hectare of poppy reported by farmers corresponds to 41% of reported gross income, a slightly lower proportion as calculated in previous years. This proportion was used to estimate the net income from the gross income of US$ 4,900/ha, an estimate derived from the total farm-gate value of opium divided by the estimated number of poppy-growing households. The net income per hectare of poppy was US$ 2,900.

At the time of the survey, respondents could not yet anticipate the impact of the late-onset disease, which led to a dramatic reduction in opium yield. Thus, huge discrepancies in the income situation can be expected, with some farmers experiencing a very low income, maybe not even recovering costs, and other, who were not affected by the disease, making unexpected high gains.

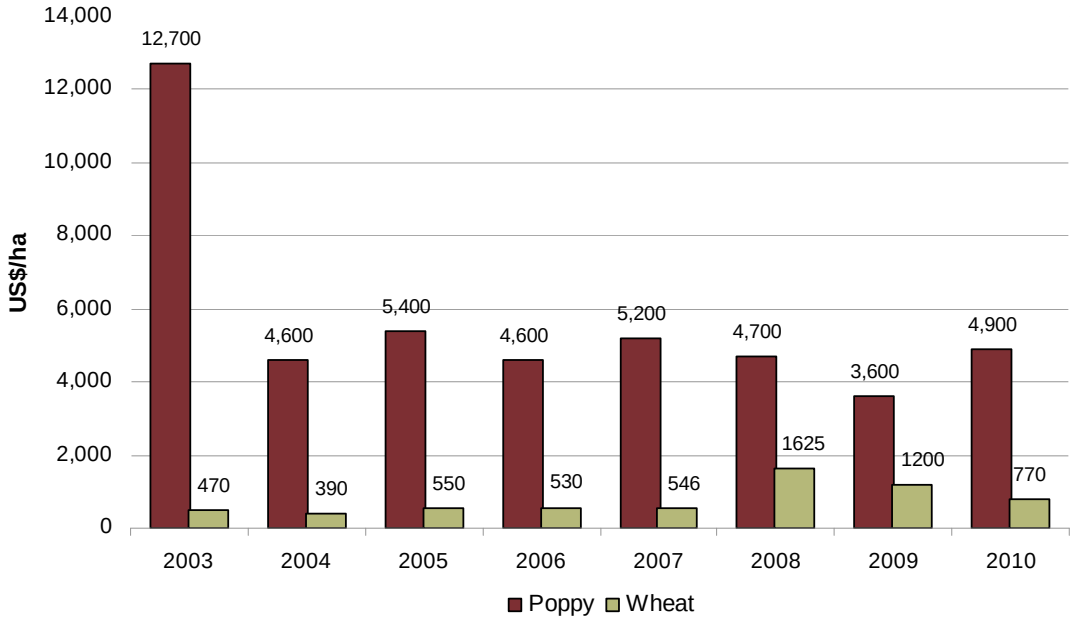
Some caveats have to be made. The average production cost for opium of around 41% of opium farm-gate prices do not necessarily apply to small-scale farmers who typically cultivate 1 jerib (= 0.2 ha) or less in Afghanistan. They can make use of – *de-facto* – 'free labour' of their household members for ploughing and weeding the fields and for lancing and collecting opium. In some provinces, notably those with a strong influence of insurgents, some or all farmers reported paying a 10% tax called 'ushr' on opium but also on other agricultural products. This further reduces their net income. Ushr was not considered in this calculation as it does not apply to all poppy farmers.

Comparison of income from opium and wheat

Comparing the per hectare income of wheat and opium poppy can provide an indication of the attractiveness of cultivating poppy, as in Afghanistan opium poppy and wheat are planted during the same season. As most of the poppy is grown on irrigated land, wheat yield on irrigated land is used for the comparison. In 2010, the ratio between gross income from opium and wheat was 6:1, the highest ratio calculated since 2008. While the price of wheat decreased, the price of opium increased significantly since 2009. This ratio is still much lower than in the years before 2008. In 2003, for example, farmers earned 27 times more gross income per hectare of opium than per hectare of wheat.

The per hectare income from wheat was estimated based on information from the village headman on yield and price of wheat. The wheat price reported reflects the price level and expectations at the time of the survey (April – May 2010). The average reported yield was 2,531 kg/ha on irrigated land. Farmers had an estimated gross income of US$ 770/ha from wheat.

Figure 34: Gross income per hectare from opium and wheat (US$/ha), 2003-2010



Sources: UNODC/Food and Agriculture Organization (FAO)/World Food Programme (WFP).

The difference between net income from opium and wheat is smaller as poppy cultivation is more cost intensive. Based on information from UNODC survey coordinators, costs for wheat were estimated to be 20% of the gross per hectare income of US$ 770.

The ratio between the net income from opium (US$ 2,744/ha) and wheat (US$616/ha) was 4:1, while the ratio of the net income is 6:1. The income comparison presented here does not take into account income from other products of opium and wheat cultivation, such as poppy seed and wheat straw. According to field observations, wheat straw can provide considerable additional income to farmers, which would lead to a smaller discrepancy between opium and wheat income per hectare.

2.15 Potential value of the opiate economy

The calculation of the potential income from opium production for the Afghan economy is based on the value of opiate exports in the border areas of neighbouring countries. This approach is based on the observation that Afghan traffickers - far more than nationals of other countries - are heavily involved in shipping opiates across borders to neighbouring countries, notably Iran and Pakistan, and to a lesser extent, countries in Central Asia. From there, traffickers in neighbouring countries usually take over the drug shipments. Thus, the far larger funds generated in subsequent trafficking activities to Europe and various other overseas locations are not accrued by Afghanis or the Afghan economy. The financial gains made by criminal groups in Afghanistan only constitute a small proportion of the overall trafficking profits arising from Afghan opiates. The amounts are, however, still important if compared to the size of the Afghan economy.

Despite ongoing attempts to improve the estimates by means of additional information-gathering activities, it should be stressed that the calculations of the monetary resources generated from the Afghan opium economy remain far less robust than the estimates of the area under cultivation, yield, opium production or the income made by Afghan opium farmers. These estimates are intended to provide reasonable orders of magnitude of the likely amounts of money made from this illegal trade to neighbouring countries and to provide an indication of trends and patterns.

The calculation of the value of the Afghan opium economy is based on the amount of opium production in Afghanistan, less domestic consumption and domestic seizures (expressed in opium equivalents), which gives the amount available for export. The proportions exported in the form of opium and morphine/heroin respectively were estimated based on information from the 2010 drug

flow survey and information obtained via the analysis of opiate seizures. A transformation ratio of opium to morphine and heroin provides an estimate for the export of morphine and heroin. The opium and morphine/heroin flows to neighbouring countries were estimated from various sources of information. A detailed description of the estimation process can be found in the Methodology section of this report.

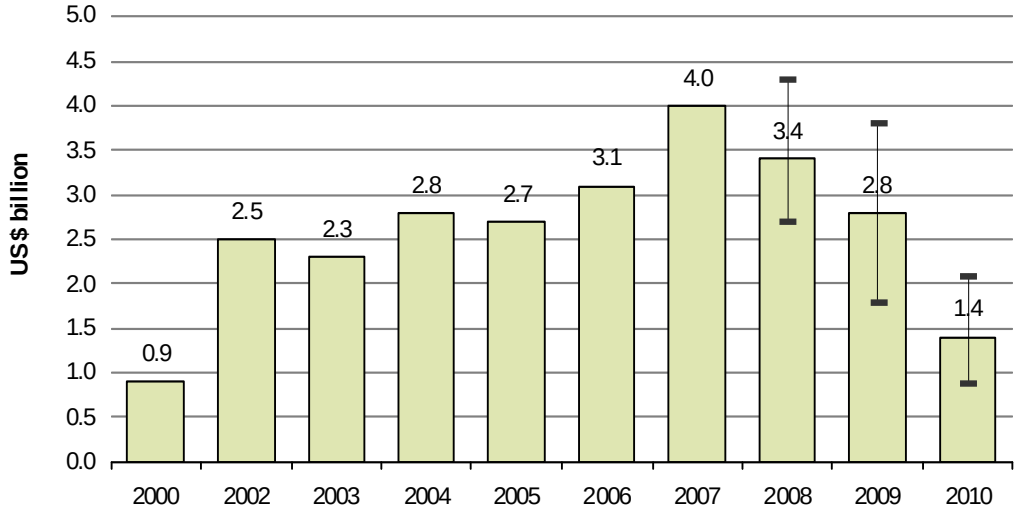
Table 36: Opiates available for export, 2010

	Opium (range)	Heroin and morphine (range)
Opium production in 2010	3,600 (2,800 - 4,400)	
% distribution	48%	52%
Opiates available for export and local consumption(mt, in opium equivalent)	1,713 (1,332 - 2,094)	1,887 (1,468 - 2,306)
Consumption in Afgh. (mt, in opium equivalent)	137 (125 - 155)	161 (148 - 188)
Seizures in Afgh. in 2009 (mt, in opium equivalent)	36	51
Opiates available for export (mt, in opium equivalent)	**1,540 (1,172 - 1,903)**	**1,674 (1,268 - 2,067)**
Heroin/morphine available for export		**239 (181 - 295)**

Note: Seizures in 2009 reported by the Government of Afghanistan to UNODC are taken as a proxy for 2010 since the total amount of drugs seized in the current year is not yet know. In the absence of a comprehensive seizure recording system that would include all counter-narcotics operations of national and international forces, the actual amount may be different.

By far the largest portion of opium produced in Afghanistan is destined for export. In 2010, an estimated 3,600 mt of opium was produced, out of which 52% were estimated to be converted into morphine or heroin within Afghanistan, the remainder being consumed and trafficked as opium. After deduction of local consumption and seizures made in Afghanistan, around 1,540 mt of opium and 239 mt of morphine and heroin were available for export.

Figure 35: Potential gross export value of opiate production (US$), 2000-2010



Sources: UNODC(2003): The Opium Economy in Afghanistan; MCN/UNODC: Afghanistan opium surveys 2003-2010. Note: The bars indicate the upper and lower margins of the range of the estimated value.

Multiplied with the corresponding prices across the border, the gross wholesale value of the exported opium and morphine/heroin in neighbouring countries amounted to US$ 1.4 billion. The decline by 50% compared to 2009 was mainly due to lower production in Afghanistan, while

cross-border prices remained relatively stable with the exception of opium prices in Pakistan, which went up considerably. The dramatic opium price increases at the farm-gate and local trader level did not immediately translate in similar price increases in neighbouring countries. The gross export value in 2010 amounted to 11% of the nominal licit GDP[19], compared to 26% in 2009. This is due to a decrease in the export value of opiates and an increase in the GDP of Afghanistan, but partly also due to an increase in the estimated local consumption of opiates in Afghanistan.

Table 37: Gross and net export value of the opiate economy (US$), 2010

	Best estimate (US$)	Lower estimate (US$)	Higher estimate (US$)
Gross export value (rounded)	1.4 billion	0.9 billion	2.1 billion
Gross export value (in % of GDP)	11%		
Net export value (rounded)	1.2 billion	0.6 billion	2 billion
Net export value (in % of GDP)	9%		

Net value

In 2010, the net export value of opiates amounted to US$ 1.2 billion, equivalent to 9% of GDP. The net export values tries to account for the costs of imports to associated with the production of morphine and heroin. To the extent possible, these costs are deducted from the gross export value of opiates. This net export value is considered to be more suitable for comparison with the GDP. However, many cost factors are not well understood or known. Thus, the calculation of the net value had to be limited to costs of imported precursor, of which prices and amount necessary for morphine or heroin production are know. The import costs for precursors constitute an important cost element of morphine and heroin production. There are other import costs associated with morphine and heroin production in Afghanistan, which could not be estimated. The best estimate of the net value was about 14% lower than the gross export value. In other words, about 14% of the revenue made by Afghan traffickers flew back to other countries to cover the costs of imported precursors.

The main (imported) precursors in terms of costs used in this estimation were:

- Ammonium chloride, for the extraction of morphine from opium
- Acetic anhydride, for the conversion of morphine base into brown heroin base

Acetic anhydride is a controlled substance. There is no known licit use of acetic anhydride in Afghanistan and no known production of the substance. The high price level of this precursor in Afghanistan indicates its scarcity. Ammonium chloride is not a controlled substance. Its easy availability and wide range of licit uses are reflected by a much lower price level. The information from the drug flow survey indicates that ammonium chloride used for heroin processing is imported.

The net export value was calculated by:

- Multiplying the main precursors' cost per 1 kg of heroin with the total amount of exported heroin;
- Subtracting the total costs of two main precursors from the gross export value. Other import costs were neglected.

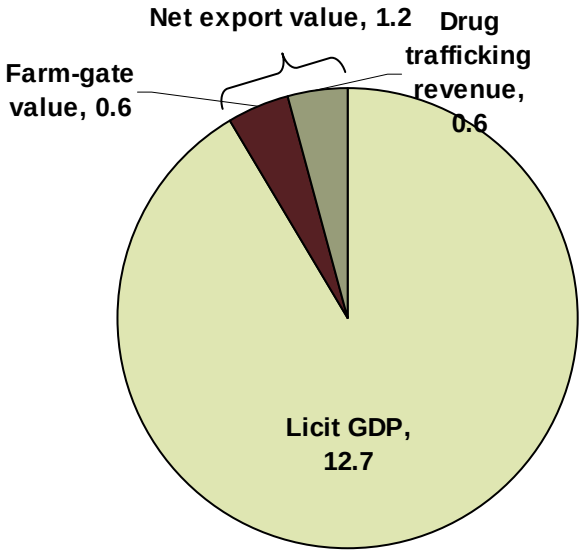
[19] Based on nominal GDP estimates of US$ 12.1 billion for 2009 and US$ 12.7 billion for 2010. GDP refers to licit GDP without the drug economy. Sources: Gov. of Afghanistan, Central Statistical Office.

Table 38: Prices and amounts of main precursors needed for the production of 1 kg of heroin, 2010

Precursors	Price (US$/unit)	Amount needed/kg heroin	Costs per kg of heroin (US$)
Ammonium chloride (kg)	3.2 (3.0 - 3.4)	2.5 kg (2.0-3.0) kg	8.0 (5.9 - 10.2)
Acetic anhydride (litre)	304 (289 - 316)	2.4 l (0.77-4.0)	732 (228 - 1,273)
Total			**732**

For the calculation of the lower estimate of the net value, it was assumed that traffickers would have to pay prices at the higher end for imported precursors, and for the calculation of the higher estimate, that they would pay prices at the lower end of the range. This method contributed to a wide range, which reflects the uncertainty associated with the estimate.

Figure 36: GDP and opiate industry in Afghanistan (in US$ billion), 2010



Sources: Afghanistan Central Statistical Office and MCN/UNODC 2010

To further approximate the potential total revenue of drug traffickers, the costs of purchasing opium from farmers can be deducted from the net export value. The cost of opium would be at least the farm-gate value, i.e. the revenue of farmers. In reality, there would be additional costs, which were not considered. In 2010, the farm-value of the opium production was at US$ 605 million. The potential revenue to drug traffickers after deduction of costs of opium and precursors was estimated at about US$ 0.6 billion. This should not be taken as a net income or 'gain' as many costs factors were not taken into consideration due to a lack of information available to estimate them.

3 METHODOLOGY

This chapter covers various methodological aspects such as estimations of the extent of opium cultivation, opium yield production, opium prices and eradication verification. It also covers socio-economic aspects such as the number of households involved in opium cultivation, reasons for cultivation/non-cultivation of opium poppy and the income from opium earned by farmers and traffickers. The survey methodology was based on a sampling approach that combined the use of satellite imagery and extensive field visits.

