

# REPORT

## **Technical Workshop on Locusts in Caucasus and Central Asia (CCA)**

Bishkek, Kyrgyzstan

12-16 November 2012



**Food and Agriculture  
Organization of the  
United Nations**



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Participants in the “Technical Workshop on Locusts in Caucasus and Central Asia”

Bishkek, Kyrgyzstan, 12-16 November 2012

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## LIST OF ACRONYMS AND ABBREVIATIONS

AFD	French Development Agency (Agence Française de Développement)
AGPMM	“Locusts and Other Transboundary Plant Pests and Diseases” (FAO)
CBS	Cross-border survey
CCA	Caucasus and Central Asia
CIT	<i>Calliptamus italicus</i> (Linnaeus 1758), Italian Locust
CNLAA	National Center for Locust Control (Morocco)
CPF	Country Programming Framework
DCCP	Department of Chemicalization and Plant Protection (Ministry of Agriculture and Melioration, Kyrgyzstan)
DMA	<i>Dociostaurus maroccanus</i> (Thunberg 1815), Moroccan Locust
EC	Emulsifiable Concentrate
ECP	E-Committee on Pesticides (ECP)
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (FAO)
FAO	Food and Agriculture Organization of the United Nations
FAOSEC	Sub-regional Office for Central Asia (FAO)
FTPP	FAO-Turkey Partnership Programme
GIS	Geographic Information System
GPS	Global Positioning System
ha	hectare
LoA	Letter of agreement
LMI	<i>Locusta migratoria</i> (Linnaeus 1758), Asian Migratory Locust
RS	Remote sensing
RSE	Republican State Enterprise "Phytosanitaria" (Uzbekistan)
TCP	Technical Cooperation Programme (FAO)
ULV	Ultra-Low Volume
USD	United States Dollars
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WHO	World Health Organization



## INTRODUCTION

1. The Technical Workshop on Locusts in Caucasus and Central Asia took place in Bishkek, Kyrgyzstan, on 12-16 November 2012. It was organized by the Food and Agriculture Organization of the United Nations (FAO) in the framework of the “Five-year Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”.
2. The following countries participated in the Technical Workshop: Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. The List of Participants is given in [Annex I](#).
3. The Technical Workshop started with an opening speech of Mr Uzakbaev, Minister of Agriculture and Amelioration, Kyrgyzstan. He welcomed the delegates and thanked FAO for organizing the workshop. After having said that locusts were an economic threat to the CCA countries and that the locust issues were of transboundary nature, the Minister reminded delegates that countries had formulated requests for FAO assistance in 2006-2008 to develop regional cooperation. FAO had collected updated information, prepared an Analytical Report on locust situations and management in CCA and presented its findings and recommendations to countries. As a result, the “Five-year Programme to improve national and regional management in CCA,” whose objective is to develop preventive control, was designed and endorsed by countries and then officially launched in October 2011 in Georgia. The Minister also mentioned the activities carried out to the benefit of Kyrgyzstan in 2012, such as training on locust monitoring and delivery of equipment, and expressed his gratitude to FAO for the assistance provided. He wished a fruitful work to delegates as well as a pleasant stay in Bishkek and success in their work.
4. On behalf of FAO, Mr Dorjee Kinlay, FAO Representative in Kyrgyzstan, welcomed the participants to the fourth annual meeting on locusts in Caucasus and Central Asia. He said that this workshop was organized in the framework of the Five-year Programme in close collaboration with the Ministry of Agriculture and Amelioration of the Kyrgyz Republic and thanks to a project funded by United States Agency for International Development (USAID). He recalled the risks associated to locust outbreaks and indicated that prevention, through regional cooperation and capacities development, was necessary to address these transboundary pests. He said that this workshop took place just after Year 1 of the Five-year Programme had ended. It would allow delegates to discuss the 2012 campaign and the preparation of the next one, the implementation of the Five-year Programme in 2012 and lessons learned, the workplan for 2013, efficient and environmentally less hazardous strategies, techniques and products for locust survey and control operations, including during a field demonstration next Thursday. He thanked all delegates for their participation and wished them fruitful debated.
5. Ms Annie Monard, Senior Officer, Team Leader, “Locusts and Other Transboundary Plant Pests and Diseases” (AGPMM), expressed her gratitude to Kyrgyzstan for hosting the meeting. After having recalled the launching of the Five-year Programme during the last regional meeting in Tbilisi, Georgia, in October 2011, she indicated that the workshop would provide the opportunity to report on all activities carried out together throughout Year 1 of the Programme, including: technical assistance (training, internship), joint and cross-border surveys, studies on remote sensing, work of the e-Committees on background documentation and pesticides, and monthly bulletins. The workshop would also allow discussing and agreeing on the activities to be implemented during Year 2 of the Five-year Programme. As usual, the meeting would also provide the possibility to exchange on locust situations and forecast. The Senior Officer mentioned also an innovation during this annual workshop, a full day focusing on field activities: half a day on survey techniques and another one on demonstration of Ultra-Low Volume (ULV) spraying. Eventually, she wished a successful work to all participants.

## OFFICERS OF THE SESSION

6. The following officers were elected:

Chairperson: Mr Vladimir Pak (Kyrgyzstan)

Vice-Chairperson: Mr Mkrtych Danielyan (Armenia)

Drafting  
Committee: Mr Mohammad Iqbal Karimi (Afghanistan)

Mr Andrey Zhivykh (Russia)

Ms Annie Monard, Senior Officer – Team Leader “Locust and  
Transboundary Plant Pests” (FAO)

Ms Marion Chiris, Locust Programme Officer (FAO)

Mr Alexandre Latchininsky, International Consultant, Locust Expert  
(FAO)

## AGENDA

7. The Agenda, as adopted, is given in [Annex II](#).

## SESSION 1: NATIONAL LOCUST CAMPAIGNS IN 2012 AND FORECASTS FOR 2013

### National locust campaigns in 2012 (Item 4 of the Agenda)

8. All delegates made comprehensive presentations on their national 2012 locust campaigns. A summary of presentations is provided in [Annex III](#).
9. Delegates provided information on surveyed, infested and treated areas concerning all locusts and grasshoppers in 2012, summarized as follows:

Country	Area (hectares - ha)		
	Surveyed	Infested	Treated
Afghanistan	290 000	190 000	200 831
Armenia	49 000	46 000	2 060
Azerbaijan	300 000	140 000	57 900
Georgia	117 000	30 000	13 079
Kazakhstan	10 895 400	3 513 880	2 228 390
Kyrgyzstan	41 696	29 023	27 963
Russian Federation	18 047 920	5 337 530 (Above Economic Threshold: 1 359 120)	1 637 410
Tajikistan	257 490	79 042	66 738
Turkmenistan	595 000	437 911	437 911
Uzbekistan	580 000	320 000	282 500
<b>Total</b>	<b>31 173 506</b>	<b>10 123 386</b>	<b>4 954 782</b>

**Table 1. Surveyed, infested and treated areas in 2014 in the eight CCA countries participating in the workshop**

10. The outstanding points from the presentations were the following:
  - In CCA countries, areas infested with the Italian Locust (CIT) increased in Kazakhstan and Russian Federation. The situation with the Moroccan Locust (DMA) generally declined except for Georgia and Turkmenistan. The Asian Migratory Locust (LMI) produced a serious outbreak in Uzbekistan and increased its densities in several areas of Russia. Also, the infestations of non-swarming grasshoppers generally increased in several countries. As a result, the total areas infested by locusts increased in CCA in 2012 as compared to 2011.
  - In the Russian Federation, the Moroccan Locust became an economic problem in the Northern Caucasus (Stavropol oblast and Kalmykia) for the first time since the 1920s;
  - In Tajikistan and Uzbekistan, Moroccan Locust breeding areas were reported at much higher altitudes (up to 2 500 m above sea level) than ever recorded before, which hampered effective control operations;
  - In both the Russian Federation and Uzbekistan, late summer hatching of the Asian Migratory locust was reported, which is quite unusual, and required additional control efforts.
11. The delegate of Russia indicated that from 2012, budget for locust management was allocated against the federal budget (Law of Finance), which was very positive. Some constraints were

raised by delegates and needs formulated during their presentations: lack of specialists (Azerbaijan, Kyrgyzstan), request for additional Geographical Positioning System (GPS) devices (same countries), and difficult access to neutral near-border areas (Tajikistan, especially with Afghanistan). The delegate of Afghanistan also mentioned the need for a locust database; he explained that the database that had been created in the country in 2005 under a FAO project had got lost and that the trained specialists had moved to other services. The Turkmen delegates mentioned locust issues at the border with Iran. The delegate from Uzbekistan reported the locust problems along the border between Uzbekistan and Tajikistan, in the foothills of the Hissar Mountains. Last, the delegates of Kazakhstan and Russia informed that they would organize a joint meeting in December 2012 to address the Italian Locust issues along their common border.

12. During the discussions, the FAO Locust Programme Officer (AGPMM), in reply to a point raised by the Afghan delegate during his presentation, indicated that although the whole purpose of the Five-year Programme was to assist countries in developing regional cooperation, the countries themselves had to be proactive, taking actions and developing bilateral cooperation. She indicated that, as envisaged in the Roadmap for Programme implementation, a letter from FAO encouraging the conclusion of bilateral agreements was ready; it was agreed with countries that such letters would be sent at high-level in the Ministries of Agriculture.
13. A question was raised about damage to rubber parts of sprayers caused by certain formulations of an Insect Growth Regulator (diflubenzuron). According to several specialists, this damage could result from inadequate spray tank cleaning, or a cheaper, generic or even an obsolete pesticide. It was also explained that ULV sprayers were designed specifically for the use of oil-based ULV formulations of pesticides, and that water-based formulations, such as emulsifiable concentrates, were not suitable and appropriate for the use in atomizer ULV sprayers.
14. Last, the delegates of Uzbekistan, Tajikistan and Turkmenistan called the audience for confirmed data regarding the occurrence of the Moroccan Locust at elevations higher than 1 400 – 1 800 m above sea level with the objective to scientifically document it.

