EMERGENCY OPERATIONS AND REHABILITATION DIVISION

TAJIKISTAN

"Emergency assistance for food security and locust control in Tajikistan"

YOUR REF:
07-FAO-019

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FINAL REPORT

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Cover page photo caption
*High densities of adults of Moroccan Locust (*Dociostaurus maroccanus*) feeding on cow pat.*
(Photo: Annie Monard, FAO)

UNITED NATIONS NATIONS UNIES
CENTRAL EMERGENCY RESPONSE FUND

USE OF THE CERF:
FOR CERF GRANTS (Rapid Response Window)

Country: The Republic of Tajikistan
Humanitarian/Resident Coordinator: Mr Francisco Galindo-Velez (UNHCR)
Reporting Period: 19 June 2007 to 18 September 2007

1. Executive summary

The Republic of Tajikistan experiences periodic outbreaks of locusts for many years. The country is mainly affected by two locust species: the Moroccan Locust (*Dociostaurus maroccanus*) in the south (along the borders with Afghanistan and Uzbekistan) and the Italian Locust (*Calliptamus italicus*), which is found together with the Moroccan Locust in the north of the country (along the borders with Uzbekistan and Kyrgyzstan). To a lesser extent, there are also problems with the Migratory Locust (*Locusta migratoria*) in the south.

In response to a particularly acute locust outbreak in June 2007, the United Nations Central Emergency Response Fund (CERF), through its rapid response window, contributed US$119 814 to locust control activities technically supervised by FAO. During the project, FAO used 100 percent of the funds provided. The CERF funding mainly facilitated procurement and delivery of pesticides, which were urgently needed to treat locust-infested areas and reduce the risk of further infestations or spread-out of the outbreak. The funding was also partly used for surveying infested areas, awareness-raising and for mobilization and training activities (e.g. mechanical control).

2. Objective of the assistance

The main objective of the project was to contribute to the improvement of food security and nutritional situation of vulnerable groups affected by the locust crisis in Tajikistan.

The project's specific objectives were to:

- Provide emergency support to the Plant Protection Unit (PPU) of the Ministry of Agriculture and Nature Protection of the Government of Tajikistan in undertaking effective and appropriate locust control operations to minimize the threat of locust attacks on crops during the 2007 agricultural season; and

- Ensure the food security of and protect livelihood opportunities for more than 12 000 of the most vulnerable land owners and farming communities.

The direct beneficiaries of the project were mainly farmers, as well as livestock and land owners, who were likely to lose their crops and/or food for their livestock. Indirect beneficiaries of the project were the populations of neighboring areas (villages, districts), who were preserved from locust infestations, and PPU staff, whose locust knowledge was improved as a result of the project's implementation.

Initially, the project intended to benefit 12 000 households; following project implementation, this figure increased to 16 000 households (approximately 90 000 people).

3. Activities

3.1 Community mobilization and training

Prior to implementing control operations, the Head of PPU conducted two short training sessions on control methods (both chemical and mechanical) for approximately 30 PPU specialists working in Khatlon region and Badakhshan Mountainous Autonomous Region (BAMR).

The PPU specialists later mobilized over 16 000 rural people (heads of farms and families), who were then briefly trained in mechanical control methods. Immediately after these sessions, trainees began mechanical control activities.

3.2 Procurement and delivery of pesticides

From June 2007, FAO and PPU, within the framework of this project, began the process of procuring and delivering pesticides to the targetted areas.

A total of 6 085 litres of pesticide was procured in four shipments as follows:

- 1 665 litres on 18 June 2007;
- 1 300 litres on 2 July 2007;
- 1 560 litres on 27 July 2007; and
- 1 560 litres on 1 August 2007.

The pesticide distribution process occurred in three stages. First, the procured pesticides were delivered to PPU by FAO. Then, PPU, following exchanges with locally available, trained locust control staff and specialists, distributed them to PPU branches in their respective districts. The pesticides

were eventually delivered by PPU branches to the farms, and the above-mentioned trained specialists carried out the chemical spraying.