3.1 Opium cultivation

Remote sensing methodologies have been used by UNODC since 2002 to monitor the extent of opium cultivation in Afghanistan. The latest major changes in the location of opium poppy cultivation and the increased security difficulties to access the area under scrutiny required a reassessment of the sampling design applied up to now.[20]

In recent years, the distribution of opium cultivation in Afghanistan became more and more concentrated in the South and West of the country, while large areas in the North and West became poppy-free or had only small pockets of opium cultivation. A decision was taken to use a sampling approach to cover those provinces where most of the poppy can be found, and a targeted approach in provinces with a low level of opium cultivation. In 2010, out of 34 provinces in Afghanistan, 8 (12 in 2009) were covered with a sampling approach and 11 (5 in 2009) with a targeted approach. The remaining 17 provinces were considered poppy-free based on the Winter Assessment 2010 and additional information from the field and not covered by the remote sensing survey.[21] However, they were covered by the village survey.

Table 39: Target provinces 2010

Region	Province
Central	Kabul
Eastern	Kapisa, Kunar, Laghman, Nangarhar
North-eastern	Badakhshan
Northern	Baghlan, Faryab, Saripul
Southern	Ghor
Western	Hirat

Sampling approach

The area available for agriculture was updated based on Landsat 7 ETM images and DMC images. The total estimated agricultural area in Afghanistan in 2010 amounted to 79,990.58 km^2. The sampling frame was established by extracting the area of land potentially available for opium cultivation in 8 provinces. The arable land in the sampling frame covers irrigated and rain-fed areas. The total area of arable land in the 8 provinces was 16,283 km^2, which is equivalent to 20% of all potential agricultural land in Afghanistan. The potential land is referred to as all land available for cultivation and includes land that is currently fallow.

Opium fields were identified by interpreting high-resolution (10x10 km) IKONOS, QUICKBIRD, WORLD-VIEW2 and GEO-EYE images.

In 2010, high-resolution satellite images were acquired for 118 sample locations covering 8 provinces in Afghanistan. This given number of images was constrained by cost considerations

[20] The revision of methodologies for the remote sensing and village survey was based on recommendations made by Graham Kalton in December 2008.

[21] Note that more than the remainder of 17 provinces turned out to be poppy-free as 3 provinces covered by the survey had less than 100 ha opium cultivation.

and the maximum number of images that the satellite provider could handle given the limited time window for each image.

Opium poppy fields were identified by interpreting the high-resolution (10 by 10 km) in the 118 IKONOS, QUICKBIRD, WORLD-VIEW2 and GEO-EYE images. Locations for these images were randomly selected from a 10 by 10 km grid that was overlaid on the map of arable land. The final sampling frame consisted of 1,159 cells in 8 provinces.

In the 2010 survey, the images that cut across provincial boundaries, the part falling in respective provinces were considered in that province.

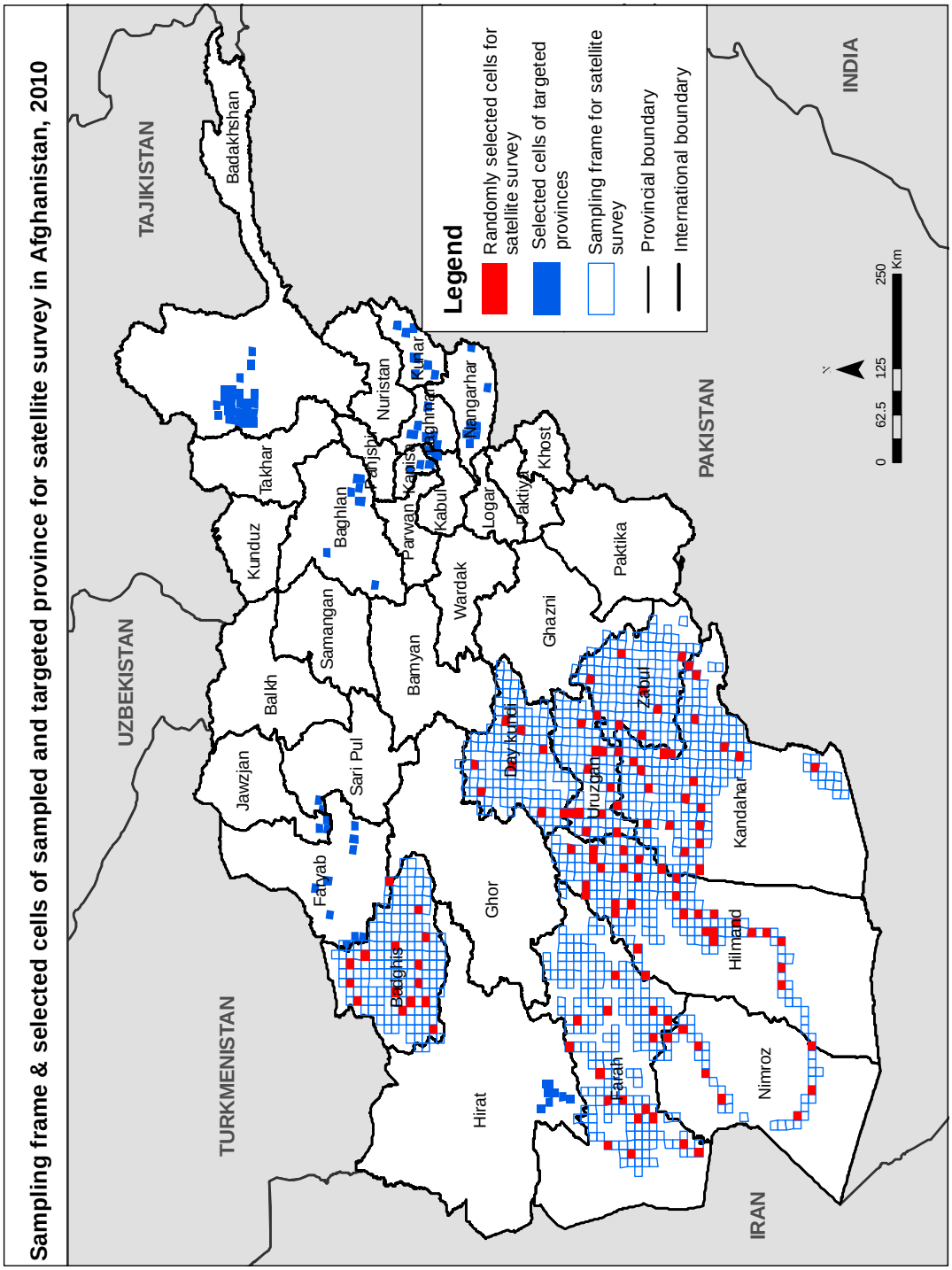
Also as it was the case in 2008 survey, cells with less than 1% of potential agricultural land were excluded from the 2009 and 2010 sampling frame in order to optimize the sample. The criterion was re-formulated as to be less than 1 square kilometer of potential agricultural land as some cells cut across the boundary of a sample and non-sampled province and the boundary of a sampled province and the national border. In total, the exclusions represented less than 2% of the total potential agricultural land in all but two of the sampled provinces (Farah and Ghor).

Table 40: Sample allocation, 2010

	PAL 2009	PAL%	Cells	Sample
Farah	1,187	14.5	234	16
Hilmand	3,127	38.3	207	20
Kandahar	2,631	32.2	240	23
Nimroz	579	7.1	75	8
Uruzgan	650	8.0	105	12
Badghis	5,575	56.2	195	10
Day Kundi	888	9.0	182	7
Zabul	1,414	14.3	182	6

PAL: Potential Agricultural Land suitable for opium cultivation

For the 2010 sampling design, the images, which were sampled in 2009, and were located in 2010 sample provinces were kept. By reducing the number of provinces where samples are required, the number of images per province could be increased accordingly. The sampled images were divided between provinces approximately in proportion to the square root of their amounts of potential agricultural land. This allocation methodology is one form of compromise between the appropriate allocation for producing national estimates and that for producing provincial estimates (Bankier, 1988). A minimum number of 8 sample cells was set.



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

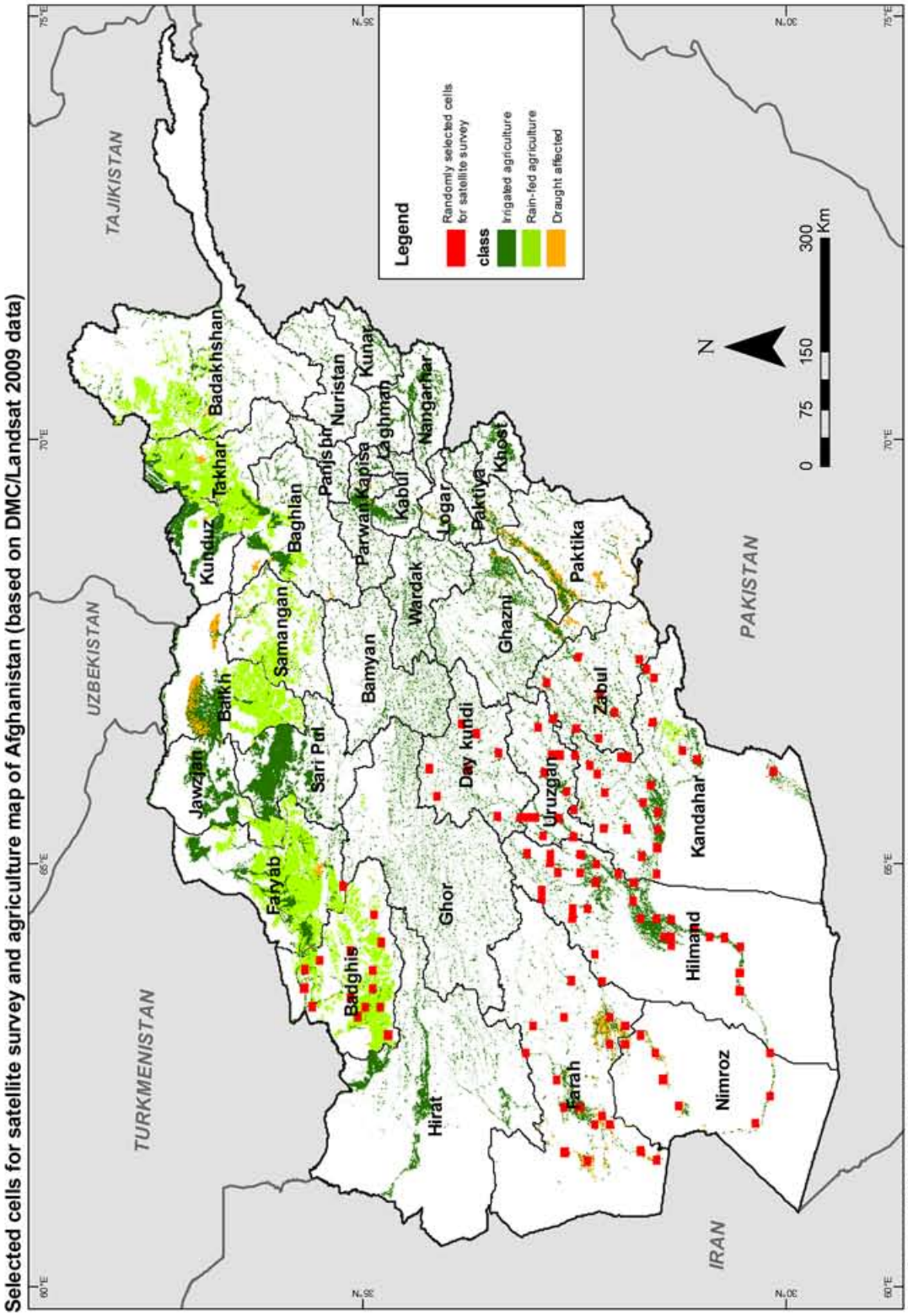

Selected cells for satellite survey and agriculture map of Afghanistan (based on DMC/Landsat 2009 data)
Legend
Randomly selected cells for satellite survey
class
Irrigated agriculture
Rain-fed agriculture
Draught affected
0
75
150
300
Km
N
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
IRAN
PAKISTAN
Badakhshan
Takhar
Kunduz
Baghlan
Nuristan
Kunar
Panjsir
Parwan
Kapisa
Laghman
Nangarhar
Kabul
Logar
Paktiya
Khost
Paktika
Samangan
Balkh
Jawzjan
Sari Pul
Bamyan
Wardak
Ghazni
Zabul
Day kundi
Uruzgan
Kandahar
Faryab
Ghor
Badghis
Hilmand
Hirat
Farah
Nimroz
Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Table 41: Agricultural land sampled, by province, 2010

Province	Total arable land(km^2)	Total	Selected	% of selected cells over total cells	Arable land in selected cells	Sample size (% of arable land in selected cells)
		# cells	# cells		(km^2)	
Badghis	6,505	180	15	8%	808	12%
Day Kundi	585	140	8	6%	55	9%
Farah	1,754	174	17	10%	325	19%
Hilmand	3,063	178	30	17%	788	26%
Kandahar	2,405	214	20	9%	457	19%
Nimroz	463	44	8	18%	106	23%
Uruzgan	631	84	12	14%	147	23%
Zabul	789	145	8	6%	93	12%
Total	**16,195**	**1,498**	**118**	**8%**	**2,779**	**17%**

Satellite image acquisition

The acquisition of satellite images at the appropriate growth stage of the opium poppy is key to the successful identification of opium poppy fields on satellite images. Satellite data is collected at two stages, namely the pre-harvest (capsule) stage and the post-harvest (post-lancing) stage. In recent years, detailed information on the crop growth cycle of each district has been collected in the form of a phenological chart. This is useful in deciding on appropriate dates for satellite data acquisition. First-dated images of the Southern, Eastern and Western regions are collected during March and April due to early cultivation and maturity of crops in those regions. The crop growth cycle begins later as one goes northward. Images of the North and North-eastern region are acquired during May, June and July. Second-dated satellite images are collected approximately two months after the first images are collected.

The normal time window for satellite data acquisition is one month, depending on the scheduled passing of the satellite and weather conditions. The time window for first-dated image acquisition begins at the full flowering stage and continues through the capsule stage. Second-dated image acquisition begins towards the end of the lancing stage and continues until the opium poppy fields are ploughed. Images acquired in the middle of the prescribed time window facilitate optimum discrimination between opium poppy and other crops.

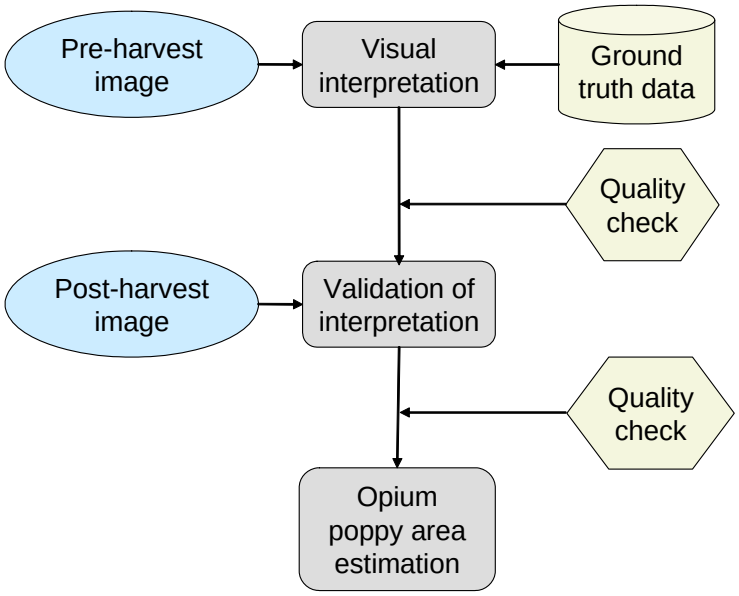
The figure below illustrates the spectral characteristics (Normalized Difference Vegetation Index (NDVI)) of opium poppy and other crops between February and June. Wheat and opium poppy have the same growth cycle between March and June, as illustrated. The spectral differences between these two crops are more pronounced in February, which marks the beginning of the capsule stage of the crop in this example. Poppy fields are ploughed immediately after the harvest, whereas wheat fields are not. This is why two-dated images − pre-harvest and post-harvest − are collected for the same location.