#### **Locust forecast for 2013 and preparation of the next campaign (Item 5)**

15. The delegates of all countries presented the forecast for 2013 (a summary is provided in [Annex III](#)). In the Caucasus, the locust situations will be similar to 2012. In Armenia, the locust situation will remain calm although Moroccan Locust's swarm flights from adjacent countries could not be excluded. Azerbaijan plans to control locusts on about 60 000 ha, which will represent a slight increase as compared to 2012. Locust infestations in Georgia may cover up to 60 000 ha (twice as compared to 2012); the state allocated funds will be sufficient for pesticide purchase and for treatments on all this area, including aerial treatments on 11 000 ha.
16. In Central Asia, a further decrease of the Moroccan Locust infestations is expected in Uzbekistan and Kyrgyzstan, while in Turkmenistan the area infested by this species will remain similar to 2012; the areas infested by the Italian Locust are expected to grow in Kazakhstan and Russia; and the Asian Migratory Locust outbreak reported from Uzbekistan may develop further.

## **SESSION 2: IMPLEMENTATION OF THE FIVE-YEAR PROGRAMME TO IMPROVE LOCUST MANAGEMENT IN CAUCASUS AND CENTRAL ASIA**

### **Five-year Programme: overview on implementation and funding situation during Year 1 (Item 6)**

17. The Locust Programme Officer presented the implementation during Year 1 (October 2011 to September 2012) of the Five-year Programme to improve national and regional locust management in Caucasus and Central Asia (CCA), as per Roadmap. The implementation of Year 1 was considered as successful as most of the activities scheduled against available funds were out carried out in a satisfactory way. She indicated that countries had spared no efforts for its success and presented the main achievements for Year 1, as follows:
- Result 1 – Regional cooperation developed: National and regional monthly bulletins on locust situations and management issued from March to September 2012; Technical Workshop on Locusts in CCA held in October 2011.
  - Result 2 – National capacities strengthened: Preparation of background documentation at a good stage (monographs on the three CCA locust pests and work of the e-Committee on documentation); One-month internship organized for a Kazakh Plant Protection Specialist in the National Center for Locust Control in Morocco.
  - Result 3 – Locust issues better anticipated: Training sessions on locust monitoring delivered in three countries (Kyrgyzstan, Afghanistan and Tajikistan) to the benefit of 40 locust/plant protection staff; Locust survey equipment delivered to seven out of the ten CCA countries for demonstration purposes; Four joint or cross-border surveys organized, involving eight countries and 42 staff; National studies on Geographical Information System (GIS) and Remote Sensing (RS) technology for locust monitoring prepared for nine out of the ten countries; Regional report on GIS/RS prepared with main findings and recommendations towards the elaboration of a common GIS for CCA countries.
  - Result 4 – Response mechanisms to locust outbreaks improved: Training session on locust spraying using ULV technology delivered in one country (Azerbaijan) to the benefit of 12 locust/plant protection specialists; Locust control equipment (including ULV sprayers) delivered to eight out of the ten CCA countries for demonstration purposes; Shootings realized in Morocco for the preparation of a video tutorial on ULV spraying against the Moroccan Locust; Work of the e-Committee on pesticides.
  - Result 5 – Impact on human health and the environment mitigated: Human health and environment aspects were part of the technical assistance delivered on locust spraying to one country (Azerbaijan).
  - Result 6 – Public information and awareness increased: FAO Website “Locust Watch in CCA” updated; one regional and two national projects approved within the Five-year Programme.
18. It was noted that two activities had to be postponed to 2013: the one-month internships to the benefit of Tajikistan (due to demanding locust situation in June 2012 and resulting unavailability of the Expert) and Uzbekistan (February 2013 was identified as the best period together with the hosting body and the beneficiary); and the promotion of impact assessment of treatments on human health and environment (for Georgia and Tajikistan in 2012) since it should be coupled with a training session to maximize the benefits. One activity was only partially implemented, the delivery of locust survey and control equipment because of custom clearance issues for three countries. Last, neither national monthly bulletins were prepared by Kazakhstan and Turkmenistan nor national GIS/RS study for Turkmenistan; technical assistance on ULV spraying to the benefit of Turkmenistan had to be cancelled in the absence

of reply from the country; no annual survey and control plans were sent by countries to FAO and therefore no ad hoc repository was created by the Organization.

19. Regarding organizational aspects, the Locust Programme Officer indicated that activities had been organized non-stop from October 2011 onwards, with a peak from February to June 2012. The implementation of the Five-year Programme was challenging and implied: coordination, preparation and implementation of activities; designation of ten national focal points by countries for Programme implementation; recruitment as well as technical, administrative and operational management of 20 national consultants and eight international consultants; a total of more than 80 travels (mainly national technicians for joint activities); the conclusion of five Letters of Agreement (LoA) between FAO and national services; procurement and delivery of equipment for nine countries; monitoring and follow-up of activities and expenditures.
20. The Locust Programme Officer said that overall, substantial progress had been made on a number of issues. It was indicated that numerous activities were organized despite few available staff in FAO; that communication with countries was far easier with respect to previous years; and that although face-to-face meetings of technicians were necessary, the “e-Committee formula” for specific subjects has proved an efficient and low-cost solution for gathering specialists from various places over the world. The excellent support given by Tajikistan for organizing at short deadlines a training for the mutual benefit of Afghanistan and Tajikistan (when the national training for Afghanistan had been cancelled for security reasons) was also mentioned as well as the outstanding support received from the National Center for Locust Control of Morocco and the positive response received from Australia for the organization of one-month internship there in early 2013.
21. The constraints and difficulties met during Year 1 were also reviewed. They included some delays in the recruitment process and in the payment of the consultants as well as in the finalization of Letters of Agreements and related payments. Reasons for such delays were identified. Although they had no direct impact on Programme implementation (overall, activities were eventually carried out on time), it created useless stress for the persons involved, both at FAO and in countries. Some delays were also encountered for projects’ approval by donors and FAO and for their signature by countries.
22. Specific constraints were met for two countries. For Kazakhstan, no consultants could be recruited for the preparation of national monthly bulletins and for the national study on GIS/RS. A lack of communication was also identified, with hesitations on the appropriate interlocutors. For Turkmenistan, severe communication difficulties were encountered. Due to absence of reply, no national focal point was designated, no national consultants for national monthly bulletins and national study on GIS/RS were nominated, equipment delivery was kept on hold and the training session on locust spraying was cancelled. Only the cross-border survey with Uzbekistan was carried out but with no funding support from the Five-year Programme to Turkmenistan (all related information was communicated to FAO by Uzbekistan).
23. Amongst the lessons learned, it was said FAO presence at the national level did make the difference for Programme implementation. In 2012, only one country had a fully-fledged FAO Representation (Afghanistan); other countries had an FAO Office, with imprest account in some cases (Georgia and Tajikistan) and no account in the other cases (Armenia, Azerbaijan and Kyrgyzstan); and four CCA countries had no FAO offices (Kazakhstan, Russia, Turkmenistan and Uzbekistan). It was indicated that the situation was evolving in five countries (Kyrgyzstan, Tajikistan, Kazakhstan, Azerbaijan and Uzbekistan), which should largely facilitate Programme implementation at the national level in the coming years.

24. The following recommendations were made:
- a) The signature of project documents, which is required by all countries to facilitate Programme implementation, and particularly needed for Kazakhstan and Turkmenistan and for countries where there are no FAO Offices. As of today, two projects are pending signature by some beneficiary countries: GCP/INT/134/USA and GCP/SEC/004/TUR. Countries are therefore urged to speed up the process to facilitate the Five-year Programme implementation as well as the effective start of the second project.
  - b) The increase of staff in AGPMM, FAO-Headquarters, which is responsible for the coordination and implementation of the Five-year Programme was also recommended (a part-time Locust Officer, full-time Locust Programme Officer, part-time Operational Officer and a part-time Clerk being needed).
  - c) Fund-raising activities which should be increased in order to allow the implementation of all activities envisaged in the Five-year Programme, both by FAO and countries.
  - d) The further development of joint activities involving neighbouring countries.
  - e) On the same line, the organization of the one-month internships abroad for at least two trainees in order to maximize benefits and reduce costs.
  - f) The development of activities pertaining to Result 5 (Impact on human health and the environment mitigated) of the Five-year Programme from Year 2 onwards.
  - g) The clarification of specific country internal procedures if any by the countries themselves for equipment delivery.
  - h) Rapid reaction from all countries for the organization of Programme activities.
25. The Locust Programme Officer presented the funding situation and expenditures for Year 1. She said that the total budget of the Five-year Programme was now of USD 3.2 million (against USD 2.4 million one year ago) – out of the total estimated budget of USD 7.8 million, thanks to the approval of two national projects for Kyrgyzstan and Tajikistan (for a total of almost USD 0.8 million). No confirmation for the pledge made by the Russian Federation in 2010 was received despite various exchanges on the subject. It was indicated that more recently, exchanges had taken place with the French Development Agency (*Agence Française de Développement - AFD*) for a national project to the direct benefit of Afghanistan and indirect benefit of its neighbouring countries.
26. The expenditures for Year 1 amounted to USD 588 000 out of a total budget of USD 784 000. Three funding sources had been available: USAID project (50 percent of the expenditures), the FAO Regular Programme (40 percent) and TCP/KYR/3305 for Kyrgyzstan (about 10 percent). The level of expenditures against the yearly budget was of more than 94 percent for USAID, 99 percent on the FAO Regular Programme and 28 percent for the project funded by the FAO Technical Cooperation Programme - TCP (it was explained that this TCP had become operational mid-March so that the procurement of equipment has started in October 2012 only, allowing the delivery by March 2013, i.e. before the start of next campaign). Result 3 (response to locust outbreaks improve), Result 2 (locust issues anticipated) and Result 1 (regional cooperation developed) had the highest share of expenditures. The table of expenditures is provided in [Annex IV](#).