3.3 Treatment of infested areas

Different pesticides are used to control locust infestations in relation to the development stage of the locust population. In June, as most of the locusts had reached the adult stage (winged insects), *DESIST* was considered the most appropriate pesticide; however, the application rate had to be increased from 400 g/hectare to 600–700 g/hectare in most districts owing to very high locust density.

Mainly PPU specialists at district level were involved in the control activities. Most of them were trained in locust control techniques during previously-implemented FAO projects and therefore only a limited number of training sessions were conducted for some specialists in Khatlon and BAMR regions.

Some districts were infested several times during May-July period and therefore pesticides were used two or three times in certain areas. As a result, about 19 000 hectares of crop land were protected compared with the planned area of 25 000 hectares (see Table 1).

Table 1 – Areas treated by crop

Crop	Total treated area (hectares)	Area treated as a result of the CERF grant (hectares)
Cotton	51 600	1 070
Grain and cereal	11 700	1 680
Food crop	19 800	640
Garden	1 440	405
Vegetable	1 060	277
Melon	1 110	438
Vineyard	330	85
Corn	1 150	340
Pasture and haymaking	135 000	14 100
Total	**223 190**	**19 035**

As per locust guidelines, various equipments such as handheld sprayers, protective clothing and other accessories were used to monitor and control the infested areas.

Due to widespread infested area, aerial spraying was required and implemented for the first time in the country thanks to national resources. This underlines the seriousness of the locust situation during spring and summer 2007. Aerial spraying was carried out with an Antonov 2 equipped with sprayers. About 8 hectares were sprayed at each aircraft sortie lasting 30 to 40 minutes and 10 to 15 flights occurred per day, in the morning and late afternoon when the temperature is about 18–20°C.

In 2007, the Government of Tajikistan mobilized over TJS 1 million (almost US$300 000) from its own budget, of which TJS 85 300 (approximately US$25 000) were used for pesticide procurement and TJS 147 000 (approximately US$442 000) for aerial treatment. However, owing to external factors, such mobilization was not sufficient.