Figure 37: Illustrations of opium poppy, wheat and clover growth cycles

Figure 38: Spectral reflectance of opium poppy and other crops

The figure above illustrates the growth cycles of opium poppy, wheat and clover from February to June, with the help of ground photographs. Note that maximum visual discrimination between opium poppy and other crops is possible during the flowering/capsule stage and after capsule lancing. The different phenological stages described above are shown in the figure below (field photographs of opium poppy, wheat and clover on different dates).

Figure 39: Image classification methodology for estimating opium cultivation area



Interpretation of opium cultivation from satellite images

First-dated images were acquired during the flowering or capsule stage and second-dated images after the opium harvest. For example, wheat appears mostly in bright red on the first date image in

false colour composite (full coverage with vegetation appears in red; bare soil in grey/green), while opium poppy fields show in tones of pink. While there can be some confusion between opium poppy and wheat in the first-dated images, the acquisition of second-dated images makes it possible to distinguish opium poppy from other crops, because the opium poppy crop has been harvested and the fields appear in grey/green.

Visual interpretation technique has been used to delineate opium poppy fields by interpreting IKONOS images covering a 10x10 km area. Ortho-rectified IKONOS, QUICKBIRD, WORLD-VIEW2 and GEO-EYE images of 1 m resolution and half m resolution (PAN-sharpened) were used for this purpose. Opium poppy was initially identified using first-dated high resolution images. Ground truth information collected in the form of segment maps and GPS points was also useful in identifying opium poppy fields. The interpretation based on first-dated images was improved using patterns of observation in second-dated images. Poppy field boundaries were delineated by an on-screen digitization method.

Band combination for opium poppy identification

Two kinds of band combination were used to detect opium poppy. True-colour combination (blue, green, red) was used in areas where land use is dominated by opium (e.g. Hilmand and Kandahar) and in cases where images were obtained during the flowering and lancing stages of opium poppy. False-colour combination (infrared, red, green) was used in almost all cases. Analysts used both combinations simultaneously to optimize discrimination between opium poppy and other crops.

Some of the images could not be acquired at the appropriate time due to weather conditions and/or the time at which the satellite passed. The delayed acquisition of images makes it difficult to detect opium poppy, since fields may be at the senescence stage due to the lancing of capsules and can therefore be confused with fallow fields. In such cases, second-dated images are often useful in confirming opium poppy fields, since harvest patterns are different for wheat and opium poppy.

Ground reference information

Ground reference data were collected from selected locations covering an area of 250x250 m within the extent of the satellite images. These locations are referred to as ‘segments’. In areas where segment maps were unavailable, ground reference data was collected in locations marked by GPS (point data). Due to security constraint, this year there were very few segments in the Western zone.

The segments were selected in the agricultural area in many of the image locations, giving preference to locations where interpretation of poppy is not easy. The surveyors visited these segments to collect detailed information for each agricultural field. Most of the surveyors trained and assigned to the segment survey already had the relevant experience from surveys conducted in previous years. Information collected during the segment survey included crop type, plant height, GPS coordinates and photographs.

Due to security constraints, only 8 of the planned 24 segments could be surveyed. Segment survey could not be carried out in parts of the Southern and Western regions. Each survey team was equipped with an orientation map to help locate segments within each satellite image, a detailed segment map showing individual land parcels and a manual containing instructions for ground data collection. This year the target survey was extended to collect more GPS points of various crops to identify the poppy. 1,152 GPS points were collected.

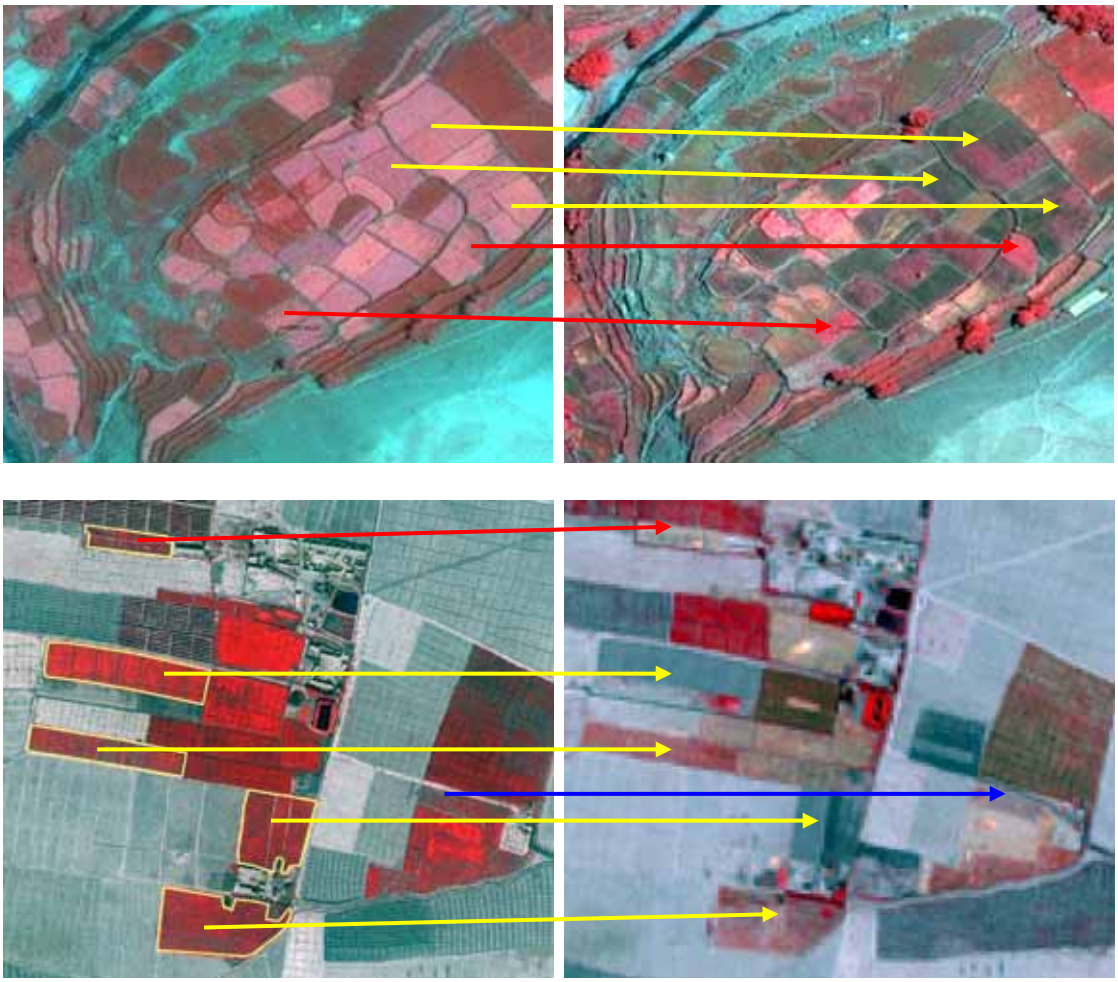
Segment maps and GPS point data were superimposed over the satellite images to facilitate visual interpretation. Ground data is not always sufficient to identify the signature of opium poppy since segments may not necessarily contain opium fields. In such cases, opium poppy was identified on the basis of the analysts’ experience and subsequently confirmed using the second-dated satellite images. Aerial photographs were also used wherever available to identify poppy from other crops as shown below. The superimposition of GPS point data also posed difficulties, because the images of mountainous terrain were not perfectly ortho-rectified. This limits the use of GPS data as ground reference information, particularly in mountainous areas.

Aerial photoghraph (natural color) *Satellite image (normal FCC)*

Advantage of two-dated images

Visual interpretation of single-dated very high resolution images was a relatively easy task in Hilmand , Kandahar, Uruzgan and Nimroz provinces. This was due to larger field sizes, and timely acquisition of the images. Interpretation in Target provinces namely Nangarhar, Kunar, Laghman, Kapisa, Kabul, Hirat, Baghlan and Badakhshan was easy with the help of GPS points and aerial photoghraphs. Interpretation of images in Badghis, Farah, and Zabul was more difficult, since the spectral signatures of opium poppy were not as clear as in Hilmand, Kandahar, Uruzgan and Nangarhar. The second-dated images were useful to distinguish poppy from barley, wheat and grapes in certain provinces, namely Kabul, Kandahar and Nangarhar particularly where the first-date images were acquired late during senescence stage. The second-dated (post-harvest) images were therefore useful in confirming whether the opium poppy on the first-dated images had been correctly identified. Image acquisition at two different times (pre- and post-harvest) is thus proven to be essential in such cases.

Figure 40: Advantage of two-dated images, Kabul and Kandahar, 2009



Quality control

A strict quality control mechanism was adopted. The interpretation carried out by each analyst was checked by two other experts. Both first-dated and second-dated images were cross-checked.

All fields determined as likely to be under opium cultivation (potential opium poppy fields) were delineated on the basis of interpretation of first-dated satellite imagery. These polygons were overlaid on the second-dated images for the purpose of confirmation. Each of the potential opium poppy fields identified using first-dated satellite data was validated with the help of second-dated satellite data. The corrections involved a few commissions and omissions.

Area estimation in sampled provinces

One method of estimating the extent of opium poppy cultivation when the probability of selecting sampling units is not equal is the Hansen-Hurwitz estimator.

An unbiased estimate of the area of opium poppy cultivation, A_k, within province *k*:

$$A_k = \frac{R_k}{n_k} \sum_{i=1}^{n_k} P_i / R_i$$

where n_k is the number of satellite image locations within the province

P_i is the area of poppy cultivation in image i

R_i is the area of land potentially available for poppy cultivation (risk area) in image i.

R_s is the total potential land available for poppy cultivation (risk area) from the sampling frame in province k.

Confidence intervals were calculated using the bootstrap method with 50,000 iterations. Bootstrapping consists of resampling with replacement from the original sample. After each iteration the area under cultivation is estimated. After 50,000 iterations, a distribution of cultivation areas can be observed and the 95% confidence interval is derived by using the 2.5 and 97.5 percentiles.

Area estimation in target provinces

The consensus view of those working in Afghanistan was that the MCN/UNODC surveillance system developed in the provinces can identify sites where poppy was grown, with further inputs being obtained from the Winter Assessment and the survey of village headmen. Fieldworkers visited the potential poppy-growing sites to confirm the situation and provided GPS references for the sites. If geographical clusters of sites were identified, targeted satellite images were obtained to measure the areas involved.

In 2010, 5 provinces (Badakhshan, Baghlan, Hirat, Kabul and Nangarhar) were surveyed using this approach. This approach assumes that all poppy areas were identified and covered by imagery. The total poppy area of a target province is equal to the poppy area measured on the imagery without any further calculation.

Uncertainty (national level)

To express the uncertainty associated with the national area estimation that includes the provinces covered by the targeted approach and the sample provinces, but excludes provinces with an estimate of less than 100 ha (which are considered "poppy-free" and not counted), a range was calculated by adding the poppy area figures of the target provinces to the upper and lower limits of the 95% confidence interval at the national level. The resulting range (rounded to between 104,000 ha and 145,000 ha) is not a confidence interval in the strict sense as it contains values from sampling and non-sampling approaches. However, considering that the contribution of the target provinces to the total poppy area was only 2%, this approach was regarded as expressing the uncertainty sufficiently well.

Uncertainty (provincial level)

The uncertainty around the estimates of the area under opium cultivation varies across provinces. In provinces where satellite images were targeted, the estimated area under opium cultivation is not affected by sampling errors, although they may be affected by the omission of areas with very little cultivation. Area estimates of target provinces should therefore be considered as a minimum estimate.

The upper and lower limit of the 95% confidence intervals of sampled provinces were calculated using the bootstrap method , a resampling approach, using 50,000 iterations.

Table 42: Area estimates of sample provinces with 95% confidence intervals

	Point estimate	Lower limit	Upper limit
Badghis	2,958	700	6,200
Day Kundi	1,547	100	3,800
Farah	14,552	6,600	23,500
Hilmand	65,045	52,200	78,300
Kandahar	25,835	14,200	38,000
Nimroz	1,983	500	3,700
Uruzgan	7,487	3,400	11,800
Zabul	483	100	1,000
		101,444	**142,151**
Target provinces	2,719		
National	122,609	104,163	144,870
National (rounded)	**123,000**	**104,000**	**145,000**

District level estimation

District level results are indicative only. A combination of different methods are used. If districts are covered by sampled cells, the average value of these cells is used. In the case of districts where sampled cells were not available two methods were used to calculate district estimates. If the agricultural area of a district with a sample grid extended into a neighbouring district(s) without interruption, the poppy proportion of sample grid was used also for the neighbouring district(s). For districts with isolated, non-contiguous agricultural area, the average poppy proportion of the province was applied. The methodology and sample was not designed to produce results at the district level.

Accuracy assessment

Due to the difficult security situation in many parts of Afghanistan, which prevented surveyors from carrying GPS and mapping equipment, an insufficient number of ground segments could be visited to conduct a systematic accuracy assessment.

3.2 Village survey methodology

Village survey activities (such as training, deployment and data collection) were carried out from March to July 2010 by 216 local field surveyors across all provinces. These activities were supervised jointly by MCN and UNODC. The surveyors were selected on the basis of their experience in opium poppy surveys, knowledge of local customs and their acceptance by local communities. Security was generally problematic for the surveyors, but selection of the surveyors from their respective regions helped to reduce security risks.

Sampling framework

A total of 1,453 villages in 368 districts were surveyed across all provinces. In 2009, the sampling frame for the village survey data was comprised of an updated list of 41,419 villages in Afghanistan based on information from the Central Statistical Office and UN databases (AIMS). The total sampling ratio was 4%. In addition to the sample villages, the surveyors, using their knowledge of the local situation, visited other areas in the province to complement their assessment of opium cultivation trends and the security situation throughout the province.

The following data were collected for all villages surveyed:

- Extent of cultivation of opium and other crops
- Total number of households/inhabitants living in the village
- Total number of households growing opium

- Farmer estimates of wheat and opium yield
- Wheat and opium prices
- Financial status of farmers
- Reasons for cultivation/non-cultivation of opium

The surveyors conducted structured interviews with 1,453 headmen and 4,359 farmers (three farmers per village − one opium-growing and two non-opium-growing (one who stopped opium cultivation and one who has never grown opium).

Surveyor training

Until 2007, all surveyors were provided with village survey training in Kabul. In order to prepare for the 2009 village survey and as part of a capacity-building exercise for national staff, regional survey coordinators and their assistants were trained in Kabul over a four-day period. They, in turn, trained surveyors in their respective regions. The extension of survey training sessions to the regional level is one of the milestones reached in building national capacity to conduct opium poppy surveys.

During the training period, a total of 216 surveyors and nine survey coordinators were trained in the use of the survey form and techniques by local UNODC staff in all regions. Surveyor training began in March 2008 and was conducted by the national staff of UNODC. MCN also participated in all training sessions. The training included practical (use of GPS, area calculation, etc.) and theoretical aspects (interviewing and dialogue with village headmen and farmers).