## **Regional cooperation in 2012 (Item 7)**

### Regular information sharing (monthly bulletins)

27. As per Activity 1.1.1 of the Roadmap for the Five-year Programme implementation, national monthly bulletins are prepared by CCA countries on locust situations and management, every year from March to October. On this basis, the regional monthly bulletins are prepared and shared at regional level. The International Consultant, Locust Expert from Morocco, who had reviewed all national bulletins received in 2012, presented his main findings to the participants. The evaluation focused on quality, timeliness and frequency of reporting. The objective was to identify, for each country, strengths and weaknesses in order to contribute to the further improvement of the bulletins.
28. The main strength was the regular monthly issuance of national bulletins or information except for Kazakhstan and Turkmenistan which did not provide any data at all this year. The main identified weaknesses were the absence of some relevant pieces of information (for instance: part of the weather data, locust species concerned, hopper instars, population densities, behavior and efficiency of treatment) and of geographical coordinates of areas infested or treated (progressive delivery and use of GPS units should fill in this latter gap). In addition, the information was not always provided using the agreed template or all filling appropriately all parts of it; it was in particular the case for the color scheme or the summary.
29. During the discussion, the delegates of Kazakhstan and Turkmenistan apologized for not having provided any bulletin during 2012. Clarifications were given on questions raised by some participants regarding the information to include in the bulletin particularly in the summary and the announcements sections. The participants welcomed the results of the assessment and deemed useful to take them into account for the preparation of the bulletins of the next campaigns.

### Cross-border/joint surveys

30. As per Activity 3.2 of the Roadmap for its implementation, four joint or cross-border surveys (CBS) were carried out in 2012 in the framework of the Five-year Programme to improve national and regional locust management in Caucasus and Central Asia (CCA), against USAID funding:
31. The three first out of the four CBS were carried out in presence of an FAO International Consultant, Locust Expert. Presentations of the CBS were made by the participating countries and completed by the International Consultants. The main points made by the presenters were the following:
  - Kyrgyzstan & Uzbekistan, April 2012
32. A CBS between Uzbekistan and Kyrgyzstan took place on 21-23 April 2012 in three provinces of Uzbekistan (Namangan, Andijan and Fergana) and Osh province of Kyrgyzstan. The survey team consisted of three members from each country and an FAO Consultant. In addition, a total of 20 local specialists from Uzbekistan and three from Kyrgyzstan participated in the CBS at the district level in the field. Because of the late and cold spring, no hatching of the Moroccan Locust was recorded. The visited areas were evaluated for their potential to harbor DMA breeding sites. The CBS confirmed that steppe areas in the foothill zone between Uzbekistan and Kyrgyzstan provided a suitable habitat for DMA oviposition. Most of such areas are situated on the Kyrgyzstan side at a higher altitude than on the Uzbekistan side and are used as pastures for livestock. After hatching there, DMA hopper bands and swarms descend into valleys and threaten crops. The CBS was an important step towards enhanced anti-locust cooperation and information sharing between the two countries.



33. The recommendations made by the International Consultant, Locust Expert, were as follows: (1) Because of difficult relief and vast areas to cover, future CBS between Kyrgyzstan and Uzbekistan should be planned for a period of seven to ten days, with three to four days in Uzbekistan and four to six days in Kyrgyzstan; (2) During DMA outbreaks, CBS should take place twice a season, during hatching and during oviposition; (3) Results of CBS should be communicated to Kyrgyzstan and Uzbekistan locust managers at all levels to facilitate decision-making.
- Georgia, Azerbaijan & Armenia, April 2012
34. A joint locust survey between Georgia, Azerbaijan and Armenia was carried out in Georgia on 25 and 26 April 2012. The survey team was composed of nine locust specialists: four from Georgia, three from Azerbaijan and two from Armenia; it was accompanied by an FAO Consultant. The survey was carried out in Dedoplistskaro area, Kakheti region, covering nearly 300 km. The choice of the itinerary had been done on the basis of historical knowledge of DMA breeding areas. The joint survey was a good opportunity for the concerned countries to harmonize their approach and techniques in monitoring locusts in Caucasus.
35. The following recommendation had been formulated by the International Consultant in his report: to choose the most appropriate persons in terms of profile, experience and age to attend these joint surveys in order to ensure greater sustainability of good locust monitoring practices and good quality of information.
- Afghanistan and Tajikistan, May 2012
36. The delegates of Afghanistan and Tajikistan presented the joint locust survey which was organized in the Khatlon Province, Tajikistan, from 30 May to 3 June 2012. An eight-member team (five from Tajikistan and three from Afghanistan), accompanied by the FAO Consultant, Locust Expert from Morocco, carried out surveys covering a distance of 750 km from Kurgant'yube to the Afghan border. The itinerary focused on potential areas of locust presence and breeding, particularly along the Tajik-Afghan border, and the following districts were visited: Pyanj, Qumsangir, Farkhor, Shaartuz, Kabodien, Hamadoni and Jilikul. Observations were made at the each survey stop as follows: the locust density was assessed through 200-metre foot transects in the vegetation or by counting the number of locusts per square metre when adults were copulating and laying eggs. During the survey, information was provided on biology, ecology and behavior of the Moroccan Locust and demonstrations on the use of some locust survey equipment, such as hygrometer and GPS, were also provided. The survey resulted in the identification of many infestations. It allowed an exchange of technical experiences in terms of surveying, data collection, reporting and use of maps and GPS and contributed to develop a regional information network. The delegates mentioned a major constraint, the presence of mines near the borders.
37. Following recommendations formulated by the delegates and the International Consultant, Locust Expert, there was a consensus that joint surveys between Afghanistan and Tajikistan should be pursued in the coming years to monitor locust activity on both sides of the border and that cross-border activities should be regulated by bilateral agreements between the two countries. The importance to have experienced and well informed experts participating in the joint survey was also stressed, as well as the need to properly fill in the CCA Standard Survey Form in the field.
- Turkmenistan and Uzbekistan, July 2012
38. The delegates from Turkmenistan and Uzbekistan presented the cross-border survey which took place on 25 - 30 July 2012 in Lebap province of Turkmenistan and Qashqadaryo provinces of Uzbekistan. There were six participants in total, three from each country. The purpose was to survey for Moroccan Locust egg-pods. A total of 28 000 ha was surveyed. The surveyed areas, corresponding to semi-desert and desert, were known as historical foci of the DMA distribution. The egg-pods were found in the foothills. It was indicated that outbreaks

were observed there for seven years, from 2005 to 2011; due to a decline in 2012, less important control operations were carried out in these provinces. Some constraints were met, including remote access, proximity to the border - as a result, some hopper bands and adult swarms may run out of control in 2013. Increased cooperation, whose terms should be well defined, is needed to handle properly this forthcoming situation. Special focus should be given to the areas adjacent to the border, in particular the neutral area of 3700 ha between Dehkanabad district of Qashkadaryo Province, Uzbekistan, and the Köýtendag District of Lebap Province, Turkmenistan; it was necessary to seek permission to carry out locust operations on both sides of the border. In order to better identify the concerned zones, it was suggested that CBS should also be carried out during hatching and egg-laying. The two parts agreed to establish a permanent exchange of information, to carry out chemical treatments on both sides of the border at the same period of time against Moroccan Locust hopper groups and bands. Together with the main findings, this was indicated in an "Act," which was signed by both parts.

39. In the discussion which followed, all delegates stressed the importance of such cross-border or joint surveys. Several delegates recommended that the CBS be always done in the presence of an International Consultant so that practical training be delivered at this occasion, including on survey techniques and the use of related equipment. The delegate from Afghanistan emphasized that the future CBS between Afghanistan and adjacent countries should take place on both sides of the border. The Delegate from Russia informed that joint locust activities between bordering districts of Russia and Kazakhstan were carried out routinely, with no external support needed. With regard to the CBS to be conducted, the below propositions were made:
- Delegates from Caucasus underlined the usefulness of joint surveys in their region and proposed to conduct them on an annual basis during the Five-Year Programme and beyond.
  - The delegate from Uzbekistan called for conducting a three-country survey between Uzbekistan, Tajikistan and Turkmenistan in the future.
  - The delegate from Tajikistan proposed to carry out a CBS between Tajikistan and Kyrgyzstan. The Kyrgyz delegate confirmed the importance of such joint activities with Tajikistan in Batken oblast. He also explained that bilateral agreements which regulated such activities between neighbouring countries, according to new legal requirements, should be signed at the Prime Minister level.
40. Wrapping up the discussion, the Senior Officer/Team Leader suggested that the countries agree on their choices for the next year's CBS. In reply to some comments on the duration of the CBS, the Locust Programme Officer explained that Five-year Programme funds aimed at encouraging the national locust services to carry out such activities, included on their own funds (for longer duration or for additional CBS), and not at supporting all costs. This was because of limited funding but also because it is retained important in a long-term perspective and for sustainability. She informed that the plan for 2013 included four CBS with International Consultant's participation where possible.

## **National capacities' development during Year 1 of the Five-year Programme (Item 8)**

### Delivered of locust survey and control equipment

41. The Locust Programme Officer reminded that the delivery of locust survey and control equipment under the Five-year Programme (activities 3.1.2 and 4.1.2 of the Roadmap for Programme implementation) aimed at strengthening the operational locust monitoring and control capacity of the beneficiary countries. However as little funding was available for this activity, only few equipment was provided so far, for demonstration purpose, against USAID

and FAO-Regular Programme funding. As per decision taken during the previous workshop, the list of equipment to be delivered by the end of March 2012 included survey kits, satellite phones, Global Positioning System (GPS) devices, MicroUlva (hand-held), Micron AU 8000 (knapsack) and Micronair AU 8115 (vehicle-mounted) sprayers and personal protective clothing (PPE) kits for all CCA countries. During the year, when the national project for Kyrgyzstan (TCP/KYR/3305) was approved, additional locust equipment was envisaged for that country (conventional pesticides, Insect Growth Regulators, other sprayers, control kits, PPE, Cholinesterase kits and office equipment).