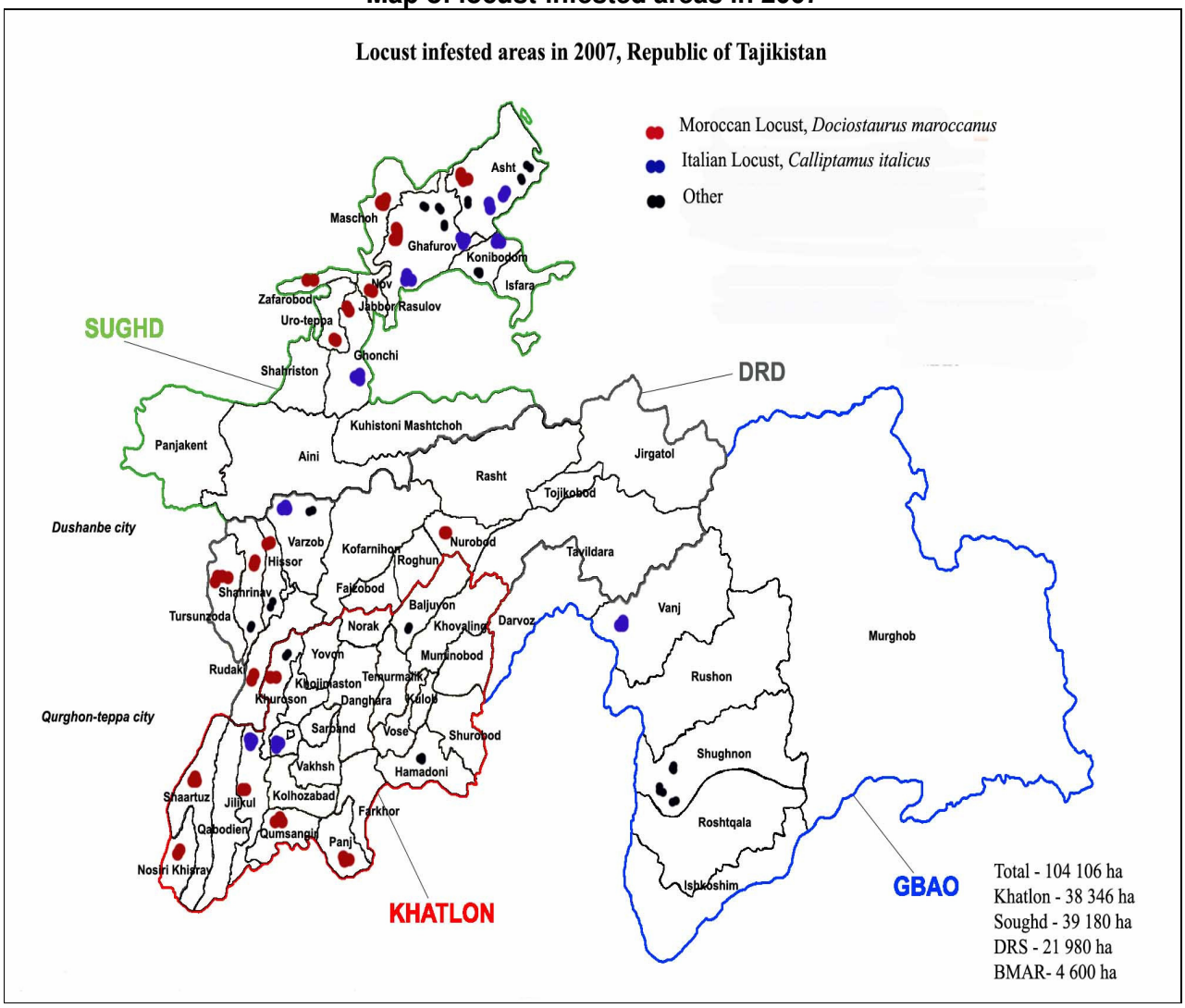
3.4 Project monitoring and surveying of infested areas

The project activities were implemented under the close supervision of the FAO Project Coordinator for Tajikistan and were technically monitored by the national locust expert and the responsible PPU staff member. The latter two specialists monitored in particular pesticide distribution and control activities.

Later, the FAO and PPU specialists jointly conducted an assessment of damage caused by the locust infestations. In addition, a survey of infested areas was conducted by the network of PPU specialists in the field. The outcomes of the damage assessment and survey are shown in the Annex to this report.

In addition, mid-June, a one-day field trip to a highly infested area, in the south-western part of the country, close to the borders with Afghanistan and Uzbekistan, was carried out by an FAO staff member, locust expert, who provided also an overview of the current locust situation and of its management and made a number of recommendations for short and medium terms.

Map of locust-infested areas in 2007



The assessment results indicate that an area of 104 106 hectares was infested by locusts and only 85 169 hectares were treated using available resources. The pesticides procured through the CERF grant were used to treat 15 212 infested hectares in agricultural areas thus protecting 19 035 hectares of crops.

Nevertheless, owing to re-infestations and relatively late control operations, about 160 500 hectares of crops were damaged by locusts in 2007 (see Table 2).

Table 2 – Areas of crops damaged by locust

Crop	Hectares
Cotton	3 086
Grain and cereal	4 548.5
Food crops	2 151
Garden	174
Vegetable	220
Melon	54.9
Vineyard	17
Corn	73
Pasture and haymaking	94 635
Total	**104 959.4**