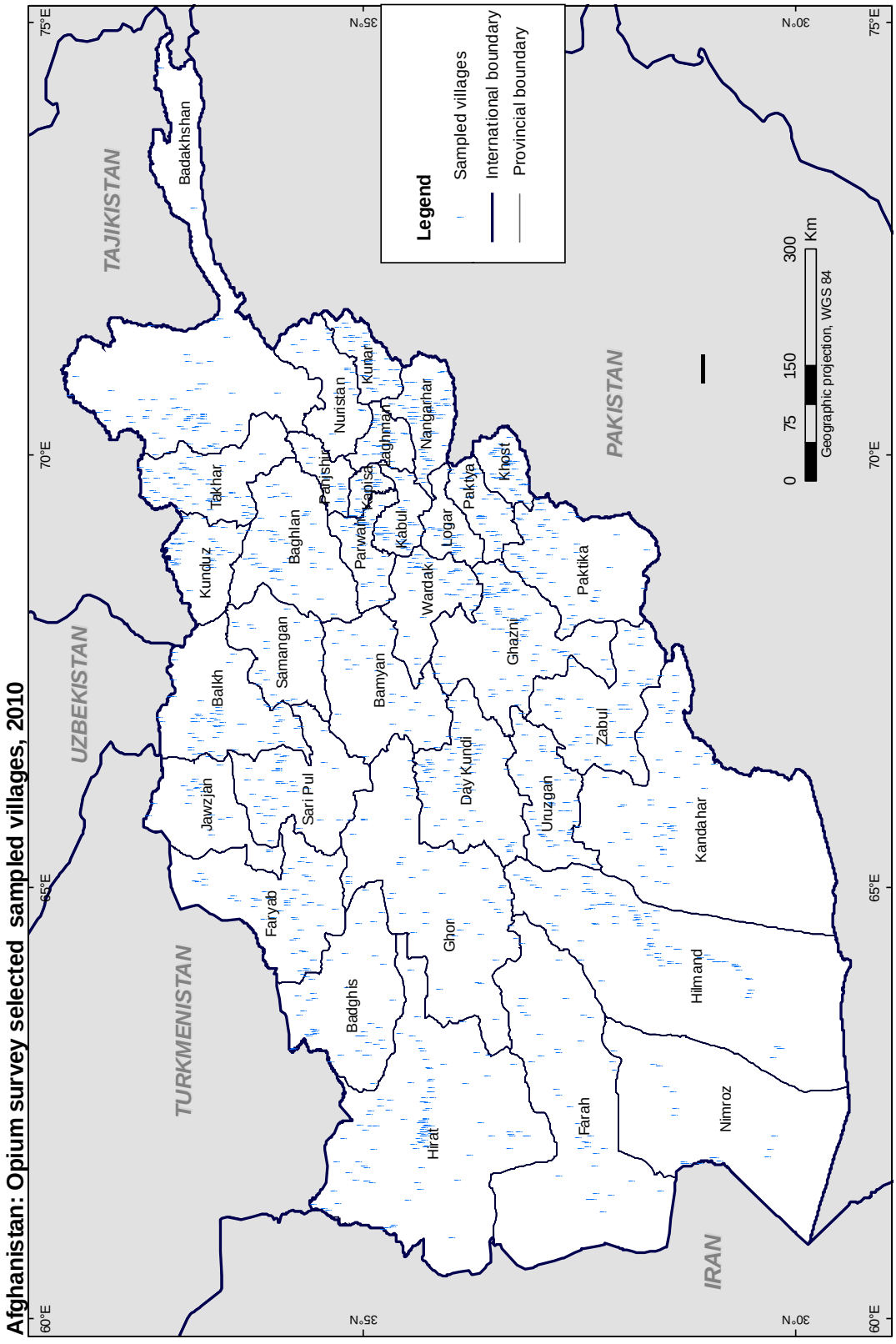
Data collection

Opium cultivation is illegal in Afghanistan and is considered to be forbidden under Islam. Given the sensitive nature of the issue, data collection is difficult and can be dangerous. Surveyors are selected from different regions of Afghanistan through a very careful process. UNODC and MCN regional offices and coordinators recruit surveyors according to survey specifications and the surveyors' skills. Most of the surveyors selected already have experience in conducting UNODC surveys.

Surveyors were trained in techniques for approaching local community members and conducting interviews. Following intensive theoretical and practical training, they were deployed to the field, where they interviewed village headmen and conducted other survey-related activities. UNODC and MCN coordinators closely monitored data quality and the progress of the survey. Fortunately, the surveyors did not encounter any security problems.

Debriefing

At the end, surveyors were debriefed by survey coordinators, reporting on their findings in the areas they had visited and providing an assessment, *inter alia*, of various factors thought to influence opium cultivation, including the security situation; pressure from the government concerning survey reports; difficulties encountered in conducting the survey; the level of control exercised by governors over their respective provinces; the presence of anti-government elements; corruption; and the levels of cannabis cultivation. Debriefing facilitates a greater understanding of opium cultivation and the socio-political and other factors that determine cultivation trends and provides useful guidance in analysing survey data.



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

3.3 Drug flow survey

The drug flow survey relies on information from key informants who are knowledgeable about drug production and trafficking. The key informants are selected non-randomly. The sample is not representative. The interviews are conducted by a group of specifically trained, experienced surveyors.

In 2010, 68 key informants were interviewed in the Eastern (12, mainly from Nangarhar), North-eastern (14, mainly from Badakhshan), Northern (12), Southern (18) and Western regions (12). The Central region was not covered by the survey.

The respondents were asked if they had expertise in one or several fields: opium trade, morphine/heroin trade, precursor trade and/or morphine/heroin production. In addition, the informants were asked if they were also involved in hashish trade.

Table 43: Key informants by field of expertise, 2010 (n=68)

Experience in (multiple answers possible)	No.
Morphine/heroin production	18
Morphine/heroin trade	42
Opium trade	62
Precursor trade	18
Hashish trade	36

The results of the drug flow survey were used to estimate drug flows within Afghanistan and to neighbouring countries, one of the components of the opiate export value estimation. In addition, information on conversion ratios from opium to morphine and heroin, precursor prices and other information on drug processing was collected. The information from the drug flow survey should be used with caution as it is not possible to verify the responses. Respondents may only partly reveal certain information or give wrong information on purpose. Still, the information gathered is a unique dataset with information on relevant topics which cannot be directly measured.

3.4 Opium yield and production

The relationship between poppy capsule volume per square metre and dry opium yield is used to estimate opium production. [22] It takes the form of a non-rectangular hyperbola:

Non-rectangular hyperbola formula for predicting opium yield:

$$Y = [(VC + 1495) - ((VC + 1495)^2 - 395.259\ VC)^{0.5}] / 1.795$$

where

Y = Dry opium gum yield (kg/ha)

VC = Mature capsule volume (cm^3/m^2)

In 2010, capsule measurements were collected from 685 fields (817 in 2009 and 190 in 2008) randomly selected. Poppy-free provinces were not included in the sampling frame. The yield survey requires the cooperation or at least agreement of the farmer to be able to take the necessary measurements. Surveyors were instructed to identify three fields of different quality in each village, a 'good', an 'average' and a 'poor' one, to avoid a possible bias of surveyors selecting fields of a certain quality.

[22]" UNODC Guidelines for yield assessment of opium gum and coca leaf from brief field visits", UN New York, 2001, ST/NAR/33. See also UNODC (2003): Limited opium yield assessment surveys. Technical report: Observations and findings. Guidance for future activities. In: Scientific and Technical Notes, SCITEC/19, December 2003.

A total of 20,474 capsules (27,211 capsules in 2009 and 17,541 in 2008) from 2,040 plots were measured. The work was carried out by 78 surveyors. A number of fields were excluded from the final calculation for not meeting the quality requirements (e.g. 3 plots per field measured, minimum of 30 capsule per field measured).

Table 44: Yield survey, 2010

	2009	2010
No. of villages	248	240
No. of fields (3 per village)	699	685
No. of plots (3 per field)	2,415	2,040
No. of capsules measured	26,901	20,474

For the yield survey, the procedure established in the UNODC "Guidelines for Yield Assessment" was followed. An imaginary transect was drawn, along which three one-metre square plots were selected. From each plot, the number of flower buds, flowers, immature capsules and mature capsules that were expected to yield opium were counted, and the diameter and height of 10 to 15 opium-yielding capsules were measured with a calliper. With these data, the capsule volume per square metre was calculated and entered into the formula for the yield calculation. Each plot thus provided one yield observation. The simple average of the three plots in a field is the field yield. The simple average of all fields in a region is the regional yield.

A range was calculated to express the uncertainty of the yield estimate due sampling with the 95% confidence interval. For the Southern region, a reduced yield was calculated taking into account the impact of disease in 2010 applying a reduction factor to the yield based on capsule measurements. The calculation of the reduction factor is discussed below. The range for this reduced yield was calculated by applying the proportional difference between mid-estimate and upper/lower bound of the 95% confidence interval of the yield based on capsules measurements.

Table 45: Regional opium yield values with 95% confidence intervals (kg/ha), 2010

Region	Best estimate	Lower bound	Upper bound
Southern (based on capsule measurements)	44.1	43.2	45.4
Southern (reduced yield due to disease)	10.1	9.8	10.4
Western	24.0	23.1	25.0
Rest of the country	51.0	49.1	53.0

Due to a low number of observations in some regions, the Northeastern, Eastern and Central regions were collapsed into one yield region. The Northern region was poppy-free.

In some fields, one or more plots had plot volumes higher than the upper end of the range, for which the hyperbolic model was developed (2,000 cm3). This was true for 132 plots out of 2017 (7%). Most of these fields were located in the Southern region. Capsule sizes and numbers observed in recent years in Afghanistan, mainly in the Southern region, are much higher than those observed in the yield experiments, which led to the development of the correlation between plot capsule volumes, and exceeded the range of values for which the correlation was established. It is uncertain how opium yield and capsule size and numbers correlate when these numbers are as high as those observed in Afghanistan during the last two years. Further research into opium yield is therefore necessary. The findings of this research may well lead to a revision of opium yield estimates in Afghanistan.

For the calculation of the 2010 opium yield, a decision was taken to leave plots with capsule volumes over 2,000 cm3 in the sample to maintain the integrity of the sample but to truncate the values at 2,000 cm^3.

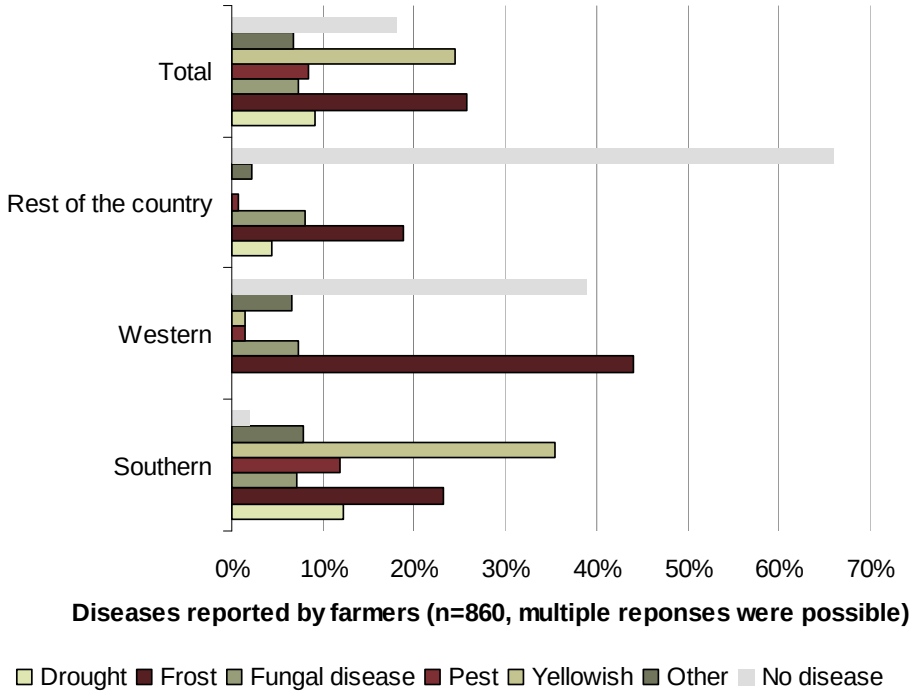
Calculation of yield in disease affected areas

The estimation of potential opium production relies on an established correlation between capsule volume per square meter and opium yield. The impact of diseases that affect the growth of poppy plants, leading to plant death or diminished growth of capsules, is captured when measuring the capsules volumes.

In 2010, diseases affected poppy in the Southern region at a very late stage of plant development, when capsules had already reached maturity. These diseases did not or had little effect on the size of the capsule but mainly influenced the amount of opium each capsule produced. Thus, the disease did not or showed little reduction in capsule volumes measured. A correlation then between capsule volume per square meter and opium yield would have led to a gross over-estimation of opium production.

In 2010, an opium yield experiment was conducted in different provinces in Afghanistan. In addition to the usual capsule measurements, the actual opium harvested on these fields was measured. Thus, the difference between the calculated potential yield based on capsule measurements and the actually harvested opium could be calculated. In the Southern region, 6 fields of the experiment – 3 in Hilmand and 3 in Kandahar province – were affected by the disease and could be used to assess its impact. In the course of the analysis, one field in Hilmand was excluded as an outlier.

Figure 41: Damage to poppy reported by farmers (n=685, multiple answers possible), 2010



Source: Opium yield survey 2010.

A reduction factor was calculated for each field as the percentage reduction between the calculated opium yield based on capsule volume and the actual harvested opium from a 50 m2 sample plot in the field. To convert the fresh opium harvested in oven-dry equivalents, results from the moisture content analysis of opium samples from these fields were used. The reduction factor for the Southern region was calculated as the simple average of the reduction factors from the 5 fields used for the analysis (reduction by 77% compared to the calculated capsule volume yield).

Not all fields were affected by diseases. Unfortunately, the satellite imagery used for the area estimation could not provide sufficient information on the impact of diseases as most images were acquired at flowering time when the diseases were not yet visible in the fields. However, the normal yield survey, which includes interviews with farmers operating the surveyed fields, contains information on diseases observed by farmers. The results confirmed the field observation

of surveyors: the Northern, North-eastern, Central and Eastern regions were virtually not affected by diseases and definitely not by the disease pattern observed in the South. The Western region was somewhat affected but not as much as the South and with a different range of diseases. Farmers' responses from the South pointed to the disease pattern observed throughout the region, a wilting of leaves and subsequent drying of the plant at a very late stage of plant development. Thus, farmers' responses from the Southern region on whether diseases affected their fields and if so which proportion of their fields were used to calculate an average proportion of poppy area affected in the region. The average was weighted by the reported fields' size. In the Southern region, farmers reported that 42.3% of their poppy area was affected by disease.

Thus, for 42.3% of the estimated area under poppy cultivation in the Southern region, the potential opium yield was calculated using the yield based on capsule measurements multiplied by the average reduction factor. For the remainder, the normal yield based on capsule measurements was used.

The calculation of a reduction factor to assess the impact of disease in the Southern region by combining the results from different surveys, some of them based on systematic, random, methods, some on opportunistic samples, none of which was specifically designed to capture this unexpected phenomenon, has limitations and should be used with caution. The magnitude of the yield reduction, however, was confirmed by other sources of information as well, such as the regular opium price monitoring and field visits by local UNODC and MCN experts.