42. The Locust Programme Officer explained that the procurement process had started in November 2011 and that equipment had been ordered for all countries by January 2012 (and in August 2012 for the additional sprayers for Kyrgyzstan). Equipment was effectively delivered to Afghanistan, Kyrgyzstan, Tajikistan (FAO Regular Programme) and Armenia, Azerbaijan and Georgia (USAID funding) in February and March 2012 for most of them. No particular problem was encountered except some delays for some items (the GPS arrived in April and May only in two countries). Upon arrival, inspection was carried out at discharge by a third-party: everything was found in order and without deviations from the technical specifications (one GPS missing for Georgia but sent soon after by the supplier). The additional sprayers ordered for Kyrgyzstan were delivered in early October 2012 (See [Annex V](#)).
43. Issues were met regarding the four other countries, in which there are no FAO offices to facilitate custom clearance, as follows:
44. Kazakhstan: In February 2012, all orders were put on hold as the United Nations Development Programme (UNDP) in Kazakhstan could not ensure the custom clearance of the goods due to their new internal legal procedures. The final recipient, i.e. the Committee for the State Agro-Industrial Complex Inspection (hereafter called the "Committee") of the Ministry of Agriculture, indicated to use the services of the Republican Methodical Center for Phyto-Sanitary Diagnostics and Forecast (hereafter called "Methodical Center") to act on its behalf and ensure the custom clearance. The sprayers arrived in the country early October but the Methodical Center informed that they could not accept the sprayers or any other item as there was no letter of exemption. Afterwards, the Committee informed that the sprayers had to be addressed to the Republican State Enterprise "Phytosanitaria" (RSE), dealing with control equipment. FAO is currently in liaising with RSE. Other equipment delivery was put on hold.
45. Russia: all purchase orders were cancelled due to custom clearance issues. The UNDP Office in the country informed that it was not allowed to custom cleared the goods with tax exemption for a third party. The transfer would have been possible only if custom duties and fees would have been paid in full by the final recipient.
46. Turkmenistan: UNDP could not assist in the custom clearance process due to difficulties to get in touch with the final recipient, the Plant Protection Service of the Ministry of Agriculture. The same problem prevented UNDP to obtain the registration of GPS and satellite phone by the Ministry of Communications. Therefore, all deliveries remained on hold, except for the Micron sprayers which had been delivered to UNDP in February 2012.
47. Uzbekistan: In February 2012, sprayers were delivered to the final recipient, the Department for Foreign Investments and Monitoring of Projects, Ministry of Agriculture and Water Resources (Tashkent). Afterwards, due to a change in legislation, UNDP could not assist anymore FAO and the suppliers for custom clearance of the goods and the delivery was kept on hold until a clearing agent was identified in August 2012. GPS were delivered early October 2012 (however, the supplier sent them by mistake to the Ministry of Agriculture and Water Resources and not to UNDP and will now re-route the GPS to UNDP for custom clearance). Survey equipment and one satellite phone were delivered at the end of September 2012 but the satellite phone was not accepted due to lack of permission to use it in Uzbekistan (it was sent back to the supplier in early October 2012). PPE delivery was in progress.

48. The lessons learned and recommendations can be summarized as follows:
- a) The project agreement should be signed as soon as possible by the beneficiary countries since it may help obtaining exemption letter for duty free custom clearance.
  - b) The final recipient should be clearly identified and indicated to FAO in order to be inserted on the shipping documents.
  - c) Goods are usually shipped to FAO or UNDP offices, which take care of the authorization for duty free import. Afterwards the goods are delivered to the final recipient. If there is no local FAO office and UNDP that can assist in obtaining custom clearance, the recipient institutions should request the exemption letter to the relevant national authorities once all shipping documents are received from the supplier, then contact FAO and liaise with the supplier to go forward with the shipment. If these conditions are not met, FAO cannot deliver the goods in the country.
  - d) In case of communication material, the final recipient should guarantee to FAO, prior issuance of the purchase order, that the equipment can be accepted in the country.
  - e) The option of the local procurement for items which are available on the local market can be explored. However, the supplier would need to be able provide the offers without including value added taxes in the price (as per FAO rules).
  - f) It is of utmost importance that the final recipient communicates with FAO, UNDP and the supplier.
49. During the discussions, the Turkmen delegates indicated that there was a national Resolution for tax exemption for all equipment purchased or delivered by the Ministry of Agriculture. On this basis, there was two possible procedures for delivering the goods: either to have a contract between FAO and the Ministry of Agriculture (to be prepared in English/Turkmen or in Russian/Turkmen), which would allow the final recipient to custom clear the goods or to go through UNDP which would ensure such custom clearance. It was replied it would probably be quicker to go through UNDP but that the Plant Protection Service had to reply to the solicitations of the UNDP to do so. An exemption letter for custom duties, based on the above-mentioned Resolution, would be useful for delivery of equipment. In view of complex procedures for getting authorization from Ministry of Communications regarding positioning and communication equipment, the delegate of Turkmenistan suggested to cancel the order for satellite phones.
50. Last the countries confirmed the list of national final recipients for locust survey and control equipment, as provided in [Annex V](#).

### Training sessions

51. Three training sessions were delivered during Year 1 of implementation of the “Five-year Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”, two on locust monitoring and one on ULV spraying techniques.
52. Training on locust monitoring and information management was presented by the delegate from Kyrgyzstan with additional comments from the International Consultant, Locust Specialist. The five-day training took place on 16-20 April 2012 in Jalal-Abad, South Kyrgyzstan. It was funded against FAO Technical Cooperation Programme (national project TCP/KYR/3305). The 16 trainees were specialists of the Department of Chemicalization and Plant Protection (DCPP) at central, province and district levels (the delegate indicated all participants were men as there was no woman working in locust field in the country). The training program was delivered in Russian by the International Consultant, Locust Specialist. It included the following topics: (1) Survey of participants’ expectations; (2) Initial and final assessments of participants’ knowledge (tests); (3) Theoretical classes; (4) Practical classes in the lab and in the field;

(5) Assessment of training by the participants. Participants gained knowledge on biology, ecology and monitoring of the main locust species in the country, particularly the Moroccan Locust. During the field class, participants learned how to fill out the Standard Survey Form, how to use the GPS devices and how to identify locust species and their developmental stages. Upon completion, each participant received a flash-drive with all training materials, and a certificate. A boxed collection of main locust species in Central Asia was put together by the International Consultant and donated to DCP. The training was considered very successful by the Kyrgyz side. The participants appreciated the highly interactive manner of teaching by the International Consultant and his very clear and comprehensible language. In terms of improvement, it was suggested to increase the field part of the future trainings, in order to receive more hands-on experience in survey, especially in the use of GPS. Overall, the training helped to strengthen the national capacity of DCP.

53. Then the delegates of Afghanistan and Tajikistan presented the joint workshop on locust monitoring, which took place in Kurgant'yube, Tajikistan, from 5 to 9 June 2012, to the benefit of 13 Afghan and 12 Tajik experts (against USAID funding). Initially, the workshop was supposed to be delivered in Afghanistan (to Afghan experts only); because of insecurity in the country, the workshop was postponed at the last minute and relocated in Tajikistan. The programme covered survey basics, tools and field techniques using a participatory approach. Survey basics concerned different methods used to estimate locust infestations in the field, why surveys are carried out, planning and implementing surveys. Survey tools included maps reading and presentation of compass, anemometer, hygrometer, GPS and CCA Standard Survey Form and trainees practiced using each tool. The importance of information and reporting was explained. The range age of the participants was from 24 to 63 years old, with 46 percent over 50 years old. The delegate of Tajikistan explained that the age average was high as locust field was not very attractive for young people due to low remuneration. The results of the pre- and post-training workshop assessments indicated that all trainees had gained experience and abilities in conducting locust surveys, gathering the required information and preparing good reports. The participants, which were extremely enthusiastic and participated actively, deemed the training workshop successful and instructive. However, due to lack of time and insufficient number of GPS (only one unit available), the participants expressed their wish to receive a training focused on the practical use of GPS to complete the knowledge gained so far. Overall, the sharing of skills and experiences from Afghanistan and Tajikistan was one of the most valuable and rewarding aspects of the workshop. Some of the contacts will likely lead to productive linkages between individuals and institutions in the two countries. The International Consultant formulated the following recommendations: in order to ensure greater benefit and sustainability, FAO should request countries to provide a list of persons from which the best qualified ones will be selected based on age and profile required for the workshop; future training workshops should allocate more time to practical use of GPS and the number of participants should not exceed 12. The delegate of Afghanistan also asked that more equipment be available for future training.
54. The delegate of Azerbaijan reported on the training workshop on ground ULV spraying techniques which had been organized in Ganja, from 19 to 23 April 2012, to the benefit of 12 participants (USAID funding). This training covered theoretical and practical aspects of ULV spraying principles, the main spraying parameters, calibration and maintenance of the equipment, full coverage spraying and barriers treatments, weather influence and assessment of treatment quality and effectiveness. Two days were devoted to theoretical background using a participatory approach and two full days were spent for practice of flow rate calibration and collecting droplets using different sprayers. Specific documentation was distributed. Results of the pre- and post- training workshop assessments show a considerable increase of the knowledge. All the trainees described the workshop as very successful. The recommendations formulated to the country by the International Consultant in his report included: to pay more attention to pesticide spray quality as many accidental factors or pollutants can hamper insidiously control operations and therefore adversely affect the effectiveness of treatments and the environment; to provide ULV sprayers and oil formulations pesticides to regional Plant

Protection centers involved in locust control management; and to select the most qualified persons, taking into consideration the age and the required skills to participate to the future workshops. Indeed, the participants' age was in general high (60 percent over 50 years old) and priority should be given to young specialists in order to assure sustainability.