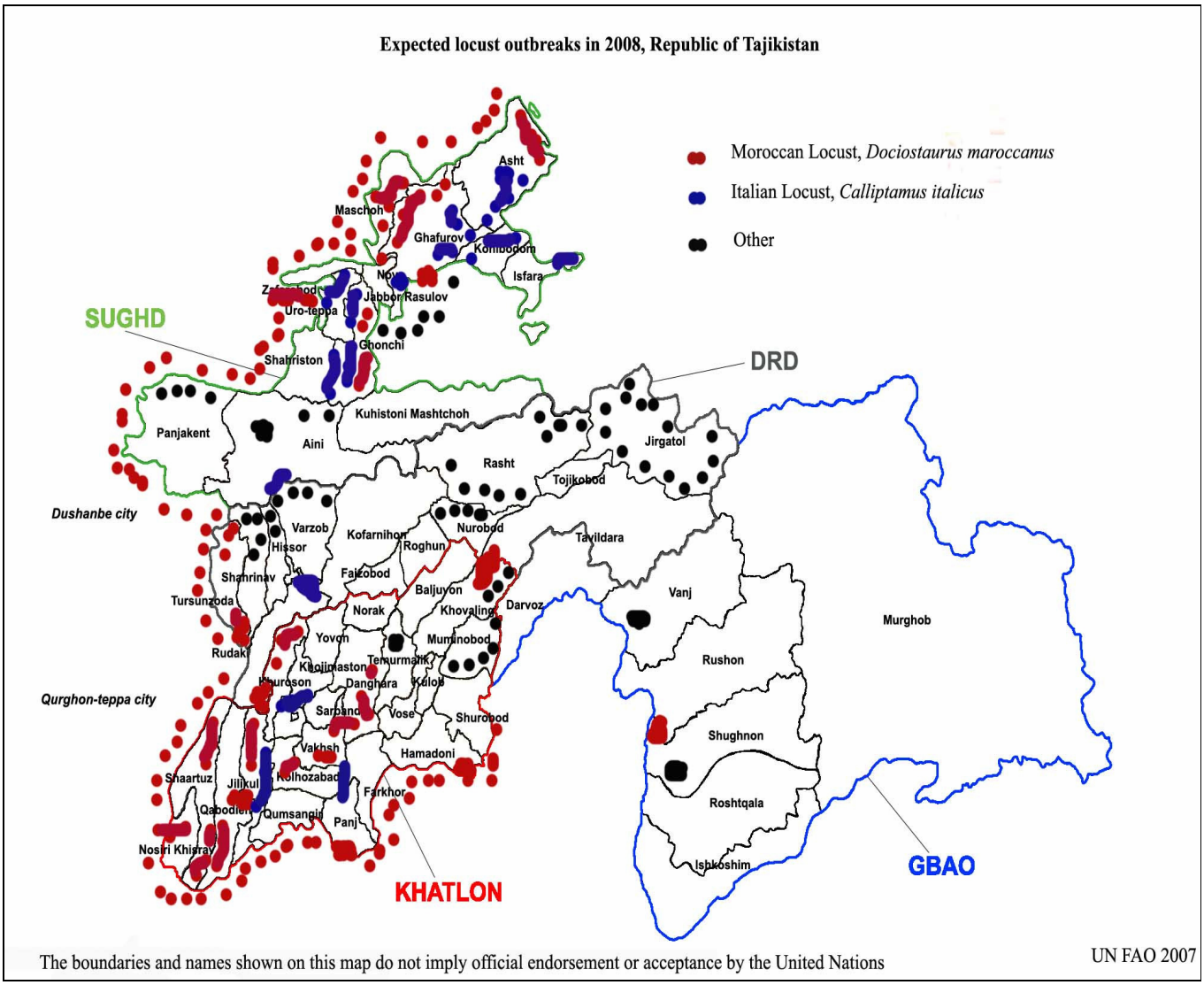
4. Foreseen locust situation in 2008

In the past, locust infestations mainly occurred through the month of July and control operations were completed during the same month. In 2007, however, owing to a combination of factors (drought and recurrent locust flights from neighbouring countries) locust infestations continued in August, for the first time in 30 years of locust monitoring in Tajikistan.

The assessment jointly conducted by the previously-mentioned FAO staff member, national experts and FAO national consultants indicates that the locust-infested areas amounted 104 106 hectares in 2007 compared with about 70 000 hectares during previous years. As a result, the total area that will require treatment in 2008 is almost triple – 152 500 ha – that required in 2004 (55 796 ha).