Table 46: Impact of the disease on opium yield in the Southern region, 2010

Southern region	Yield (kg/ha)	Area proportion	Poppy area (ha)	Opium production (mt)
Yield based on capsule measurements (kg/ha)	44.1	58%	57,929	2,555
Reduction factor due to disease	77%			
Reduced yield in disease-affected area (kg/ha)	10.1	42%	42,468	429
Region	**29.7**	**100%**	**100,397**	**2,984**

Note: the reduction factor is an approximation indicating the magnitude of the impact of disease in 2010 and should be used with caution.

Opium production

The opium production was calculated with the estimated regional area under opium cultivation multiplied by the corresponding regional opium yield. All opium estimates in this report are expressed in oven-dry opium equivalent, i.e. the opium is assumed to have 0% moisture. The same figure expressed in air-dry opium, i.e. opium under "normal" conditions as traded, would be higher as such air-dry opium contains some moisture.

The point estimates and uncertainties of the opium production estimate due to sampling for the area under poppy cultivation and yield can be expressed as $a_p \pm \Delta a$ and $y_p \pm \Delta y$ respectively, where the uncertainty is determined from the 95% confidence intervals.

These uncertainties will impact on the estimate of production ($p_p \pm \Delta p$, or equivalently expressed as the range ($p_p - \Delta p$, $p_p + \Delta p$)), where the best estimate $p_p = a_p y_p$, such that

$$\frac{\Delta p}{p_p} = \left[\left(\frac{\Delta a}{a_p} \right)^2 + \left(\frac{\Delta y}{y_p} \right)^2 \right]^{\frac{1}{2}}$$

expresses the error in production, Δp, resulting from uncertainty in the estimates for cultivation area and yield.

For targeted regions there is no sampling error in the area under cultivation. In such cases, the error in production relates only to the uncertainty in the yield and is given by $\Delta p = p_p \Delta y / y_p$

Table 47: Regional opium production (oven-dry opium, mt), 2010

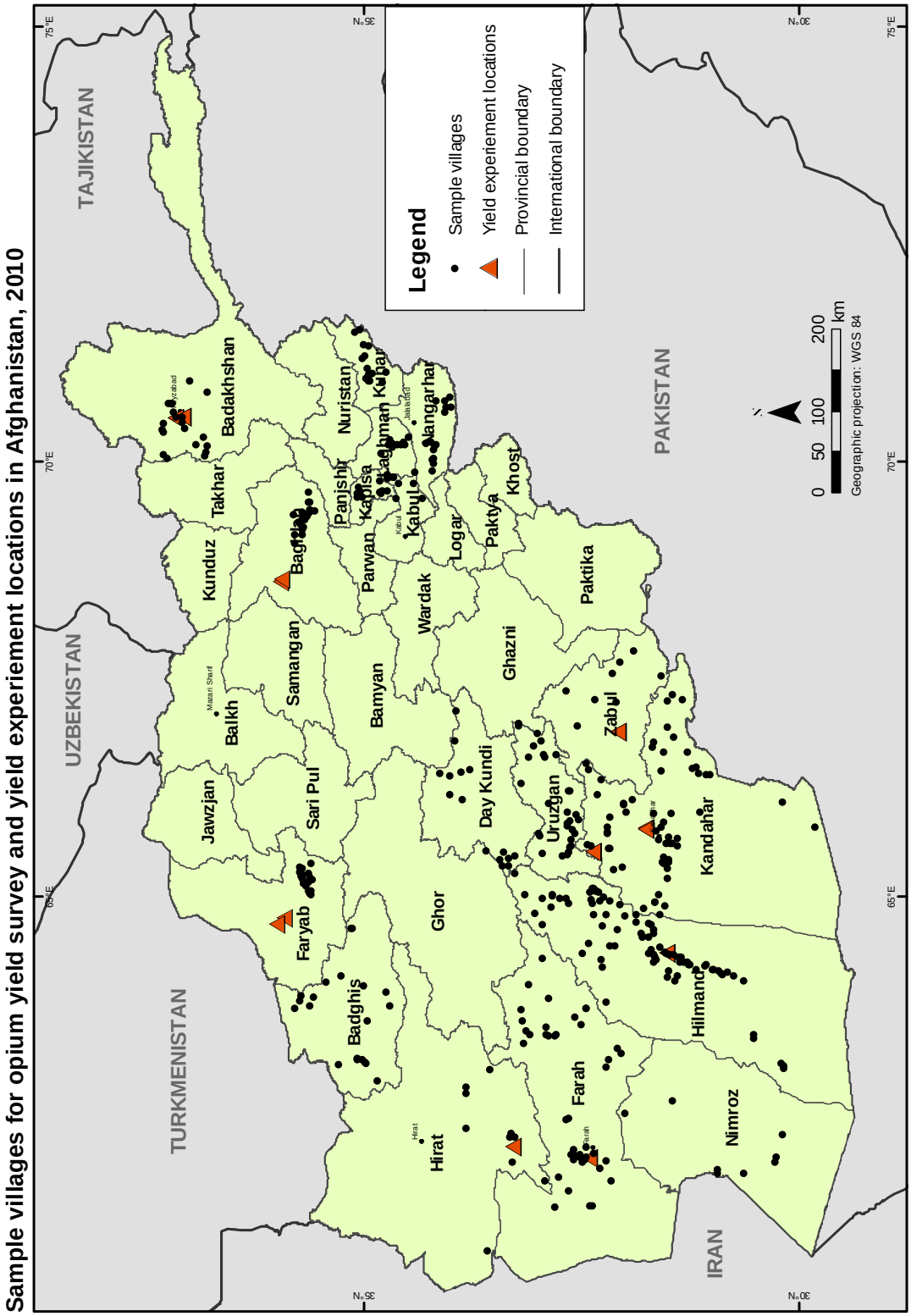
Region	Area estimation method	Best estimate	Lower bound	Upper bound
Central	Target	8	7	8
Eastern	Target	56	54	59
Northeastern	Target	56	54	58
Northern	Target	Poppy-free	Poppy-free	Poppy-free
Southern	Sample	2,984	2,439	3,529
Western	Sample	476	259	694
National (rounded)		**3,600**	**3,000**	**4,200**

Yield survey training in Badakshan province, 2010

3.5 Eradication verification methodology

Verification of eradication led by provincial governors (GLE)

In 2010, UNODC/MCN improved the field based verification activities by enhancing the control mechanism. The areas verified by the eradication verifiers were randomly checked by the verification inspectors for validation of the reported figures. A total of 52 eradication verifiers were trained on eradication verification techniques and deployed in a phased manner to provinces where eradication activities were envisaged. The eradication verifiers were part of the eradication teams led by the respective provincial governor. Verifiers reported to the Office of Provincial Governors beginning February 1, 2010.



Source: Government of Afghanistan - National monitoring system implemented by UNODC
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Verification methodology for GLE:

- Eradication verifiers were part of the Governor-led eradication teams.
- The verifiers took measurements of each eradicated field, collected its GPS coordinates and took photographs.
- The verifiers drew sketch maps of each field as a reference for area calculations done at a later stage in the Kabul office.
- The verification reporting officers in Kabul obtained the provisional data from the verifiers through telephone (mobile/satellite phones) and updated the database on a daily basis.
- The verifiers filled in hardcopy survey forms and submitted them to UNODC regional offices. The forms were then sent to the Kabul office for data entry. Quality control was undertaken by MCN/UNODC survey coordinators and regional verification coordinators at the regional level. Eradicated fields were revisited randomly by verification inspectors to check the accuracy of the reports. Further validation of the results was done using data obtained through helicopter flights, as well as from satellite imagery, to calculate the final area of eradicated poppy fields wherever possible.
- MCN/UNODC published periodical reports to inform stakeholders of eradication activities. The eradication figures provided in these reports were considered provisional until they were finalized based on field checks and/or checks based on the satellite image interpretation.
- The updated area figure for each province was reported in the periodical reports, often on a weekly basis.

3.6 Opium poppy-growing households

The number of households involved in opium cultivation in Afghanistan is based on information from the headman interview on the number of households cultivating opium and the total number of households in the village. The average proportion of households cultivating opium in the sample was calculated for each province and multiplied with the total number of rural households in that province, a figure provided by the Central Statistical Office.

3.7 Average farm-gate price and farm-gate value of opium production

In 2009, farm-gate prices at harvest time were derived from the opium price monitoring system and refer to the month when opium harvesting actually took place in the different regions of the country. This is thought to better reflect the opium prices at harvest time. To calculate the national average price, regional price averages were weighted by regional opium production. The opium price in the Central region was calculated from the annual village survey as there is no monthly opium price monitoring in that region. The Northern region was poppy-free in 2010.

Table 48: Regional farm-gate prices of dry opium at harvest time (US$/kg), 2010

Region	Average Dry Opium Price (US$/kg)
Central	133*
Eastern	130
North-eastern	91
Northern	Poppy-free
Southern	181
Western	108
National average price weighted by production	**169**

Prices for the Central region were taken from the annual village survey as there is no monthly opium price monitoring in that region.

The farm-gate value of the opium production is the product of potential opium production at the national level with the weighted average farm-gate price of dry opium at harvest time. The upper and lower limits of the range were determined by using the upper and lower opium production estimate.

Table 49: Farm-gate value of opium production (US$), 2010

	Production of dry opium (rounded) (mt)	Farm-gate price of dry opium (US$/kg)*	Farm-gate value (rounded, US$ million)
Upper limit	4,400	169	728
Lower limit	2,800	169	482
Best estimate	**3,600**	**169**	**605**

** Average price at harvest time weighted by production.*

3.8 Per hectare income from opium

The gross per-hectare income from opium is estimated by dividing the farm-gate value by the area. This gross income refers only to opium gum and does not take into account the potential income from by-products such as poppy seeds or stalks. According to field observations, these by-products do not play a major role.

Expenditure per hectare

The net per-hectare income from opium is estimated by calculating average expenditures for ploughing, weeding, irrigation, fertilizers and lancing. This information comes from the interview with opium-farmers. A proportion is calculated from reported expenditure for poppy per hectare and reported income from opium per hectare. In 2010, poppy-farmers reported an average gross income of US$ 1,822 from poppy. The reported gross income per hectare, calculated from reported gross income and reported poppy area of the household, was US$ 3,080. This value is different from the average poppy income calculated from farm-gate value divided by poppy area estimate from the remote sensing survey (US$ 4,900) described above, as it is derived from different sources. Another reason for the discrepancy could be that farmers at the time of the survey could not anticipate the strong increase in farm-gate prices of opium just after harvest time, some weeks after the village survey.

Total expenditure related to cultivating one hectare of poppy according to farmers' responses was US$ 1,270/ha, much lower than expenditure reported in 2009 (US$ 1,584/ha). The main reduction in reported costs came from lower expenditure on fertilizer but also from expenditure for lancing and irrigation. Possibly, farmers invested less in fertilizer and irrigation than in previous years, which contributed to a lower yield and thus reduced lancing costs. Reported expenditure corresponds to 41% of reported gross income.

This ratio is applied to the estimated gross income per hectare calculated from farm-gate value and number of opium-growing households to obtain the net income from opium per hectare.

3.9 Value of Afghan Opiates in Neighbouring Countries

Two main assumptions are made in the calculation of the opium economy in Afghanistan:

- Total amount produced in Afghanistan in 2010 was either consumed internally or exported (no change in stock value inside Afghanistan).
- The value of the exported opium (partly transformed into morphine/heroin) was based on its value at border areas of neighbouring countries. Opiates are usually trafficked by Afghan traders to neighbouring countries. In general, Afghan traffickers are involved in shipping the opiates across the borders, from where traffickers from neighbouring countries take over the consignments. The value of the opium production in the border areas of neighbouring countries with Afghanistan is thus considered to be a good proxy for the overall gross income made by Afghan citizens from the opium sector.[23]

Apart from some refinements, the overall approach taken to calculate such an income has remained largely unchanged as compared to previous years in order to ensure direct comparability of the results. Two small adjustments were made:

1. The division between of opium and opium converted in to morphine and heroin was done as a first step before deducting local consumption and seizures, simply because heroin has to be produced first before it can be consumed or seized.
2. The calculation of opiates consumed within Afghanistan was updated with the drug user estimates from the 2009 Drug Use Survey implemented by the Government of Afghanistan and UNODC.[24]

Assumptions

The model is based on the following assumptions:

- Afghan drug traffickers control drug trafficking from Afghanistan to neighbouring countries, where the merchandise is then handed over to other traffickers. The total gross value of the exported Afghan opium can be estimated by multiplying wholesale prices for opium and heroin in border regions of neighbouring countries with estimated amounts of drugs trafficked.
- Only exports to Afghanistan's direct neighbours are included in the model, i.e. to I. R. of Iran, Pakistan and Central Asia. There are indications that direct drug exports to China and India as well as to other countries by air or land take place. The amounts trafficked through these routes are thought to be comparatively small and they are not considered in this model. Shipments trafficked via transit countries are not considered in this estimation.
- For the conversion of opium into morphine, a factor of 7:1 is used. For the conversion of morphine into heroin a factor of 1:1 is used. Morphine seizures in Pakistan and Iran bear evidence of morphine exports from Afghanistan to these countries. For the estimation of flows, no difference is made between morphine and heroin as the proportion of opiates exported as morphine is not known.
- For the purposes of this model, in most estimation steps, Central Asian countries are treated as one region.

[23] There are, of course, also traders from neighbouring countries (notably from Pakistan, Iran and Tajikistan) purchasing opiates in Afghanistan and smuggling them across the border. Similarly, some Afghan traffickers are involved in shipping the opiates from Afghanistan to the main transhipment markets, located further inland in neighbouring countries. These effects are considered to offset each other.

[24] Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan: 2009 Survey. (in print)

Stocks

The calculation – for now - has not considered the impact of building up opium stocks (or producing heroin out of previously accumulated stocks). The issue of changes in opium stock did not play a major role when the calculation model was first developed in 2003. As long as previously accumulated stocks of opium are being used to produce morphine and heroin and similar amounts of new opium stocks are subsequently being made, the net results will not be influenced in a significant way.

In the meantime, however, there are indications that stocks have become important and could have a measurable impact on the final results. However, so far, UNODC does not have a solid methodology for estimating year on year changes in the stocks of opium and of morphine and heroin that could be used in the calculation of the opium economy.

Components

The estimation process of the opium economy includes the following steps:

- Estimation of the amount of opium converted into morphine and heroin within Afghanistan;
- Estimation of the amount of opium and morphine/heroin available for export by deducting the internal consumption and seizures;
- For each total exported opium and total exported morphine/heroin, estimation of quantities going to neighbouring countries (Iran, Pakistan and Central Asia);
- Estimation of the gross value of the exported opium and heroin by multiplying quantities with prices in respective neighbouring countries;
- Estimation of the net value of the economy by subtracting the costs of imported precursors used to produce the exported morphine and heroin from the gross value of exported opiates.

This process requires three components:

- Conversion: This component determines the amount of opiates available for export and estimates the proportion converted into morphine and heroin within Afghanistan.
- Distribution: This component estimates the internal flows of opium and heroin within Afghanistan prior to export as well as the flows into neighbouring countries.
- Value: this component estimates the value of the opiate flows based on price ranges of opium and heroin at the wholesale level in neighbouring countries of Afghanistan.