#### One-month internship abroad

55. The delegate of Kazakhstan made a presentation on the internship on locust management carried out by Mr Almas Baidillayev, a Plant Protection Specialist from Kazakhstan, in Morocco, in the National Center for Locust Control (CNLAA), from 10 to 29 June 2012. This internship was carried out in the framework of Activity 2.3 of the Five-year Programme and against USAID funding. One person from Tajikistan was also expected to participate but this was not possible due to demanding locust situation in the country. The internship focused mainly on practical aspects of locust management and covered different issues related to locust campaign management, habitat features of the Moroccan Locust, locust survey, information management and use of the CCA agreed Standard Survey Form, ULV spraying techniques, monitoring of human health and environment as well as management of pesticides and of their empty containers. Five days were devoted to a survey in a breeding area of the Moroccan Locust located in the Atlas Mountains. Two days were spent on demonstration and training on calibration of different sprayers using pesticide oil formulation (ULV). The delegate of Kazakhstan deemed the internship successful and well organized. The trainee improved his technical skills on locust monitoring and ULV spraying techniques. It was emphasized that the knowledge and experience gained would be shared during future trainings held at national level.
56. The International Consultant, Locust Expert and Director of the CNLAA, completed the presentation and formulated the following recommendations: as the organization of such training session requires important human resources, logistics and funding, it is highly recommended in the future to involve simultaneously several participants from various CCA countries in such internships abroad (as originally planned) to ensure a better cost-benefice balance, maximize efforts made by FAO and the host country and strengthen exchanges and information sharing within CCA. In addition, a pre-selection of the candidates should be made to choose the most appropriate persons in order to ensure sustainability of the knowledge gained, taking into consideration age, background, experience and skills of the candidates. Last, each CCA country should prepare an annual plan of national training workshops and keep FAO informed. Afterwards, the Locust Programme Officer thanked the CNLAA for the availability and support provided. She also stressed that trainees were expected to provide a report to the host country and FAO at the end of the internship.

#### **Developing monitoring and analyzing systems (remote sensing) (Item 9)**

57. The International Consultant, Geographic Information System Expert, presented the work accomplished as per Activity 3.3 of the Roadmap for implementing the Five-year Programme, which planned to develop monitoring and analyzing systems for locust management in CCA countries by using GIS and remote sensing technology. The first step, during Year 1, consisted in collection of information on features and availability of remote sensing and weather data at national level. National Consultants from all CCA countries except for Kazakhstan and Turkmenistan were recruited to this task from March 2012 onwards. The second step consisted in the overview of the national situations with spatial equipment and software used in locust monitoring and management. The following steps included the review of the locust GIS systems in Kazakhstan and FAO Headquarters in Rome and of the Plant Protection GIS system in Russia. Lessons learned and potentially useful features of these GIS were presented to the delegates. The expert emphasized the positive experience on GIS introduction into the practice of Plant Protection in Russia.

58. Based on these reviews, recommendations towards developing a common system of collection, storage and sharing of standardized and georeferenced locust information for CCA countries were developed. They include: (1) use open source GIS software; (2) determine the basic maps as administrative and topographic ones at scales of 1:1 000 000 and 1:200 000; (3) define a source of weather forecasts of temperature, precipitation, wind on a regular grid for CCA; (4) use the remote sensing data of medium spatial resolution for characteristics of soil moisture, state and productivity of vegetation, habitat mapping locust, flood zones; (5) the products of GIS should include tables and maps of current and historical locust infestations, ecological conditions and control operations. Long term trends in population dynamics will be estimated on the base of historical data; information needed by plant protection services of individual countries should be prepared using the GIS. Next steps of this activity will be discussed during the GIS regional workshop scheduled during Year 2, in 2013, during which the main features of a regionally compatible GIS should be identified. It is planned to discuss the following issues: (1) GIS data base structure and outputs; (2) name of the CCA locust monitoring system; (3) technical and software environment; (4) regional forecasting; (5) remote sensing application; (6) training programs.
59. In the discussion, the delegate from Russia proposed to concentrate on developing national, rather than regional, GIS systems, and expressed the concern that the developed regional system may discontinue once the FAO funding is over. Delegate from Kyrgyzstan called this concern legitimate taking into account lack of funding on the national level, especially for specific hardware and software. The International Consultant, GIS Expert, explained that to minimize the costs, the common GIS system can be web-based and use open-source software. One option to start such system could be species-based, i.e. covering one locust species in several provinces of several countries. The International Consultant, Locust Expert from Morocco, shared his country's experience in developing and using a locust GIS system, which allows reliable data analysis and locust forecasting for better decision-making for survey and control operations. The International Consultant, Locust Specialist, emphasized that the Five-year Programme offered an excellent and unique opportunity to all CCA countries for developing together this very powerful tool. The delegates agreed on that and added that if it could be challenging at the beginning, it will provide a very useful tool, including for forecast.

## **Preparing background documentation (Item 10)**

### Situation update on the three monographs

60. The International Consultant, Locust Expert, reported on the progress made in preparing the scientific monographs on the three main locust species in Caucasus and Central Asia (Activity 2.2 of the Roadmap). In addition to the authors designated at the Regional Workshop held in Tbilisi, Georgia, in 2011, i.e. M. Childebayev, F. Gapparov, V. Kambulin, A. Latchininsky and M. Sergeev, several other scientists from Georgia, Kazakhstan, Russia, Turkmenistan, and Uzbekistan contributed to the monographs. First drafts of the monographs were planned to be completed by the end of 2012. It was indicated that while the Russian version of the monographs would be available on the FAO Website "Locust Watch in CCA", translation into English and print-out of the monographs would occur if/when funding would be available.

### Background documentation (e-committee)

61. The International Consultant, Locust Expert, also reported on the progress made in creating lists of the most important documents on the three CCA locust species (Activity 2.2 of the Roadmap). Such lists were compiled by the members of the E-Committee on documentation: A. Latchininsky (FAO, Chair), V. Kambulin (Kazakhstan), F. Gapparov (Uzbekistan), M. Sergeev (Russia), and E. Abashidze (Georgia). The list for the Asian Migratory Locust contains over 600 entries; the list for the Italian Locust over 200 entries, and the list for the Moroccan

Locust about 150 entries. The next steps include: (1) Produce a short list of “top” publications for each species (by the end of 2012); (2) Prepare short abstracts in Russian for the selected publications and translate them into English. Such lists and abstracts will be available on the FAO Website “Locust Watch in CCA” (by the end of 2012 for Russian version and early 2013 for the English version). In addition, if possible, selected material will subsequently be scanned and also made available for countries on the website.

#### Video on locust spraying in ULV formulation

62. The Locust Programme Officer indicated that with the overall objective to develop the use of the ULV spraying technology (pesticide formulation and related sprayers) in CCA, the Five-year Programme included the preparation of a video tutorial on ULV locust spraying (activity 4.2.1 of the Roadmap for its implementation), against the USAID project. In June 2012, shootings were made on field operations carried out by the National Center for Locust Control of Morocco against the Moroccan Locust, in presence of the Kazakh Plant Protection specialist hosted for the one-month internship. Images were recorded on locust control techniques and operations using pesticides in ULV formulation but also on many other aspects of locust management: campaign management, locust survey techniques and operations, preparation of locust survey and control teams, use of maps and GPS units, pesticide management, information management and preparation of standard monthly bulletin on locust situation and management. Next step will be to edit the images recorded, with the required soundtrack, during Year 2. The video tutorial will allow to have an audiovisual support for future training sessions in CCA countries.

#### Pesticides’ registration (e-committee)

63. The International Consultant, Locust Specialist, reported on developing a minimum list of pesticides proposed for registration in CCA countries, as a step towards harmonization of national pesticide registrations under the aegis of FAO (Activity 4.2.3 of the Roadmap). The International Consultant recalled that FAO was neither a registration nor a recommendation authority for pesticides; rather, it reviews the results of locust control with pesticides and provides technical advice in line with best agricultural practices in the respect of human health and the environment. In order to develop the minimum list of pesticides, an E-Committee on Pesticides (ECP) was created during Year 1, which included A. Latchininsky (Chair, FAO), G. Yussupova (Kazakhstan) and F. Gapparov (Uzbekistan) as well as A. Monard and M. Ammati (FAO). All ECP work was executed via e-mail exchanges and Skype discussions. The first step was to collect and review the information on pesticides currently registered and frequently used against locusts in CCA. This information was received from nine CCA countries, i.e. all but Afghanistan. In this latter case, the relevant information was taken from the country’s annual reports at regional FAO seminars. Analysis of this comprehensive information showed that, as of October 2012, there were 235 insecticide formulations of 37 active ingredients belonging to seven chemical classes registered for locust control in CCA countries. The number of actually used pesticides in the last five years was 57. The numbers of registered pesticides varied greatly among the countries, from under ten in Afghanistan, Azerbaijan and Tajikistan to almost one hundred in Kazakhstan and Kyrgyzstan. There are only seven registered pesticides in ULV formulations in six CCA countries, while Armenia, Azerbaijan, Russia and Turkmenistan have no pesticides registered in ULV formulations.
64. Next, the E-Committee on Pesticides formulated the criteria for defining the minimum list of pesticides for locust control proposed for registration in CCA. These criteria were identified as follows: (1) Efficacy, chemical classes and risks to human health and environment; (2) Mode of action, speed of action and duration of toxic effect (persistence); (3) Formulations and compatibility with spraying equipment; (4) Dose rate, target organisms, frequency of application; (5) Impact on non-target organisms; (6) Experience in pesticide use. Each criterion was explained in detail to the delegates. Based on these criteria, a minimum list of pesticides



against locusts for registration in all CCA countries was proposed. The list included 11 active ingredients from five chemical classes, as provided in [Annex VI](#).

65. It is recommended that:
- each country review the proposed minimal list of pesticides and took the necessary actions to promote their inclusion in the national list of registered pesticides for locust control, in accordance with their national registration procedures;
  - each country take the necessary actions to promote the use of below-listed pesticides when already registered at national level; and
  - the list be reviewed at least once every three years.
66. In the ensuing discussion, delegates shared opinions on possible locust resistance to pesticides, and suboptimal efficacy of low-cost and/or generic pesticides. Two countries, Armenia and Turkmenistan, indicated that their lists of registered pesticides included more products than the ones presented by the International Consultant; the latter explained that the E-Committee used only the information provided by the countries themselves. Answering the questions from the delegate from Afghanistan, the International Consultant explained the technique of barrier treatments and World Health Organization (WHO) pesticide classification based on hazards to human health. Mr Sander, Resource Person, inquired if it was anticipated to register biological pesticides in ULV formulation. Specific questions regarding the human health hazard of the fungal biopesticide Metarhizium, potential hazards of application of fipronil, and harmfulness of Dimilin to non-target insects were addressed by the International Consultant.