It is therefore obvious that the country will experience a larger outbreak in 2008. The Government has issued a decree to establish a special organization – Tajik State Unitary Enterprise for Locust and Agricultural Pest Control. While the Government is looking to strengthen its technical and financial capacity for controlling locust infestations in 2008, there is still a lack of regional cooperation with neighbouring countries, despite some results achieved to-date.

Map of expected locust outbreaks in 2008



5. Conclusions

Three issues continue to hamper locust operations:

- Some areas (i.e. likely suitable breeding areas) are acting as locust reservoirs from which locusts arrive when natural vegetation starts to dry out, including: (i) very difficult to access hilly areas surrounding the agricultural and cotton crops, which are later infested by locusts; and (ii) a natural reserve to which access is forbidden.
- The shortening of the biological cycle (hopper development) compared with previous years, probably as a result of temperatures fitting more than usual with a thermal range highly suitable for locusts.
- A lot of re-infestations of already-treated areas from the two neighbouring countries, Afghanistan and Uzbekistan, in the south-western part of the country. This was particularly crucial during a period of strong winds from the end of May to mid-June 2007.

At the beginning of the 2007 campaign there were discussions with Afghan officials concerning necessary joint border survey and control operations but that did not result in field activities. In early March, an agreement, which later resulted in a protocol, was achieved with the Uzbek authorities to cooperate in solving the locust issue in border areas.

It was clearly stated by officials that a regional approach was necessary. They indicated that the infested areas were perfectly defined and that it would have been possible to manage initial locust infestations. However, owing to a lack of pesticide and equipment it was neither possible to control additional swarms arriving from adjacent countries nor to anticipate their arrival through appropriate information management. The officials noted that never before such high density swarms (like clouds covering the sky, with locusts eating everything, even dry trees) occurred, and that at the end of May, during windy periods, there were so many locusts on the roads that cars could not move. They also observed daily back and forth movements between surrounding hilly/mountainous areas and flat and moist areas, locusts flying early in the morning to low lands, looking for water, and leaving after midday.

Despite efforts made by FAO and Tajik Authorities, a number of issues related to locust management still persist. A crucial one concerns information collection, transmission, follow-up and analysis, the primary component when dealing with locusts. In order to anticipate further outbreaks, preventive control strategy should be developed at national level and a regional approach promoted and initiated, which appears as the only way to better manage locust issues in the whole region, including at less cost for financial resources, human health and environment.

ANNEX I: Area of crops (in hectares) damaged by locusts in 2007

#	District, Region	Cotton	Grain and Cereals	Food crops	Gardens	Vegetables	Melons	Vineyards	Corn	Pastures
A	**Total for Tajikistan**	**3 086**	**4 548.5**	**2 151**	**174**	**220**	**54.9**	**17**	**73**	**94 635**
A-1	**Total for DRS**	**220**	**600**	**1 300**	**124**	**20**	**40**	**5**	**30**	**18 000**
1	Tursunzoda		50	100						3 000
2	Shahrinav		100	200	5		5			4 000
3	Hissor		50	200	5		5			1 000
4	Rudaki	220	100	400	10	20	20	5	30	8 000
5	Varzob		100	200	4		10			1 000
6	Jirgatol		100	150	100					500
7	Rasht									
8	Fayzobod									
9	Nurobod		100	50						500
A-2	**Total for Khatlon**	**1 800**	**3 450**	**-**	**-**	**180**	**3**	**2**	**-**	**48 500**
1	Vakhsh	150	600			20				2 000
2	Shahrituz	200	300			20				8 000
3	Pyanj	150	500			20				4 000
4	Khuroson	500	700			30				3 000
5	Qabodiyon									1 000
6	Danghara									8 000
7	Qumsangir	450	600			30				4 000
8	Jilikul									1 000
9	N. Khisrav	250	100			20				6 000
10	J. Rumi	100	350			40				1 000
11	Muminobad									3 000
12	Khovaling									
13	Temurmalik									
14	Shurobod									
15	Farkhor									2 000
16	Jomi									1 000
17	Hamadoni									500
18	Baljuvon		300				3	2		4 000
A-3	**Total for Sughd**	**1 066**	**498.5**	**851**	**50**	**20**	**11.9**	**10**	**43**	**28 135**
1	Asht	20	14.5			1				2 000
2	Ghaffurov	401		10		1	3.9		15	7 815
3	Mastchoh	100	114	325						1 500