Conversion of opium into morphine and heroin

The opium production figure refers to oven-dry opium, meaning opium dried under laboratory conditions to remove any moisture contained in the gum as opposed to air-dry opium, often simply called "dry opium" or fresh opium.[25] The analysis of information from various sources over the past years indicated that about 7 kg of opium are needed to produce 1 kg of morphine (base) or brown heroin (base).[26] By and large, this 7:1 ratio has been confirmed in various key informant surveys in recent years and it is also used for this estimation. Theoretically, it would be possible to extract from 7 kg of opium gum (with about 14% morphine) all its morphine content and produce 1 kg of 100% pure heroin, assuming a 1:1 conversion ratios from morphine to heroin. Considering local conditions, however, the conversion of 7:1 applies more realistically to a lower quality heroin. Thus, the heroin figures calculated here refer to brown heroin base. Information on heroin purity in Afghanistan indicates a wide range of purity. It is difficult to assess the typical laboratory

[25] The moisture content of fresh opium ranges between 30% and 50%. Opium after storage typically has a moisture content of 10% to 15%. Although usually referred to as 'dry' opium, opium after the natural drying process still contains residual water. Cf. UNODC (2003): Limited opium yield assessment surveys. Technical report: Observations and findings. Guidance for future activities. In: Scientific and Technical Notes, SCITEC/19, December 2003.

[26] For a detailed discussion of the 7:1 ratio see UNODC/Ministry of Counter Narcotics (2008): Afghanistan Opium Survey 2008. November 2008. Vienna, p. 151-154.

purity of Afghan heroin as the seizures of heroin vary by location, trading level and sometime may already contain adulterants added to better commercialize the drug. Typical laboratory efficiencies can be assumed to be on the range of 50% to 80% [27]

For the production of 1 kg of high quality white heroin (HCl), more than 7 kg of opium is needed. However, export of such high-quality white heroin from Afghanistan appears to be very limited as compared to 'brown heroin'. Therefore, production and exports of white heroin was not considered in this estimation.

None of the factors in the estimation chain fresh opium – oven dry opium – morphine content – morphine extraction efficiency – morphine to heroin conversion efficiency is well researched. Preliminary results from the 2010 opium yield experiment indicate only an average or lower than average morphine content in the South. This was also the case in previous yield experiment surveys. At that time, however, a considerably proportion of opium production took place in the Northeast of the country, where samples typically had over-average morphine content.

Further investigation is needed to better understand the regional pattern of morphine content in Afghanistan. This could lead to an adjustment of the conversion rates used so far.

Proportion of opium converted into morphine and heroin

The proportion of opium converted into morphine and heroin were derived from two sources:

1. A three-year average of seizures made in Afghanistan and neighbouring countries
2. Information from key informants collected in the 2009 drug flow survey.

The high opium proportion (61%) in seizure figures reflect the fact that a large amounts of opium were seized in Iran in recent years. Informants estimated that the proportion of opium converted into morphine or heroin was much higher than seizure figures show. According to them, only 34% of production remains opium, and 66% is converted into morphine and heroin within Afghanistan.

Table 50: Opiate seizures in Afghanistan and neighbouring countries (%), 2007-2009

Distribution	2007	2008	2009	Average 2007-2009
% opium	58%	62%	63%	**61%**
% heroin/morphine	42%	38%	37%	**39%**

The simple average of the percentages of opium and heroin found in these two sources (52%) was taken as an estimate of the proportion of opium to morphine/heroin. This is slightly lower than the proportion estimated in 2009 (58%). Due to the exploratory nature of estimation, small scale changes should be interpreted with caution.

Opiates available for export

In 2009, the Ministries of Health and Counter Narcotics in collaboration with UNODC implemented a national drug use survey in Afghanistan. The results from this survey were used to update the number of opium and heroin users in Afghanistan. No adjustments were made to take into account possible changes between 2009 and 2010. The calculation of the average daily drug amounts consumed per user are still ongoing. Therefore, the consumption amounts derived from the 2005 survey and used in previous calculations of the opiates available for export were used.[28]

[27] The simulation exercise conduction by the German Bundeskriminalamt found purities within that range (see Bulletin on Narcotics, vol. LVII, No. 1 and 2, 2005, p. 11-31). Out of 8 heroin base samples analysed by DEA in 2007 and 2008, 6 had purities between 54.9% and 79.6%. Two samples from 2008 had very low purities of 2.64% and 10.76% (the samples are not representative for heroin in Afghanistan) (communication from DEA, May 2009).

[28] UNODC/Ministry of Counter Narcotics (2005): Afghanistan Drug Use Survey 2005. Vienna. For a detailed discussion of the calculation of the local consumption figure see UNODC/Ministry of Counter Narcotics (2008): Afghanistan Opium Survey 2008. November 2008. Vienna, p. 154-155.

The estimated amounts of opiates consumed within Afghanistan may change when updated daily consumption figures become available.

Table 51: Consumption of opiates in Afghanistan, 2005 and 2009

	2005 best estimate	2005 lower	2005 upper	2009 best estimate	2009 lower	2009 upper
Heroin users	50,000	35,000	51,000	120,000	110,000	140,000
Estimated heroin consumption (mt/yr)	9.6	6.7	9.8	23.0	21.1	26.9
Daily consumption (g/day)	0.5	0.5	0.5	0.5*	0.5*	0.5*
Estimated heroin consumption in opium equiv. (mt/yr)	**67**	**47**	**69**	**161**	**148**	**188**
Opium users (all)	150,000	110,000	155,000	230,000	210,000	260,000
Daily consumption (average all users, calculated)(g/day)	1.6	1.6	1.6	1.6*	1.6*	1.6*
Estimated opium consumption (mt/yr)	**89**	**65**	**92**	**137**	**125**	**155**

** Estimate from the 2005 drug use survey, currently under revision.*

Source: UNODC/Ministry of Counter Narcotics (2005): Afghanistan Drug Use Survey 2005 and Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan: 2009 Survey. (in print).

Due to a higher number of opiate users in 2009, the amounts of opium and heroin estimated to be consumed locally are much higher than previously estimated.

According to the Government of Afghanistan[29], 35,687 kg of opium and 7,355 kg of morphine and heroin were seized in Afghanistan in 2009. This figure was taken as a proxy for the seizures affecting the 2010 production. Information from the CNPA laboratory indicates that not all assumed seizures of heroin turn out to actually contain heroin or contain heroin in combination with various other substances.[30] This is rather typical for seizures and not specific only to Afghanistan. The present level of information does not allow to correct the official seizure figures for purity. Since January 2009, ISAF has been engaged in counter narcotics operations in Afghanistan in cooperation with Afghan forces and has intensified seizure activities. Due to the involvement of many different actors in seizure operations and the absence of an integrated seizure reporting system, it is possible that some seizures are not included in official records or that some degree of double reporting occurs.

Proportion of opiates exported to neighbouring countries

The estimation of proportion of opiates exported to neighbouring countries is based on three source:

1. Official seizure records from neighbouring countries (three year average)
2. Drug flow analysis from the annual drug flow survey (internal flows and external flows)
3. Information from the Afghan opiate trade programme on trafficking routes and their importance

Unlike in 2009, information on the location of clandestine laboratories was not available for all regions and could not be used as an additional information source.

[29] Afghanistan, Annual Reports Questionnaire 2009.

[30] Counter Narcotics Police of Afghanistan, Forensic Laboratory/UNODC (2008): Laboratory Information Bulletin 12/2008 (LIB IV/2008). http://www.unodc.org/pdf/scientific/LIB%20IV-2008_Kabul-.pdf

Opium and heroin flows

Information on the location of illicit opium markets and clandestine morphine heroin laboratories indicates the existence of drug flows within Afghanistan. Similar to previous years, an attempt was made to estimate these internal flows based on the responses from key informants interviewed during the drug flow survey 2010.

After a redistribution of opium and morphine/heroin in each region based on the estimated internal flows, the results of the drug flow survey were used to estimate external flows to neighbouring countries.

For the final calculation of the distribution of opium and morphine/heroin flows from Afghanistan to neighbouring countries, the simple average of all three approaches was calculated. The minimum and maximum of the different approaches was used to calculate the lower and higher estimate of the export value of the opium economy. This method is thought to reduce the biases and shortcomings that each individual approach has. The uncertainty is reflected in the width of the ranges.

Table 52: Distribution of opium exports by approach, 2010

Destination	Based on seizures (3-years average 2007-2009)	Based on opium flows	Based on trafficking routes**	Average (range)
Iran*	95%	71%	81%	82% (71% - 95%)
Pakistan	4%	14%	10%	9% (4% - 14%)
Central Asia	1%	14%	8%	7% (1% - 14%)
China	n.a.	0.4%	n.a.	0.4%
India	n.a.	0.4%	n.a.	0.4%
Total	**100%**	**100%**	**100%**	

Note: Opium seizures were also reported from China and India. However, their origin is not know so that they could not be counted as seizures of Afghan opium in this estimation.

** May include opium trafficked through Pakistan. ** Information from UNODC's Afghan opiate trade programme.*

Table 53: Distribution of morphine/heroin exports by approach, 2010

Heroin	Based on seizures (3-years average 2007-2009)	Based on heroin flows	Based on trafficking routes**	Average (range)
Iran*	72%	62%	31%	55% (31% - 72%)
Pakistan	20%	13%	44%	26% (13% - 44%)
Central Asia	9%	23%	25%	19% (9% - 25%)
China	n.a.	0.2%	n.a.	0.2%
India	n.a.	0.8%	n.a.	0.8%
Total	**100%**	**100%**	**100%**	

** May include morphine/heroin trafficked through Pakistan. ** Information from UNODC's Afghan opiate trade programme.*

Export value of the opium economy

The calculation of the value of the opium economy is limited by the fact that the drug products leaving the laboratories in Afghanistan may undergo further processing, e.g. adulterations, before

reaching the assumed points of sale in neighbouring countries. Indeed, there is evidence that heroin is mixed with cutting agents already in Afghanistan. This is done to increase profitability but can also have other reasons such as tailoring the drug product for specific usages.[31] This not only alters the volume of the drug exported but also influences costs. These factors cannot be estimated at the moment. However, it is reasonable to assume that the use of cutting agents would increase the profitability of exporting opiates. Not taking them into account could thus lead to an under-estimation of the export value of the opium economy.

Prices

For Iran, only the typical wholesale price of opium in 2008 was available, so no lower and upper price margins could be calculated. Information from the field indicated no major change in price level since then, so that the 2008 price was also used for this calculation.

For Pakistan, the simple average of the monthly opium wholesale prices in Peshawar between January and September 2010 was used as the typical price, the lowest and highest monthly price in the period as the minimum and maximum price. Heroin prices were calculated similarly from the monthly wholesale prices of heroin in Peshawar between January and September 2010. These prices were collected by UNODC in the framework of its monthly drug price monitoring.

For Central Asia, wholesale prices ranges of opium and mid- and high-quality heroin in October 2010 were available for the Tajik border provinces of Khatlon and Gorno-Badakhshan (GBAO) from the Tajikistan Drug Control Agency. The lowest value of this price range was used as the minimum and the highest value as the maximum price. The typical price was calculated as the simple average of the minimum and maximum prices.

It should be noted that price information obtained from all three countries has strong limitations and should be improved in order to enhance the reliability of the estimate.

Table 54: Opium prices in countries neighbouring Afghanistan

US$/kg	Typical	Min.	Max.
Iran (2008)	421	421	421
Pakistan (Jan-Sep 2010)	375	254	582
Central Asia (border Afghanistan-Tajikistan) Oct. 2010	280	160	400

Table 55: Heroin prices in countries neighbouring Afghanistan

US$/kg	Typical	Min.	Max.
Iran 2008	3,291	2,121	4,460
Pakistan (Jan-Sep 2010)	3,050	2,251	4,437
Central Asia (border area, Khatlon and GBAO, Tajikistan), October 2010	3,450	3,100	3,800

Gross export value

For the calculation of the gross export value, the volume of opium and heroin reaching neighbouring countries based on the estimated distribution was multiplied with the corresponding prices. Lower and upper margins of the export volume were calculated with the minimum, maximum and average export volumes and with the minimum, maximum and typical prices.

The total gross export value is the combined gross export value of the opium and heroin exports. As indicated above, morphine exports are not taken into consideration here as all processed opium exports are assumed to be in the form of heroin.

[31] See UNODC (2009): World Drug Report 2009, p. 61, where evidence from the forensic laboratory of CNPA is presented confirming the use of various cutting agents in Afghanistan in 2008.

Table 56: Gross and net export value of the opiate economy (US$), 2010

	Best estimate (US$)	Lower estimate (US$)	Higher estimate (US$)
Opium	621,072,561	448,475,916	821,665,108
Heroin	774,316,462	421,378,542	1,269,621,478
Gross export value	1,395,389,023	869,854,458	2,091,286,587
Gross export value (rounded)	1.4 billion	0.9 billion	2.1 billion
Precursor import costs	175,090,205	231,799,565	66,718,780
Net export value	1,220,298,818	638,054,892	2,024,567,807
Net export value (rounded)	1.2 billion	0.6 billion	2 billion

Net export value and GDP

In previous reports, the gross export value of Afghan opiates was compared with Afghanistan's GDP, usually with the most recent estimate of the GDP available. However, in the calculation of GDP, imports are subtracted from gross exports to obtain net exports. Similarly, imports costs can be deducted from gross export value of opiates to obtain the net export value. This net export value would be more suitable for comparison with the GDP. This is especially important in a situation when import costs e.g. for precursors constitute a significant cost factor for heroin production. This is indeed the case.

Costs of imported precursors

To make the export value of the opium economy comparable to the GDP, the main costs of precursors, which have to be imported for heroin processing into Afghanistan, were deducted.

The main (imported) precursors in terms of costs used in this estimation were:

- Ammonium chloride, for the extraction of morphine from opium
- Acetic anhydride, for the conversion of morphine base into brown heroin base

Acetic anhydride is a controlled substance. There is no known licit use of acetic anhydride in Afghanistan and no known production of the substance. The high price level of this precursor in Afghanistan indicates its scarcity. Ammonium chloride is not a controlled substance. Its easy availability and wide range of licit uses is reflected by a much lower price level. The information from the drug flow survey indicates that ammonium chloride used for heroin processing, more precisely in the morphine extraction process, is imported.

Information on the amount of precursors needed to produce 1 kg of heroin differs, depending on the source and the type and purity of the final product. Typical amounts quoted are 2 to 3 kg of ammonium chloride and between 0.77 and 4 litres of acetic anhydride.[32] For the purpose of this estimation, the simple average between the lowest and the highest figure found in literature was used for the mid-estimate.

The net export value was calculated by:

- Multiplying the main precursors' cost per 1 kg of heroin with the total amount of exported heroin
- Subtracting the total costs of two main precursors from the gross export value. Other import costs were neglected.

[32]The United States Department of Justice/Drug Enforcement Administration (DEA) in 2008 indicated the use of 2-3 kg of ammonium chloride and 1.5-2.5 litres of acetic anhydride per kg of heroin HCl (informal communication). The International Narcotics Control Board (INCB) indicated 100 to 400 litres of acetic anhydride for the manufacture of 100 kg of heroin HCl (E/INCB/2005/4, p. 69). During a authentic simulation exercise in Afghanistan done under local conditions, the Federal Criminal Police Office of Germany (Bundeskriminalamt) found that 0.29 kg of ammonium chloride were used to process 1 kg of opium. However, in this trial, white heroin hydrochloride was produced as a final product, and the intermediate product brown heroin base was not weighted (published in Zerell, U., Ahrens B. and P. Gerz (2005): Documentation of a heroin manufacturing process in Afghanistan. In: Bulletin on Narcotics, vol. LVII, No. 1 and 2, 2005). Still, based on the list of chemicals used, it can be assumed that with a conversion factor 7:1 from opium to heroin, 2 kg of ammonium chloride would have been needed for 1 kg of brown heroin base (0.29 kg x 7). The same simulation found that 0.11 kg of acetic anhydride was used per kg of opium, corresponding to 0.77 kg of acetic anhydride based on the same 7:1 factor.