#### **Five-year Programme: Workplan for Year 2 (Item 11)**

67. The Locust Programme Officer presented the Workplan for Year 2 of the Five-year Programme. To that end, she recalled that a Roadmap had been endorsed in October 2011 at the launching of the Five-year Programme to serve as reference over the five-year period, and that it was completed by the annual workplans. For Year 2 (1 October 2012 - 30 September 2013), available funding was of almost USD 1.3 million, from the two regional projects, FAO-Turkey Partnership Programme (FTPP) and USAID (27 percent and 25 percent of the budget for Year 2 respectively), the two national projects (TCP) for Kyrgyzstan and Tajikistan (23 percent each) and the contribution of the Regular Programme (2 percent). However signature was still needed -by at least one additional country- to make the FTPP project operational and the Officer urged the delegates to follow-up on this issue at the national level (such signature should be obtained by the end of 2012 at the latest). With regard to the budget breakdown, Result 3 (Improved response mechanisms to locust outbreaks) gets the highest share (which is mainly due to the equipment delivery planned under the two national projects), followed by Result 2 (National capacities strengthened) and 3 (Locust issues and disasters better anticipated and mitigated.) As per recommendation made at the end of Year 1, more activities will be implemented for Result 5 (Impact on human health and the environment mitigated and monitored) during Year 2.
68. Afterwards, the Workplan was reviewed in detail by delegates. A number of activities regard all countries and discussions allowed to clarify some points. It was agreed that the national annual Action Plan for survey and control operations would be sent by countries to FAO for sharing at the regional level - a repository accessible to all countries would be created to that end (Activity 1.2 of the Roadmap). With regard to background documentation, it was indicated that in addition to the practical guidelines on locust management whose preparation would start this year, a bilingual Russian/English glossary would also be issued if funds were available (Activity 2.2). Discussions also concerned the selection of students for benefiting of post-graduate education (Activity 2.3). Countries main concerns regarded the selection process, the involved countries (both for sending or welcoming students), the sustainability or

guarantee that students would return to work on locusts in their countries, and language prerequisites for students. A proposal to include the post-graduate education of a GIS specialist was made and supported by all countries. Three of the members of the E-Committee on fellowship (as identified in the Roadmap) were present in the workshop. Note was duly taken of all comments and suggestions and it was agreed that two tenders would be made, one for the hosting institutes or universities and the other for the students' proposals. Another new activity of Year 2 would be the organization of Round tables by countries where control operations are fully or partially delegated to private companies; the objectives would be to sensitize such companies on ULV technology as well as good agricultural practices and respect of human health and the environment. During the next Technical Workshop, countries will report on this Activity, carried out on their own funds (Activity 4.1.3). If possible, the website "Locust Watch in Caucasus and Central Asia" would be improved as it sometimes could not be accessed by countries (Activity 6.2.2).

69. Discussions also took place on those activities which are implemented for some countries only (depending on the years). Regarding technical assistance for training delivery, it was clarified that all training sessions included a theoretical component as well as a practical part. Several recommendations formulated during the week were also taken into account, i.e. to organize one-month internships for at least two locust/plant protection specialists at the same time, to develop joint activities, to benefit from the presence of an international consultant when possible during cross-border or joint survey), to allow the three Caucasian countries participating simultaneously in joint activities, etc. On this basis, the following was decided for Year 2:

- One-month internships to the benefit of four countries will be organized in February 2013 (Activity 2.3): on biopesticides in Australia for an Uzbek and a Kyrgyz Locust/Plant Protection specialists; and on locust management (survey and control techniques in the respect of human health and the environment, campaign management, pesticides management, etc.) in Morocco for a Tajik and a Russian Locust/Plant Protection specialists.
- A joint training session on locust survey (Activity 3.1.1) will be organized to the benefit of two countries, Kazakhstan and Russian; a CBS will be organized immediately after (Activity 3.2), in presence of the International Consultant, Locust Expert (trainer) - the Five-year Programme will support the stay of the Consultant while costs related to the CBS will be supported by the two concerned countries.
- Training sessions on ULV spraying (Activity 4.1.1) will be delivered to two countries, Kyrgyzstan and Tajikistan; such trainings will also include a part on mitigating/monitoring impact of treatments on human health and environment (Activity 5.1).
- A joint training session on ULV spraying (refreshing) and mitigation of impact on human health and the environment (Activities 4.1.1 and 5.1) will be organized in Georgia to the benefit of the three Caucasian countries and Russia; it will be immediately followed by a CBS involving these four countries (Activity 3.2), with no international consultants (the Caucasian countries having already benefiting from this assistance during CBS organized in 2012 and the Russia will benefit in 2013).
- A training session on mitigation of impact on human health and the environment (Activity 5.1) will be organized in Kazakhstan.
- A joint or cross-border survey will be organized in Tajikistan involving Afghanistan, Turkmenistan and Uzbekistan (Activity 3.2).
- Last, it was agreed that a training on locust survey (Activity 3.1.1) would also be organized for Turkmenistan, with participation of an Uzbek specialist, if and only if sufficient funding would be available.

70. As far as equipment was concerned, it was indicated that Kyrgyzstan and Tajikistan would benefit from a number of survey and control equipment funded by the two national projects, with delivery planned by the end of March 2013. In addition, cholinesterase kits would also be purchased in view of the training sessions on mitigating and monitoring impact of treatments on human health and the environment. National consultants would also be recruited for such countries to conduct impact assessment (Activity 5.2).
71. Last, in order to reduce travel costs and as some GIS/RS specialists would probably also be nominated as delegates for the annual workshop, it was agreed that the workshop aiming at defining the main features of a regionally-compatible GIS for CCA countries (involving one participant per country) would be held immediately before the next annual Technical Workshop,. The tentative location and date for these two workshops are Uzbekistan, the first week of November 2013, upon agreement with the national authorities.
72. The Workplan for Year 2, reflecting the above decisions and indicating related budget, is provided hereafter.

## Workplan for Year 2 of the Five-year Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)

Res. & Act.	Description - Activities envisaged for Year 2	Beneficiary countries		TOTAL BUDGET for Year 2 (USD)	AVAILABLE FUNDS FOR YEAR 2 (as of November 2012)				
		Year 1	Year 2		USAID 2011-2015	TURKEY 2012-2016	RP 2011/12	TCP KYR Feb 2012 - Dec 2013	TCP TAJ July 12- June 14
<b>R1 - Regional cooperation</b>				<b>115,660</b>	<b>91,000</b>	<b>0</b>	<b>11,000</b>	<b>7,960</b>	<b>5,700</b>
	1.1. Facilitate regional exchanges to manage locust situations	all	all	115,660	91,000		11,000	7,960	5,700
	1.1.1. Create/maintain regular regional information sharing of standardized	all	all	37,660	19,000		5,000	7,960	5,700
	1.1.2. Allow direct experience exchange (technical workshop 2012)	all	all	78,000	72,000		6,000		
	1.2. Develop coordination, including through transboundary policy	all	all	0					
	1.3. Identify the best long-term solution for sustainable regional cooperation	(year 3)	(year 3)	0					
<b>R2 - National capacities</b>				<b>225,500</b>	<b>43,000</b>	<b>141,500</b>	<b>9,000</b>	<b>16,000</b>	<b>16,000</b>
	2.1. Training-of-Trainers (ToT) programme - locust management	no funding	no funding	0					
	2.2. Make available/accessible background documentation on locust pests	all	all	20,000	17,000		3,000		
a	Biblio & Material to be made available (e-committee)	all	all	3,000			3,000		
b	Monographies	all	all	0					
c	Guidelines	all	all	17,000	17,000				
	2.3. Allow internships and post-graduate formation			<b>205,500</b>	<b>26,000</b>	<b>141,500</b>	<b>6,000</b>	<b>16,000</b>	<b>16,000</b>
a	One-month internship	*KAZ	KYR (AUL)*TAJ + RUS	58000	26000			16000	16000
b	Fellowship: 2 or 3-year diploma for 3 students & E-committee	none	3 students	147500		141500	6000		
	2.4. Promote and support applied research	no funding	no funding	0					
a	Two grants for applied research	no funding	no funding	0					
b	Entomological and chemical equipment for 6 laboratories	no funding	no funding	0					
<b>R3 - Locust issues and disasters better anticipated and mitigated</b>				<b>152,657</b>	<b>82,000</b>	<b>15,000</b>	<b>0</b>	<b>32,357</b>	<b>23,300</b>
	3.1. Improve survey operations for better field locust monitoring			<b>85,657</b>	<b>15,000</b>	<b>15,000</b>		<b>32,357</b>	<b>23,300</b>
	3.1.1. Strengthen human capacities (techn. consultations on survey)	*AFG-TAJ *KYR	KAZ & RUS (joint training)	85,657	15,000	15,000		32,357	23,300
	3.1.2. Strengthen operational capacities (survey equipment)	all but RUS	none	0					
	3.2. Organize regular cross-border surveys	*GEO-ARM-AZE *AFG-TAJ *KYR-UZB *UZB-TUK	*KAZ-RUS *GEO-ARM-AZE-RUS *UZB-AFG-TAJ-TUK	20,000	20,000				
	3.3. Develop monitoring and analyzing systems	all	all	47,000	47,000				
	3.3.1. Extend use of Geographical Information System and remote sensing	all	all	47,000	47,000				
	3.3.2. Improve forecasting	(year 5)	(year 5)	0					
	3.4. Enhance preparedness for risk reduction - contingency plans	(year 3)	(year 3)	0					