4	Spitamen			200		18			18	2 150
5	Zafarobod	400	50	70						1 000
6	Istaravshan	10	250					10	10	3 120
7	Ghonchi		70							3 500
8	Rasulov	135					8			4 700
9	Konibodom			82						
10	Isfara			164	50					2 350

ANNEX II: Area of crops (in hectares) protected by treatment in 2007

#	District, region	Cotton	Grain and cereals	Food crops	Gardens	Vegetables	Melons	Vineyards	Corn	Pastures
A	**Total for Tajikistan**	**51 600**	**11 700**	**19 800**	**1 440**	**1 060**	**1 110**	**330**	**1 150**	**13 5000**
A-1	**Total for DRS**	**11 000**	**2 800**	**2 800**	**370**	**160**	**120**	**20**	**50**	**30 000**
1	Tursunzoda		200	100		4	10			5 000
2	Shahrinav		100	200	10	6	10			5 000
3	Hissor	500	100	100	50	20	20	5	10	2 000
4	Rudaki	600	2 000	100	200	40	60	5	40	12 000
5	Varzob		200	2 000	10	30	20			2 000
6	Jirgatol			200						2 000
7	Rasht									
8	Fayzobod									
9	Nurobod		200	100	100	60		10		2 000
A-2	**Total for Khatlon**	**24 000**	**7 000**	**15 000**	**370**	**500**	**630**	**190**	**1100**	**92 000**
1	Vakhsh	1 000	1 000	2 000	40	40	40	60	100	4 000
2	Shahrituz	3 000	1 000	1 000	60	90	80	10	50	12 000
3	Pyanj	5 000	500	2 000	20	60	100		100	8 000
4	Khuroson	2 000	500	2 000	30				100	5 000
5	Qabodiyon									2 500
6	Danghara									10 000
7	Qumsangir	3 000	500	2 000	60	100	100	20	100	8 000
8	Jilikul	2 000	500	1 000	10	20	60		100	1 000
9	N. Khisrav	3 000	500	1 000		40	60		200	10 000
10	J. Rumi	2 000	1 000	1 000	60	60	100	40		3 000
11	Muminobad									6 000
12	Khovaling									
13	Temurmalik									
14	Shurobod									6 000
15	Farkhor	1 000	1 000			20	20		100	4 000
16	Jomi	1 000	500		40	40	40	10	100	2 000
17	Hamadoni	1 000		1 000	10	20	20	40	100	500
18	Baljuvon			2 000	40	10	10	10	50	10 000
A-3	**Total for Sughd**	**26 500**	**1 900**	**2 000**	**700**	**400**	**360**	**120**	**-**	**9 500**
1	Asht	3 000	200	100	200	10	20	10		1 000
2	Ghaffurov	500	100	100			40	10		1 000

3	Mastchoh	8 000	200	400		40	20			3 000
4	Spitamen	2 000	100	200		10	40			1 000
5	Zafarobod	10 000	100	400	50	100	100			500
6	Istaravshan	400	600	300	50	40	50	30		500
7	Ghonchi	200	200	200		40	50	40		1 000
8	Rasulov	2 000	300	200		60	20	10		1 000
9	Konibodom	400	100	100	400	100	20	20		500
10	Isfara									
A-4	**Total for BMAR**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 500**
	Shughnan									3 500

ANNEX III: Area of crops (in hectares) protected by treatment through the CERF grant in 2007