ANNEX I: OPIUM POPPY CULTIVATION PER PROVINCE (HA), 2002-2010

PROVINCE	2002	2003	2004	2005	2006	2007	2008	2009	2010	Change 2009-2010 (ha)	Change 2009-2010 (%)
Badakhshan	8,250	12,756	15,067	7,370	13,056	3,642	200	557	1,100	+543	+97%
Badghis	26	170	614	2,967	3,205	4,219	587	5,411	2,958	-2,453	-45%
Baghlan	152	597	2,444	2,563	2,742	671	475	Poppy-free	Poppy-free	NA	NA
Balkh	217	1,108	2,495	10,837	7,232	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Bamyan	-	610	803	126	17	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Day Kundi	-	2,445	3,715	2,581	7,044	3,346	2,273	3,002	1,547	-1,455	-48%
Farah	500	1,700	2,288	10,240	7,694	14,865	15,010	12,405	14,552	+2147	+17%
Faryab	28	766	3,249	2,665	3,040	2,866	291	Poppy-free	Poppy-free	NA	NA
Ghazni	-	-	62	9	-	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Ghor	2,200	3,782	4,983	2,689	4,679	1,503	Poppy-free	Poppy-free	Poppy-free	NA	NA
Hilmand	29,950	15,371	29,353	26,500	69,324	102,770	103,590	69,833	65,045	-4,788	-7%
Hirat	50	134	2,531	1,924	2,287	1,525	266	556	360	-196	-35%
Jawzjan	137	888	1,673	1,748	2,024	1,085	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kabul	58	237	282	-	80	500	310	132	152	+20	+15%
Kandahar	3,970	3,055	4,959	12,989	12,619	16,615	14,623	19,811	25,835	+6024	+30%
Kapisa	207	326	522	115	282	835	436	Poppy-free	Poppy-free	NA	NA
Khost	-	375	838	2	133	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kunar	972	2,025	4,366	1,059	932	446	290	164	154	-10	-6%
Kunduz	16	49	224	275	102	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Laghman	950	1,907	2,756	274	710	561	425	135	234	+99	+73%
Logar	-	-	0	-	-	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Nangarhar	19,780	18,904	28,213	1,093	4,872	18,739	0	294	719	+425	+145%
Nimroz	300	26	115	1,690	1,955	6,507	6,203	428	2,039	+1611	+376%
Nuristan	-	648	764	1,554	1,516	0	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktika	-	-	-	-	-	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktya	38	721	1,200	-	-	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Panjshir	-	-	-	-	-	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Parwan	-	-	1,310	-	124	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Samangan	100	101	1,151	3,874	1,960	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Sari Pul	57	1,428	1,974	3,227	2,252	260	Poppy-free	Poppy-free	Poppy-free	NA	NA
Takhar	788	380	762	1,364	2,178	1,211	Poppy-free	Poppy-free	Poppy-free	NA	NA
Uruzgan	5,100	4,698	7,365	2,024	9,703	9,204	9,939	9224	7,337	-1,887	-20%
Wardak	-	2,735	1,017	106	-	-	Poppy-free	Poppy-free	Poppy-free	NA	NA
Zabul	200	2,541	2,977	2,053	3,210	1,611	2,335	1,144	483	-661	-58%
Total (rounded)	**74,000**	**80,000**	**131,000**	**104,000**	**165,000**	**193,000**	**157,000**	**123,000**	**123,000**	**0**	**0%**

ANNEX II: INDICATIVE DISTRICT LEVEL ESTIMATES OF OPIUM CULTIVATION (HA), 2001-2010 [33]

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Badakhshan	Arghanj Khwah							54	0		
	Argo							210	60	203	327
	Baharak	345	180		5,544	1,635	710	0	14	2	
	Darayim							682	43	145	289
	Darwaz-i Payin (mamay)						0	0	0		
	Darwaz-i- Bala (nesay)							0	0		
	Faiz abad (Provincial Center)	868	2,370	3,109	2,362	3,111	7,154	83	64	11	10
	Eshkashim						0	0	0		
	Jurm	2,897	2,690	4,502	4,818	1,460	2,027	170	6	6	2
	Khash							999	7	6	4
	Khwahan						0	0	0		
	Kishim	2,191	2,840	4,530	2,883	1,076	3,165	0	2	68	204
	Kohistan							0	0		
	Kuf Ab							0	0		
	Kiran wa Munjan					48	0	10	0		
	Raghistan						0	400	0		
	Shahri Buzurg	41	170	615		39	0	313	0	2	3
	Shighnan						0	0	0		
	Shiki							0	0		
	Shuhada							0	0		
	Tagab							93	0		
	Tashkan							136	0	57	163
	Wakhan						0	0	0		
	Wardooj							9	3	14	1
	Yaftal-i-Sufla							305	0	43	97
	Yamgan							10	0		
	Yawan							166	0		
	Zaybak						0	0	0		
Badakhshan Total		**6,342**	**8,250**	**12,756**	**15,607**	**7,369**	**13,056**	**3,642**	**200**	**557**	**1,100**
Badghis	Ab Kamari						127	0	11	161	16
	Ghormach		4	101		944	624	250	328	299	486
	Jawand				226	134	431	66	13	1,090	130
	Muqur						220	149	7	102	81
	Bala Murghab		22	69	345	1,889	1,034	3,557	81	2,754	2055
	Qadis						391	198	146	906	135
	Qala-i-Now (Provincial Center)				43		378	0	0	99	55
Badghis Total		**0**	**26**	**170**	**614**	**2,967**	**3,205**	**4,219**	**587**	**5,411**	**2,958**
Baghlan	Andarab	81	31	301	564	548	947	130	475		
	Baghlan *		120	16	154	374	72		0		
	Baghlan-i-Jadeed				81	248	371	287	0		
	Burka				198	242	39	31	0		
	Dahana-i- Ghuri			37	200	24	35	0	0		
	Deh Salah							14	0		
	Dushi				89	116	174	68	0		
	Firing Wa Gharu							0	0		
	Gozargah-i-Noor							30	0		
	Kahmard *				527	263	255		0		
	Khinjan			9	21	92	137	23	0		
	Khost Wa Firing			21	0	295	442	56	0		
	Khwajah Hijran (Jalgah)							10	0		
	Nahreen	1		63	276	35	36	0	0		
	Pul-i-Hisar							0	0		
	Pul-i-Khumri (Provincial Center)		1	37	173	224	81	21	0		
	Talah wa Barfak			113	161	102	153	0	0		
Baghlan Total		**82**	**152**	**597**	**2,444**	**2,563**	**2,742**	**671**	**475**	**p-f**	**p-f**
Balkh	Balkh	1	22	332	411	2,786	1,975				
	Chahar Bolak			68	877	2,701	799				
	Chahar Kent				23	25	16				
	Chimtal		153	617	258	1,878	2,074				
	Dowlat abad	3	-		141	202	181				
	Dehdadi		8	35	16	990	307				
	Kaldar (Shahrak-i-Hairatan)				152	395	123				
	Khulm				50	367	0				
	Kishindeh				111	290	189				
	Marmul				3	18	12				
	Mazar-i-Sharif				50	119	78				
	Nahr-i-Shahi		14	30	139	425	833				
	Sholgarah		19	28	256	543	245				
	Shortepa				8	98	401				
	Zari										
Balkh Total		**4**	**217**	**1,108**	**2,495**	**10,837**	**7,233**	**p-f**	**p-f**	**p-f**	**p-f**

[33] The survey is designed to produce province level estimates. District estimates are derived by a combination of different approaches. They are indicative, only, and suggest a possible distribution of the estimated provincial poppy area among the districts of a province.

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Bamyan	Bamyan (Provincial Center)			20	93	19	17				
	Panjab			250	31		0				
	Saighan										
	Shebar			36	492	107	0				
	Waras			191	64		0				
	Yakawlang			112	123		0				
Bamyan Total				**610**	**803**	**126**	**17**	**p-f**	**p-f**	**p-f**	**p-f**
Day Kundi	Day Kundi *	0	-	836	1,996		1,948			0	0
	Gizab	0	-	776	1,109		1,243	1,054	665	810	722
	Ishtarlay							535	214	239	9
	Kajran	0	-	418	189		1,633	366	357	704	622
	Khedir							531	289	160	5
	Kiti							282	168	284	134
	Mir Amor							512	281	703	19
	Nili (Provincial Center)							0	214	5	5
	Sang-i-Takht							2	1	68	10
	Shahristan	1	-	415	421		2,220	64	85	29	21
Day Kundi Total		**1**	**0**	**2,445**	**3,715**	**2,581**	**7,044**	**3,346**	**2,273**	**3,002**	**1,547**
Farah	Anar Darah				91	1,828	143	16	239	79	1
	Bakwah				39	390	1,093	3,458	3,090	3570	1,936
	Bala Buluk			513	336	1,665	1,669	5,312	1,509	2705	2,586
	Delaram									3011	4,404
	Farah (Provincial Center)				87	729	905	1,328	1,013	1,142	51
	Gulistan			1,187	447	163	202	1,132	4,756	1,355	2,661
	Khaki-Safed				84	432	537	99	609	232	645
	Lash-i-Juwayn				41	1,568	215	233	109	45	3
	Pur Chaman				409	293	363	1,549	1,046	96	2,175
	PushtRod				554	2,482	1,709	1,314	1,588	46	61
	Qala-i-Kah				189	407	506	337	888	47	11
	Shib Koh				12	283	352	87	163	77	18
Farah Total		**0**	**500**	**1,700**	**2,289**	**10,240**	**7,694**	**14,865**	**15,010**	**12,405**	**14,552**
Faryab	Almar				239	57	338	213	0		
	Andkhoy				15	13	31	0	0		
	Bil Chiragh		26	232	24		322	620	102		
	Dowlat abad				78	133	27	0	0		
	Gurziwan							101	0		
	Khani ChaharBagh				205	6	490	0	0		
	Khwajah Sabz Poshi Wali				129	451	375	238	0		
	Kohistan				640	50	84	152	10		
	Maimanah				248		218	66	10		
	Pashtun Kot		1	281	429	97	60	249	0		
	Qaram Qul				55	138	43	0	0		
	Qaisar			150	1,050	579	880	303	168		
	Qurghan							0	0		
	Shirin Tagab			103	137	1,141	172	924	0		
Faryab Total		**0**	**28**	**766**	**3,249**	**2,665**	**3,040**	**2,866**	**291**	**p-f**	**p-f**
Ghazni	Ab Band						0				
	Ajristan		-		62		0				
	Andar						0				
	Bahram-e Shahid (Jaghatu)					9	0				
	Deh Yak						0				
	Gelan						0				
	Ghazni (Provincial Center)						0				
	Giro						0				
	Jaghatu *						0				
	Jaghuri						0				
	Khwajah Omari						0				
	Malistan						0				
	Muqur						0				
	Nawa						0				
	Nawur						0				
	Qara Bagh						0				
	Rashidan						0				
	Waghaz						0				
	Wali Muhammad Shadid Khugyani						0				
	Zanakhan						0				
Ghazni Total		**0**	**0**	**0**	**62**	**9**	**0**	**p-f**	**p-f**	**p-f**	**p-f**
Ghor	Chaghcharan (Provincial Center)		700	1,189	872	1,149	1,233	910			
	Chahar Sadah							41			
	Dowlatyar							132			
	Do Lainah							131			
	Lal Wa Sarjangal				1,055	718	771	200			
	Pasaband		700	805	175	48	241	17			
	Saghar		300	256	340	120	283	18			
	Shahrak			640	902	18	1,398	0			
	Taywara		500	808	649	240	608	39			
	Tulak			84	990	396	145	16			
Ghor Total			**2,200**	**3,782**	**4,983**	**2,689**	**4,679**	**1,503**	**p-f**	**p-f**	**p-f**

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hilmand	Baghran		1,800	2,309	2,232	2,507	2,890	4,287	4,279	3,343	4,049
	Dishu		-		369	911	851	1,160	688	475	119
	Garm Ser		2,020	462	1,922	1,912	6,168	6,523	8,000	5,789	6,333
	Kajaki		2,640	1,392	1,676	1,639	6,760	5,807	6,240	3,696	3,299
	Lashkargah (Provincial Center)		1,140	605	1,380	1,332	4,008	6,320	7,857	4,379	2,014
	Musa Qala		3,690	2,455	2,404	1,664	6,371	8,854	12,687	8,603	8,415
	Nad Ali		5,880	870	4,177	2,356	11,652	20,045	20,824	17,063	18,646
	Naher-i-Saraj		1,850	1,575	6,486	3,548	10,386	22,769	13,270	9,598	11,517
	Nowzad		2,650	3,096	1,051	3,737	2,707	6,192	3,863	6,473	2,845
	Nawa-i-Barukzai		2,730	1,240	3,506	2,552	10,168	6,314	13,978	4,416	1,328
	Reg-i-Khan Nishin		1,940		1,893	2,772	3,765	8,484	4,720	2,056	2,292
	Sangin Qala		2,810	777	1,365	1,184	2,862	5,150	5,532	2,754	2,631
	Washer		800	590	892	386	735	865	1,653	1,188	1,555
Hilmand Total		**0**	**29,950**	**15,371**	**29,353**	**26,500**	**69,323**	**102,770**	**103,590**	**69,833**	**65,045**
Hirat	Adraskan				133	9	99	196	22	1	
	Chiisht-i-Sharif				166	42	42	0	0		
	Fersi			134	28	110	111	0	0		
	Ghoryan				60	238	204	302	0		
	Gulran				240	33	32	0	0		
	Guzara				88	231	233	0	0		
	Hirat				0	16	16	0	0		
	Enjil				41	394	382	0	0		
	Karrukh				265	124	121	0	0		
	Kohsan				4	72	73	146	0		
	Kushk (Rabat-i-Sangi)				73	64	50	367	43		
	Kusk-i-Kohnah				3	15	15	0	0		
	Obe				842	144	131	0	0		
	Pashtun Zarghun				154	249	242	0	0		
	Shindand				427	54	408	516	201	555	360
	Zendah Jan				7	128	129	0	0		
Hirat Total		**0**	**50**	**134**	**2,531**	**1,924**	**2,288**	**1,526**	**266**	**556**	**360**
Jawzjan	Aqchah		47	171	247	631	30	0			
	Darzab				625	272	16	803			
	Faizabad		24	280	218	112	473	21			
	Khamyab		30	51	40	68	2	0			
	Khanaqa							0			
	Khwajah DuKoh				19	15	271	0			
	Mardyan		4	228	174	21	348	62			
	Mingajik		7	64	101	77	38	0			
	Qarqin		24	58	151	43	17	0			
	Qush Tepah							43			
	Sheberghan (Provincial Center)		1	36	98	508	828	156			
Jawzjan Total		**0**	**137**	**888**	**1,673**	**1,748**	**2,023**	**1,086**	**p-f**	**p-f**	**p-f**
Kabul	Bagrami						0	0	0		
	Chahar Asyab						0	0	0		
	DehSabz						0	0	0		
	Farzah							0	0		
	Gulara						0	0	0		
	Estalef						0	0	0		
	Kabul						0	0	0		
	Kalakan						0	0	0		
	Khak-i-Jabar						0	0	0		
	Mir Bacha Kot						0	0	0		
	Musahi						0	0	0		
	Paghman						0	0	0		
	Qara Bagh						0	0	0		
	Shakar Dara						0	0	0		
	Surubi	29	58	237	282		80	500	310	132	152
Kabul Total		**29**	**58**	**237**	**282**	**0**	**80**	**500**	**310**	**132**	**152**
Kandahar	Arghandab		330	139	261	287	735	1,016	57	158	22
	Arghistan		80	14	651	2,449	784	310	28	43	7
	Daman		190	357	895	775	183	375	19	119	0
	Ghorak		380	166	241	233	336	1,445	232	628	1,466
	Kandahar (Provinclal Center)		640	293		0	1,367	1,220	590	425	108
	Khakrez		560	312	145	185	217	132	1,224	1,474	1,215
	Maruf		-	63	117	150	464	914	182	36	33
	Maiwand		1,090	353	514	1,281	1,362	2,878	3,375	6,524	9,966
	Miya Neshin							322	1,603	158	44
	Nesh							432	3,284	1,717	2,842
	Panjwayee		150	482	864	4,687	4,714			1,564	2,982
	Reg				0	327		4	0		0
	Shah Wali Kot		260	489	923	2,379	1,593	1,258	560	911	813
	Shorabak			111	45	19	409	308	4		0
	Spin Boldak		290	277	303	218	454	768	541	650	1,359
	Zhire							5,232	2,923	5,405	4,978
Kandahar Total		**0**	**3,970**	**3,055**	**4,959**	**12,990**	**12,618**	**16,615**	**14,623**	**19,811**	**25,835**