Res. &	Description - Activities envisaged for Year 2	Beneficiary		TOTAL BUDGET for Year 2	AVAILABLE FUNDS FOR YEAR 2 (as of November 2012)				
		Year 1	Year 2		USAID 2011-2015	TURKEY 2012-2016	RP 2011/12	TCP KYR Feb 2012 - Dec 2013	TCP TAJ July 12- June 14
	<b>R4- Improved response mechanisms to locust outbreaks</b>			<b>408,766</b>	<b>21,000</b>	<b>22,000</b>	<b>0</b>	<b>168,626</b>	<b>197,140</b>
	4.1. Allow early reaction and appropriate control operations			<b>403,766</b>	<b>16,000</b>	<b>22,000</b>	<b>0</b>	<b>168,626</b>	<b>197,140</b>
	4.1.1. Strengthen human capacities (techn. consultations on control)	*AZE	*KYR *TAJ *GEO-ARM-AZE-RUS	90,212	15,000	21,000		27,172	27,040
	4.1.2. Strengthen operational capacities (control equipment)	all but RUS	TAJ + KYR	313,554	1,000	1,000		141,454	170,100
	4.1.3. Enhance public-private partnership	none	all	0					
	4.2. Promote less harmful pesticides and alternatives to conventional pesticides			<b>5,000</b>	<b>5,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	4.2.1. Develop ULV formulations and related techniques	all (video)	all (video)	5,000	5,000	0			
	4.2.2. Propose alternatives to conventional pesticides (demonstration)	(year 3)	(year 3)	0		0			
	4.2.3. Encourage registration of more pesticides	all	all	0		0			
	4.3. Promote joint cross-border control operations			<b>0</b>			<b>0</b>	<b>0</b>	<b>0</b>
	<b>R5 - Impact on human health and the environment mitigated and</b>			<b>106,457</b>	<b>39,000</b>	<b>19,000</b>	<b>0</b>	<b>28,057</b>	<b>20,400</b>
	5.1. Mitigate impact of locust control operations on human health and the environment			<b>84,457</b>	<b>17,000</b>	<b>19,000</b>	<b>0</b>	<b>28,057</b>	<b>20,400</b>
a	Technical assistance	none	*KYR *TAJ *KAZ *GEO-ARM-AZE-RUS	46,457	10,000	12,000		16,057	8,400
b	Equipment - PPE, Testmate	all but RUS	same countries/group of countries	38,000	7,000	7,000		12,000	12,000
c	Extension material	no funding	no funding	0	0	0			
	5.2. Monitor impact of locust control operations on human health and the environment	none	same countries/group of countries	<b>22,000</b>	<b>22,000</b>				
	Impact assesement			22,000	22,000				
	<b>R6 - Public information and awareness increased</b>			<b>5,000</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>0</b>	<b>0</b>
	6.1. Develop awareness and education among local populations	no funding	no funding	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	6.2. Enhance visibility of locust issues and management and of related donor support			<b>5,000</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>0</b>	<b>0</b>
	6.2.1. Prepare and implement a communication plan	no funding	no funding	0	0				
	6.2.2. Create and update a website on locusts in Caucasus and Central Asia	all	all	5,000	0	0	5,000		
	<b>Other</b>			<b>141,708</b>	<b>19,000</b>	<b>83,500</b>	<b>0</b>	<b>25,808</b>	<b>13,400</b>
	Supervision, coordination, management of Five-year Programme	all	all	80,000		80,000			
	Evaluation	(year 5)	(year 5)	3,000	3,000				
	TSS	all	all	58,708	16,000	3,500		25,808	13,400
	<b>Sub-total</b>			<b>1,155,748</b>	<b>295,000</b>	<b>281,000</b>	<b>25,000</b>	<b>278,808</b>	<b>275,940</b>
	<b>Support cost</b>			<b>127,832</b>	<b>20,000</b>	<b>69,000</b>	<b>0</b>	<b>19,517</b>	<b>19,316</b>
	<b>Total</b>			<b>1,283,580</b>	<b>315,000</b>	<b>350,000</b>	<b>25,000</b>	<b>298,324</b>	<b>295,256</b>

### **SESSION 3: EFFICIENT AND ENVIRONMENTALLY LESS HAZARDOUS STRATEGIES, TECHNOLOGIES AND PRODUCTS FOR LOCUST CONTROL: PROGRESS MADE AND FIELD DEMONSTRATION**

#### **Progress made on: spraying technologies and products; safety and environmental precautions; and biopesticides (Items 12 and 13)**

73. Countries reported on progress made on spraying technology and products as well as safety and environmental precautions (item 12 of the Agenda) and on biopesticides (item 13).
74. The delegate of Russia mentioned that there was neither ULV technology nor ULV pesticide in the country.
75. The delegates of Georgia indicated that their country had been using ULV technology for ten years but that its use had been enlarged after FAO provided ULV sprayers (under an emergency project in 2010 and the Five-year Programme in 2012). Training was organized on ULV by an international specialist, with due attention paid to calibration. Over 20 people are now trained in ULV spraying, which is quite a lot and very good for Georgia. It was also indicated that airplane was widely used with ULV sprayers. Last, it was stressed that the ULV technology appeared very cost-efficient.
76. The delegate of Kazakhstan indicated that the areas treated using ULV technology have increased recently and that it presented many positive aspects (efficiency, ready-to-use products).
77. The delegate of Kyrgyzstan indicated that the ULV sprayers seemed very efficient but in Kyrgyzstan, they did not have the appropriate pesticides (in ULV formulation) to use them. He also mentioned the fact that no water being needed, like for EC pesticides, was a big advantage. He underlined that Kyrgyzstan was supporting the use of ULV technology.
78. The delegate of Tajikistan informed that they had installed aerosol generator on vehicles. He also said that control operations were conducted at night to avoid negative impact on populations. He agreed with his colleagues that ULV technology seemed less costly and more efficient and presented the advantage of ready-to use products, not needing water (especially now that Moroccan Locust was found at higher altitudes, with more difficult access).
79. On progress made on biopesticides, the delegate of Georgia indicated that in 2012, an attempt had been made to register a formulation of Metarhizium; it could not be achieved due to change of status of the manufacturer during the year (merging with another company). He said that a new try will be done to register the biopesticide in 2013. The Kyrgyz delegate added that the country was ready to register biopesticides but that no supplier had come to them so far; he said that they will try to go ahead in 2013.

#### **Survey techniques (indoor and field demonstration) (Item 14)**

80. An indoor presentation on locust survey techniques was delivered by the International Consultant, Locust Expert from Morocco. It covered survey basics, tools and field techniques. Survey basics concerned the different methods used to estimate locust densities for hoppers and adults, infested areas, the reasons to carry out surveys, planning and carrying out surveys. It was explained that survey tools should include map as well as tally counter, anemometer, compass, hygrometer and GPS (delivered to most

countries by the Five-year Programme). Short exercises were conducted to calculate a distance depending of map scale.

81. The discussion focused on the techniques used by CCA countries and on the importance of some factors such as humidity on locusts present in the region. In reply to a comment by the delegate from Uzbekistan, it was emphasized that the presentation aimed at providing an overview of the methods used for locust survey, independently of the species concerned. The need for learning new survey tools and techniques was underlined by many delegates who thanked the International Consultant for his very useful presentation.
82. Upon request from the delegates, later on during the day dedicated to indoor/field demonstrations, in the premises of the Department of Chemicalization and Plant Protection of the Ministry of Agriculture and Melioration (locust control station at Voенno Antonovka, North-West of Bishkek), the International Consultant explained the functioning of the above-mentioned survey tools, including GPS.

### **Spraying in Ultra-Low Volume in the respect of human health and the environment (field demonstration) (Item 15)**

83. The Resource Person, Technical Manager, Micron Group, gave a demonstration of ULV spraying technique and equipment in premises of the Department of Chemicalization and Plant Protection of the Ministry of Agriculture and Melioration (locust control station at Voенno Antonovka, North-West of Bishkek). The demonstration covered the following topics:
  - The principles of ULV application and the use of the technique for locust control;
  - Typical application rates and parameters;
  - Characteristics and use of both passive and air-assisted ULV sprayers (with special reference to the use of the wind to assist with the coverage of the target);
  - Correct spraying techniques to ensure operator safety;
  - Productivity (estimated area sprayed per day) with different types of ULV sprayers.
84. Practical demonstrations of both portable and vehicle-mounted ULV sprayers were made. They were carried out with water (for the safety of the participants) and spray coverage was assessed using water-sensitive cards. After the work with the ULV sprayers, the station staff demonstrated a high volume tractor-mounted airblast sprayer normally used to apply dilute (Emulsifiable Concentrate - EC) pesticide formulations at 200 to 250 l/ha. This allowed a direct comparison between the spray deposits from the ULV and high volume sprayers.
85. The demonstration attracted considerable interest and was followed by questions from the participants. These questions concerned:
  - Recommended track spacing for different types of sprayers under various operating conditions (ranging from 10 m for passive hand-held sprayers to 50-100 m for air assisted vehicle-mounted sprayers), type of fuel used in the motorised sprayers (2-stroke gasoline /oil mixture for portable sprayers and normal car gasoline for vehicle-mounted sprayers) and anticipated running time (up to one hour for the portable sprayer and three hours for the vehicle-mounted sprayer);
  - Materials used in the construction of ULV sprayers and their compatibility with ULV formulations (materials are resistant, but some specific issues were reported with the air tube of the vehicle-mounted sprayer with certain Insect Growth Regulator in

ULV formulations that appear to contain particularly aggressive solvents – alternative materials will be investigated for this application); and

- Maintenance of ULV sprayers and availability of spare parts (all spare parts are available and participants were advised to consider purchasing kits of running spares at the same time as new sprayers).