#	District, Region, Country	Cotton	Grain and Cereals	Food crops	Gardens	Vegetables	Melons	Vineyards	Corn	Pastures
A	**Total for Tajikistan**	**1 070**	**1 680**	**640**	**405**	**277**	**438**	**85**	**340**	**14 100**
A-1	**Total for DRS**	**110**	**870**	**230**	**235**	**87**	**188**	**20**	**25**	**2 800**
1	Tursunzoda		70	30		1	3			500
2	Shahrinav		60	70	5	6	5			500
3	Hissor	50	40	50	20	10	10	5	5	200
4	Rudaki	60	500	50	100	20	40	5	20	1 200
5	Varzob		100	20	10	20	10			200
6	Jirgatol									
7	Rasht									
8	Fayzobod									
9	Nurobod		100	10	100	30	120	10		200
A-2	**Total for Khatlon**	**960**	**810**	**410**	**170**	**190**	**250**	**65**	**315**	**7 800**
1	Shahrituz	200	50	50	30	40	40	5	20	1 200
2	Pyanj	40	40	10						1 000
3	Khuroson	100	100	20	20			5	25	500
4	Qabodiyon									
5	Danghara	50	50							1 000
6	Qumsangir	100	100	20	40	50	40	10	40	800
7	Jilikul	100	100		10	20	30		40	100
8	N. Khisrav	100	100	10		20	30		60	1 000
9	J. Rumi	100	100	50	40	20	40	20		300
10	Kulob	50	50							
11	Farkhor	50	100			10	10		60	400
12	Jomi	20	20							
13	Hamadoni	50		50	10	10	10	20	50	500
14	Baljuvon			200	20	20	50	5	20	1 000
A-4	**Total for BMAR**									**3 500**
	Shughnan									3 500

ANNEX IV:Areas surveyed, infested and treated (in hectares) against locusts in 2007

#	District, Region, Country	Planned survey areas (ha)	Actual surveyed areas (ha)	Infested areas (ha)	Treated areas (ha)		
					Total	GoT and other	FAO
A	**Republic of Tajikistan**	**171 400**	**146 225**	**104 106**	**85169**	**69 957**	**15 212**
A-1	**Total for Khatlon**	**64 500**	**58 395**	**38 346**	**32 775**	**23 562**	**9 213**
1	Khuroson	2 000	7 660	6 900	6 090	5 840	250
2	Qumsangir	11 000	6 500	4 830	3 860	3 360	500
3	Pyanj	6 000	7 060	5 410	4 860	4 734.50	125.50
4	Vakhsh	-	4 920	3 250	2 700	2 700	-
5	Jilikul	4 000	2 950	2 015	1 925	50	1 875
6	Qabodiyon	11 000	3 540	545	255	255	-
7	D. Rumi	3 500	2 830	2 230	1 700	1 700	-
8	Shahrituz	7 000	6 060	3 780	3 440	2 690	750
9	N. Khisrav	5 000	3 285	1 690	1 360	1 110	250
10	Danghara	7 000	3 140	1 230	1 000	725	275
11	Farkhor	8 000	1 690	585	430	55	375
12	Jomi	-	1 340	562	180	80	100
13	Hamadani	-	4 060	2 739	1 000	200	800
14	Baljuvon	-	3 360	2 580	850	-	850
15	Kulob	-	-	-	2 625	-	2 625
16	Vose	-	-	-	500	-	500
A-2	**Total for DRS**	**68 500**	**33 580**	**21 980**	**14 455**	**11 956**	**2 499**
1	Rudaki	27 500	16 900	12 330	8 240	7 716	524
2	Shahrinav	3 000	4 400	2 400	1 910	1 510	400
3	Tursunzoda	17 000	6 320	3 750	2 210	2 060	150
4	Hissor	13 000	2 850	1 600	725	-	725
5	Varzob	1 000	2 870	1 860	920	670	250
6	Jirgatol	7 000	240	40	-	-	-
7	Nurobod	-	-	-	250	-	250
8	Tojikobod	-	-	-	200	-	200
A-3	**Total for Sughd**	**38 400**	**53 250**	**39 180**	**34 359**	**34 359**	**0**
1	Asht	3 200	4 920	4 065	3 600	3 600	-
2	Aini	500	815	420	310	310	-
3	Zafarobod	6 800	8 870	6 980	6 434	6 434	-
4	Istaravshan	3 200	5 420	3 840	3 200	3 200	-
5	Konibodom	1 000	1 678	498	405	405	-
6	Mastchoh	6 000	8 065	6 040	5 200	5 200	-
7	B. Gaffurov	5 700	8 272	8 137	7 815	7 815	-
8	Spitamen	1 500	1 610	1 010	545	545	-
9	J. Rasulov	7 500	9 400	5 990	5 250	5 250	-
10	Ghonchi	3 000	4 200	2 200	1 600	1 600	-
A-4	**Total for BMAR**	**-**	**1 000**	**4 600**	**3 580**	**80**	**3 500**
1	Shughnan	-	1 000	4 600	3 580	80	3 500