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Kapisa	AlaSai				77	82	0	367	0		
	Hisah-i-Awal Kohistan							0	0		
	Hisah-i-Duwumi Kohistan							0	0		
	Koh Band				111	33	0	0	0		
	Kohistan *				116		0		0		
	Mahmood-i-Raqi (Provincial Center)				10		0	0	0		
	Nijrab				92		0	0	0		
	Tagab	0	207	326	116		282	468	436		
Kapisa Total		**0**	**207**	**326**	**522**	**115**	**282**	**835**	**436**	**p-f**	**p-f**
Khost	Bak				0		14				
	Gurbuz				47		10				
	Jaji Maidan				8		16				
	Khost Matun (Provincial Center)				0		0				
	Manduzay (Ismyel Khel)				125		0				
	Musa Khel (Mangal)				86		0				
	NadirShah Kot				75		0				
	Qalandar				39		0				
	Sabari (Yaqubi)				0		0				
	Shamul (Dzadran)										
	Spera			118	0		5				
	Tanay	6		257	458	2	88				
	Terayzai (Ali Sher)				0		0				
Khost Total		**6**	**0**	**375**	**838**	**2**	**133**	**p-f**	**p-f**	**p-f**	**p-f**
Kunar	Asad Abad (Provincial center)	1	140	396	841	270	356	42	252	4	
	Bar Kunar (Asmar)	31	40	163	52	14	10	111	7	9	7
	Chapa Dara				535	147	23	0	0		12
	Dangam	4	49		44	22	9	90	0	9	
	Dara-i-Pech	11	263	310	585	76	183	0	0	1	5
	Ghazi Abad							5	0		4
	Khas Kunar		70		298	41	18	8	1		
	Mara warah			345	170	22	33	6	0	84	
	Narang wa Badil	10	100	173	425	55	25	57	0	4	1
	Nari	1	-	60	0	19	0	80	15	1	
	Noor Gal	9	70	353	460	58	88	7	0	4	20
	Sar Kani	8	100	141	385	50	75	11	6	1	
	Shigal wa Sheltan							5	0	36	73
	Sawkai	8	140	83	571	284	111	19	9	4	33
	Watapoor							3	0	6	
Kunar Total		**74**	**832**	**1,942**	**3,795**	**775**	**820**	**446**	**290**	**163**	**155**
Kunduz	Ali Abad		3	5	41		0				
	Dashti-i-Archi				9		102				
	Chahar Darah		6	15	37		0				
	Hazrati Imam Sahib				28		0				
	Khanabad			11	70		0				
	Kunduz (Provincial Center)		3	9	32		0				
	Qala-i-Zal		5	8	7	275	0				
Kunduz Total		**0**	**16**	**49**	**224**	**275**	**102**	**p-f**	**p-f**	**p-f**	**p-f**
Laghman	Alingar	3	146	354	593	107	259	23	13	1	48
	Alisheng	0	104	148	597	69	192	237	370	1	65
	Dowlat Shah	12	-	571	233	44	118	124	3		31
	Mehterlam (Provincial Center)		240	366	580	25	0	0	16	43	90
	Qarghayee	0	460	468	753	30	140	177	23	90	
Laghman Total		**15**	**950**	**1,907**	**2,756**	**274**	**709**	**561**	**425**	**135**	**234**
Logar	Azra										
	Baraki Barak						0				
	Charkh						0				
	Kharwar										
	Khoshi						0				
	Muhammad Aghah						0				
	Pul-i-Alam						0				
Logar Total		**0**	**0**	**0**	**0**	**0**	**0**	**p-f**	**p-f**	**p-f**	**p-f**
Nangarhar	Achin	1	940	2,131	1,907	198	1,274	1,797		14	10
	Bati Kot		2,390	1,994	4,683	166	550	1,774			
	Behsud							0			
	Chaparhar	2	990	1,169	1,818	20	209	878			
	Darah-i- Noor		380	24	472	2	0	322			
	Deh Bala	11	650	927	358	17	68	1,075			
	Dur Baba		40	31	99	5	19	36			
	Goshta	99	150	13	217	10	41	109			
	Hesarak	2	620	1,016	1,392	64	283	295		18	5
	Jalalabad		90	4	1,658	77	0	0			
	Kama		1,120	558	1,898	82	0	0			
	Khugyani	3	2,640	2,986	2,269	117	750	3,253		108	131
	Kot							0			
	Kuzkunar		500	102	801	37	151	153			
	Lalpoor	95	250	1	362	17	68	356		5	59
	Mohmand Dara		720	19	1,170	54	221	995			1
	Nazyan		150	98	168	8	160	266		1	
	Pachir wagam	3	420	1,142	1,091	35	143	594			
	Rodat		2,760	3,313	3,633	50	0	3,755			
	Sherzad	2	1,470	1,641	1,229	57	430	864		148	513
	Shinwar		2,060	1,616	1,759	79	504	2,218			
	Surkh Rud	0	1,440	118	1,229	0		0			
Nangarhar Total		**218**	**19,780**	**18,904**	**28,213**	**1,093**	**4,871**	**18,739**	**p-f**	**294**	**719**
Nimroz	Chahar Burjak				65	526	1,119	87	4	84	144
	Asl-i-Chakhansur				0		0	0	1		183
	Kang				0		40	0	0		10
	Khash Rod			26	50	1164	661	6,421	6,197	326	1,621
	Zaranj (Provincial Center)						135	0	0	17	81
Nimroz Total		**0**	**300**	**26**	**115**	**1,690**	**1,955**	**6,507**	**6,203**	**428**	**2,039**

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Nuristan	Barg-i-Matal				2	535	522				
	Du Ab										
	Kamdesh			210	307	269	262				
	Mandol				0	731	713				
	Noor Gram										
	Nuristan Paroon (Provincial Center)			438	185	19	19				
	Wama				66		0				
	Waygal				205		0				
Nuristan Total				**648**	**765**	**1,554**	**1,516**	**p-f**	**p-f**	**p-f**	**p-f**
Paktika	Barmal						0				
	Dilah wa Khwoshamand						0				
	Giyan						0				
	Gomal						0				
	Jani Khel										
	Mata Khan						0				
	Nika						0				
	Omna						0				
	Sar Rowza						0				
	Sharan (Provincial Center)						0				
	Surubi						0				
	Turwo										
	Urgun						0				
	Wazahkhwah						0				
	Wor Mamay						0				
	Yahya Khel										
	Yosuf Khel										
	Zarghun Shahr						0				
	Ziruk						0				
Paktika Total		**0**	**0**	**0**	**0**	**0**	**0**	**p-f**	**p-f**	**p-f**	**p-f**
Paktya	Azra *	1	38	419	603		0				
	Ahmadabad *										
	Samkani	0	-	76	275		0				
	Dand Patan				175		0				
	Gardez (Provincial Center)						0				
	Woza Jadran				0		0				
	Jaji	0	-	185	11		0				
	Jani Khel				18		0				
	Laja Ahmad Khel										
	Lija Mangal	0	-		118		0				
	Sayyid Karam	0	-	41	0		0				
	Shamul *				0		0				
	Shwak				0		0				
	Zurmat				0		0				
Paktya Total		**1**	**38**	**721**	**1,200**	**0**	**0**	**p-f**	**p-f**	**p-f**	**p-f**
Panjshir	Bazarak (Provincial Center)										
	Darah										
	Hissa-i-Awal(Khinj)				0		0				
	Hisa-i-Duwumi				0		0				
	Panjshir				0		0				
	Paryan										
	Rukhah										
	Shutul										
	Unaba										
Panjsher Total					**0**		**0**	**p-f**	**p-f**	**p-f**	**p-f**
Parwan	Bagram				274		0				
	Charikar (Provincial Center)				181		0				
	Syahgird (Ghorband)				141		0				
	Jabalussaraj				21		0				
	Koh-i-Safi				41		124				
	Salang				0		0				
	Sayyid Khel										
	Shaykh Ali				263		0				
	Shinwari				389		0				
	Surkh-i-Parsa				0		0				
Parwan Total		**0**	**0**	**0**	**1,310**	**0**	**124**	**p-f**	**p-f**	**p-f**	**p-f**
Samangan	Aybak (Provincial Center)			14	27	0	0				
	Darah-i-Soof-i-Bala	614		34	196	1,454	1,182				
	Darah-i-Suf-i-Payin										
	Fayroz Nakhcheer										
	Hazrat-i-Sultan			29	85	280	90				
	Khuram wa Sar Bagh	0		24	238	307	99				
	Roi-Do-Ab				605	1,833	589				
Samangan Total		**614**	**100**	**101**	**1,151**	**3,874**	**1,960**	**p-f**	**p-f**	**p-f**	**p-f**
Sari Pul	Balkhab			453	204	95	188	0			
	Gosfandi							0			
	Kohistanat				471	1,424	377	0			
	Sangcharak				687	441	1,122	16			
	Sari Pul (Provincial Center)			595	476	959	415	203			
	Sayyad				23	52	25	41			
	Sozma Qala	0	57	380	113	256	124	0			
Sari Pul Total		**0**	**57**	**1,428**	**1,974**	**3,227**	**2,251**	**260**	**p-f**	**p-f**	**p-f**

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Takhar	Baharak							0			
	Bangi	0		20	13		0	79			
	Chahab	19		4	27		70	0			
	Chal	20			30		15	9			
	Darqad				15		0	0			
	DashtiQala							0			
	Farkhar	26		43	27	43	118	32			
	Hazar Sumuch							32			
	Eshkamish	19		77	40		2	47			
	Kalafgan	27		77	69		609	318			
	Khwaja Bahawuddin							0			
	Khwaja Ghar	32		26	35		109	0			
	Namak Ab							0			
	Rustaq	24		34	194	1,321	816	118			
	Taloqan (Provincial Center)	16		14	115		77	577			
	Warsaj	10		14	66		46	0			
	Yangi Qala	20		71	131		317	0			
Takhar Total		**211**	**788**	**380**	**762**	**1,364**	**2,179**	**1,211**	**p-f**	**p-f**	**p-f**
Uruzgan	Chorah	0	1,330	975	1,402	259	2,024	71	316	306	221
	Dihrawud	0	1,340	1,282	2,523	209	1,704	3,538	2,849	2038	145
	Khas Uruzgan	0	-	580	358	338	886	173	304	407	230
	Nesh	0	490	59	426	352	614				
	Shahidi Hasas	0	1,190	1,333	782	646	1,127	3,109	4,403	2445	3,635
	Tirin Kot (Provincial Center)	0	750	469	1,874	221	3,348	2,312	2,067	4028	3,106
Uruzgan Total		**0**	**5,100**	**4,698**	**7,365**	**2,025**	**9,703**	**9,203**	**9,939**	**9,224**	**7,337**
Wardak	Chak-i-Wardak			211	284		0				
	Daimirdad			0	90	106	0				
	Hisah-i-Awal Behsud			22	0		0				
	Jaghatu										
	Jalrez			531	78		0				
	Markaz-i- Behsud			472	0		0				
	Maidan Shahr (Provincial Center)			527	102		0				
	Nerkh			780	215		0				
	Sayyidabad			192	248		0				
Wardak Total				**2,735**	**1,017**	**106**	**0**	**p-f**	**p-f**	**p-f**	**p-f**
Zabul	Arghandab	0		302	526	205	346	79	55	103	91
	Atghar			188	32	86	36	16	3	2	16
	Daychopan	0		646	431	1,016	742	389	422	147	122
	Kakar Kak-e Afghan							104	110	219	44
	Mizan	0		309	251	56	123	129	289	309	140
	Naw Bahar							63	44	33	4
	Qalat (Provincial Center)	0		689	317	188	657	78	310	19	20
	Shah Joi	0		178	679	240	538	320	237	175	20
	Shemel Zayi			65	44	16	35	159	153	46	15
	Shinkai			164	287	102	228	139	105	87	0
	Tarnak wa Jaldak	1			410	145	506	136	608	5	10
Zabul Total		**1**	**200**	**2,541**	**2,977**	**2,053**	**3,211**	**1,611**	**2,335**	**1,144**	**482**
TOTAL		**7,598**	**73,905**	**80,399**	**126,328**	**103,635**	**164,858**	**192,981**	**157,253**	**123,094**	**122,515**
Rounded Total		**8,000**	**74,000**	**80,000**	**131,000**	**104,000**	**165,000**	**193,000**	**157,000**	**123,000**	**123,000**

p-f: poppy-free according to the definition of the respective year. This concept was introduced in 2007. In 2007, provinces with no poppy; since 2008, provinces with less than 100 ha of poppy.

ANNEX III: ERADICATION FIGURES BY DISTRICT (2010)

Province	District	Eradication (ha) verified	No. of fields eradication reported	No. of villages eradication reported
Badakhshan	Argo	146	918	46
Badakhshan	Darayim	63	361	27
Badakhshan	Kishim	64	299	7
Badakhshan	Tashkan	29	182	23
Sub total		**302**	**1760**	**103**
Farah	Bala Buluk	88	134	7
Farah	Farah (Provincial Center)	61	174	17
Farah	Pushtrud	49	123	11
Sub total		**198**	**431**	**35**
Hilmand	Garm Ser	177	401	39
Hilmand	Lashkargah (Provincial Center)	103	340	12
Hilmand	Nad Ali	964	1,876	74
Hilmand	Naher-I- Saraj	41	65	1
Hilmand	Nawa-I- Barukzai	316	891	52
Sub total		**1602**	**3,573**	**178**
Hirat	Kushk (Rubat-I- Sangi)	6	22	3
Hirat	Shindand	153	719	39
Sub total		**159**	**741**	**42**
Kabul	Surubi	0.48	9	1
Sub total		**0.48**	**9**	**1**
Kapisa	Hissa-I-Awal Kohistan	0.04	1	1
Kapisa	Hissa-I-Duwumi Kohistan	0.01	1	1
Kapisa	Koh Band	1	24	7
Kapisa	Mahmood Raqi (Provincial Center)	0.05	2	2
Sub total		**1**	**28**	**11**
Laghman	Alingar	8	21	2
Laghman	Alishing	2	5	1
Laghman	Mehterlam (Provincial Center)	0.24	1	1
Sub total		**10**	**27**	**4**
Nangarhar	Achin	2	18	3
Nangarhar	Khogyani	14	27	2
Sub total		**16**	**45**	**5**
Nimroz	Khashrod	0.43	14	2
Sub total		**0.43**	**14**	**2**
Takhar	Kalafgan	1	5	2
Takhar	Rustaq	11	46	5
Sub total		**12**	**51**	**7**
Uruzgan	Tirinkot (Provincial Center)	15	197	14
Sub total		**15**	**197**	**14**
Grand Total		**2316**	**6876**	**402**

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