ANNEX V: Areas to be surveyed and treated (in hectares) during the forthcoming 2008 campaign

#	District, Region, Country	Surveyed area in 2007 (ha)	Planned survey in 2008 (ha)	Infested areas (ha)	Areas to be treated in 2008 (ha)
A	**Republic of Tajikistan**	**145 225**	**235 000**	**104 106**	**152 500**
A-1	**Total for Khatlon**	**58 395**	**94 000**	**38 346**	**58 500**
1	Khuroson	7 660	8 000	6 900	6 500
2	Qumsangir	6 500	11 000	4 830	6 000
3	Pyanj	7 060	6 000	5 410	6 000
4	Vakhsh	4 920	4 000	3 250	4 000
5	Jilikul	2 950	4 000	2 015	2 000
6	Qabodiyon	3 540	11 000	545	2 000
7	Rumi	2 830	4 000	2 230	3 000
8	Shahrituz	6 060	7 000	3 780	6 000
9	N. Khisrav	3 285	5 000	1 690	4 000
10	Danghara	3 140	7 000	1 230	6 000
11	Farkhor	1 690	4 000	585	4 000
12	Jomi	1 340	2 000	562	1 000
13	Hamadoni	4 060	2 000	2 739	2 000
14	Baljuvon	3 360	4 000	2 580	3 000
15	Kulob	-	-	-	-
16	Vose	-	-	-	-
17	Muminobod	-	5 000	-	1 000
18	Khovaling	-	4 000	-	1 000
19	Temurmalik	-	4 000	-	500
20	Shurobod	-	2 000	-	500
A-2	**Total for DRS**	**33 580**	**81 000**	**21 980**	**45 000**
1	Rudaki	16 900	20 000	12 330	10 000
2	Shahrinav	4 400	8 000	2 400	6 000
3	Tursunzoda	6 320	17 000	3 750	10 000
4	Hissor	2 850	15 000	1 600	8 000
5	Varzob	2 870	8 000	1 860	5 000
6	Jirgatol	240	7 000	40	3 000
7	Nurobod	-	3 000	-	1 500
8	Tojikobod	-	-	-	1 000
	Rasht	-	1 000	-	-
	Faizobod	-	2 000	-	500
A-3	**Total for Sughd**	**53 250**	**56 000**	**39 180**	**47 000**
1	Asht	4 920	8 000	4 065	6 000
2	Aini	815	1 000	420	500
3	Zafarobod	8 870	8 000	6 980	7 000
4	Istaravshan	5 420	6 000	3 840	6 000
5	Konibodom	1 678	2 000	498	1 000
6	Mastchoh	8 065	7 000	6 040	7 000
7	B. Gaffurov	8 272	7 000	8 137	7 000
8	Spitamen	1 610	5 000	1 010	4 000
9	J. Rasulov	9 400	8 000	5 990	6 000
10	Ghonchi	4 200	4 000	2 200	2 500
A-4	**Total for BMAR**	**1 000**	**4 000**	**4 600**	**2 000**
1	Shughnan	1 000	4 000	4 600	2 000