## **ANY OTHER BUSINESS**

86. Delegate from Uzbekistan reported on the outbreak of Asian Migratory Locust which occurred in the second half of summer in the River Amudarya delta, Aral Sea region. His narrative was accompanied by photos and video clip. This LMI outbreak threatens crop production and food security in the Aral Sea region and in the entire Republic of Uzbekistan. If the outbreak is not controlled, huge LMI swarms can fly out to neighboring countries. As such, this is clearly a transboundary problem. The emergency LMI situation in the Aral Sea region in 2012 resulted from a huge flooding in 2010, after which the areas of reeds – the LMI preferred habitat – dramatically increased. FAO International Consultant, Locust Expert (Report, 2010) warned about the impending threat and predicted the LMI infestation increase in 2012. The aerial survey conducted in the autumn of 2012 showed that the area infested with LMI egg-pods was 168 000 ha which is ten times higher than in 2011. Despite the fact that the Uzbek Government allocates substantial funds for locust control on a regular basis, the capacities of Anti-locust service of the Aral Sea region are limited, and the outbreak may escape control. Hatching will occur in the spring of 2013, and that will be the most appropriate time to conduct an expert assessment of the situation and prepare for large-scale control campaign. Locust control is difficult to implement in the Amudarya delta. This is the region of a serious ecological catastrophe, and that is why the large-scale application of broad-spectrum chemical insecticides may be detrimental to the fragile wetland environment near the Aral Sea. Taking into account all this, the Uzbek Government is considering to request emergency assistance from FAO to prevent the further escalation of the LMI outbreak and impending transboundary threat to food security in Central Asia and Caucasus.
87. The Plant Production and Protection Officer of the FAO Sub-regional Office for Central Asia (FAOSEC) presented the FAO activities on plant production and protection in Central Asia. He briefly described the main issues emphasizing: the ongoing reform and decentralization; the establishment of FAO country offices; the result based management approach; programming at country level by formulating a Country Programming Framework (CPF) as the main planning and management tool for providing best assistance to the country; FAO expertise available in the region, etc. Moreover he described the types of FAO projects and presented ongoing and pipeline projects.

## **ADOPTION OF THE REPORT**

88. The Report was adopted unanimously with amendments made.

## **CLOSING REMARKS**

89. The Senior Officer, Team Leader – Transboundary Plant Pests, congratulated all countries for the efforts made for strengthening regional cooperation, year after year. Then, the Chairperson said that the technical workshop was successful. He thanked all



delegates, who had actively participated in the work. He wished a safe trip back to all participants.

## **ANNEXES**

## Annex I - List of participants

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**Annex II – Approved Agenda**

Technical Workshop on Locusts in Caucasus and Central Asia (CCA)
<b>Bishkek, Kyrgyzstan, 12-16 November 2012</b>
Approved agenda

**Opening**

1. Opening address
2. Election of Chairman, Vice-Chairman & Drafting Committee
3. Adoption of the agenda

**Session 1: National locust campaigns in 2012 and forecasts for 2013**

4. National locust campaigns in 2012 (countries' presentations)
5. Locust forecast for 2013 and preparation of the next campaign (countries' presentations)

**Session 2: Implementation of the Five-year Programme to improve locust management in Caucasus and Central Asia**

6. Five-year Programme in 2012: overview on implementation and funding situation
7. Regional cooperation in 2012
  - Regular information sharing
  - Cross-border/joint surveys
    - Kyrgyzstan - Uzbekistan (countries' presentations)
    - Azerbaijan - Armenia – Georgia (countries' presentations)
    - Afghanistan - Tajikistan (countries' presentations)
    - Turkmenistan - Uzbekistan (countries' presentations)
8. National capacities' development in 2012
  - Situation update on locust survey and control equipment
  - Training on locust monitoring:
    - Kyrgyzstan (country presentation)
    - Afghanistan & Tajikistan (countries' presentations)
  - Training on locust spraying:
    - Azerbaijan (country presentation)
  - One-month internship on locust management:
    - Kazakhstan (country presentation)
9. Developing monitoring and analyzing systems (remote sensing)
10. Preparing background documentation
  - Situation update on the three monographs
  - Background documentation (e-committee)

- Pesticides' registration (e-committee)
- Video on locust spraying in ULV formulation

11. Five-year Programme in 2013: workplan

**Session 3: Efficient and environmentally less hazardous strategies, technologies and products for locust control: progress made and field demonstration**

12. Progress made on: spraying technologies and products; safety and environmental precautions (countries' feedback)
13. Progress made in CCA with biopesticides (countries' feedback)
14. Survey techniques (field demonstration)
15. Spraying in Ultra-Low Volume in the respect of human health and the environment (field demonstration)

**Closing**

16. Any other business
17. Adoption and signature of the report
18. Closure address



## Annex III- National locust situation in 2012 and forecast for 2013

### AFG

The Moroccan Locust (DMA) has always been a major threat to agriculture in Afghanistan. Infestations occur annually in northern Afghanistan. The 2012 locust control campaign began in April and ended in late June. In June, DMA swarms from Tajikistan flew in the three most infested Afghan provinces, Baghlan, Takhar and Badakhshan. DMA swarms damaged about two hectares of cotton in Takhar province. A total of 200 831 ha was treated against DMA, CIT (to a much lesser extent) and grasshoppers. Eleven vehicle-mounted ULV sprayers and 900 hand-held sprayers were used during the campaign. A total volume of 48 200 l of pesticides was sprayed, including pyrethroids and Insect Growth Regulators.

According to egg-laying survey carried out at the end of 2012 campaign, it is expected that in 2013, about 160 000 ha will be infested with locusts, mostly DMA, and to a lesser extent by CIT and grasshoppers. The campaign cost will be USD 656 000. The locust infested area should decline by 15 percent as compared to 2012.

### ARM

The locust situation was generally calm. Locust monitoring was conducted on 49 000 ha out of which 46 000 ha were infested by CIT, including 2 100 ha in six oblasts with densities exceeding the economic threshold. Hopper densities varied from eight to 30 per square m. Area treated this year was 2 060 ha, using a pyrethroid insecticide.

CIT infestations are expected to exceed the economic threshold on 4 000 to 5 000 ha in 2013. An invasion of DMA swarms from adjacent countries of Georgia and Azerbaijan should not be ruled out entirely.

### AZE

Hatching of DMA started in early April 2013. Warm and moderately humid weather in April-May contributed to mass hatching and successful hopper development. Out of about 300 000 ha surveyed, 140 000 ha were found infested by locusts and control operations, which started in late April using ground sprayers and pyrethroid pesticides, were carried out on 57 900 ha. Control efficacy was hampered by complicated mountainous relief in DMA breeding areas. Regional cooperation, particularly with Georgia, was very beneficial.

It is expected that locust infestations will be present on about 140 000 ha in 2013, of which 50 000 to 60 000 ha will require chemical treatments. Pesticides, including those in ULV formulations, will be acquired on a tender basis. Funds from the state budget will be used to purchase necessary equipment.

### GEO

Spring and summer temperatures in DMA and CIT breeding areas were above average in 2012, which contributed to successful locust development and breeding. DMA hotspots were found in North Kakheti, at the foothills of the Great Caucasus, where they had never been registered before. The total area treated was 13 080 ha, including 7 080 ha treated by ground ULV and 6 000 ha treated by aircraft in remote areas. Pesticides used included deltamethrin and alpha-cypermethrin (ground treatments) and chlorpyrifos and diflubenzuron (aerial treatments).

The infested area in 2013 is expected to reach up to 60 000 ha, i.e. two folds as compared to 2012. State budget reserved 400 000 Lari (USD 242 400) for anti-locust activities, which will cover aerial treatments on 11 000 ha as well as pesticide purchase.

### KAZ

The area infested by CIT increased and the total locust infested area exceeded 3.5 million ha. Chemical treatments were carried out on 132 000 ha against DMA, 212 990 ha against LMI, and 1 883 400 ha against CIT, for a total of 2 228 390 ha treated.

In 2013, the total locust infested area is expected to be of 2 851 400 ha, including 2 365 700 ha by CIT, 355 500 ha by LMI and 130 200 ha by DMA. While the situation with LMI and DMA is expected to remain similar to 2012, increased CIT infestations are forecasted.

## **KYR**

As a result of late and cold spring, DMA hatching started two weeks later than the average in 2012, and infested areas decreased as compared to 2011. The area treated against DMA was 8 870 ha. CIT also started to hatch later than usual, and the area treated against this species was 19 093 ha. The total treated area of 27 963 ha is significantly lower than in 2011. Two-thirds of the areas were treated with vehicle-mounted ULV sprayers, and one-third with tractor sprayers. Pesticides used belonged to three classes: pyrethroids, phenyl-pyrazoles and neonicotinoids.

In 2013, DMA is expected to infest 7 000 ha in Fergana valley. CIT infestation may cover 23 000 ha, mostly in Central Tjan-Shan zone. Thus the total infested area is expected to remain at the 2012 level. The state budget allocated for locust control in 2013 is USD 150 000. It is planned to use 11 tractor and five vehicle-mounted ULV sprayers.

## **RUS**

Locust situation was quite serious in 2012. Warm spring weather contributed to a one-month earlier-than-usual locust hatching and subsequent hopper gregarization. The total infested area was 5 337 530 ha including 1 359 120 ha with densities exceeding the economic threshold. The most important infestations were found in the Southern, Volga and Siberian Federal regions. In several districts of Astrakhan, Volgograd, Voronezh, Chelyabinsk and Orenburg oblasts, Republics of Kalmykia, Bashkortostan, Dagestan and Stavropol province, emergency situations or threats of emergency situations were declared. Chemical treatments were carried out on 1 637 410 ha.

A peak of locust populations occurred in 2011-2012. Since it is considered that outbreak may last from three to eight years, a mass locust breeding cannot be excluded for 2013. Despite serious control efforts in 2012, the overwintering egg supply may be quite substantial. The exact surface of infested areas will be determined based on the results of the autumn surveys.

## **TAJ**

In 2012, the locust infested areas covered 80 000 ha, thus decreasing by 50 percent as compared to 2011. The treated area was 66 738 ha, including 46 717 ha against DMA and 20 021 against CIT. Locust spraying was executed with 40 tractor and 1 650 hand-held and knap-sack sprayers. Locust control operations prevented damage to 90 000 ha of cotton, orchards, grain crops and pastures with a potential estimated economic effect of USD 19 million.

The autumn egg-pod survey was conducted on 410 000 ha, out of which 150 000 ha were found infested. In 2013 it is planned to treat locust infestations on 140 000 ha, which would represent a two-fold increase as compared to 2012; this relies mainly on difficult access to certain foothills and mountainous areas which could not be surveyed in 2012. In addition to the locusts, the economic importance of grasshoppers is expected to increase.

## **TUK**

A DMA outbreak occurred in 2012. The treated area increased two-fold as compared to 2011 and reached 437 911 ha. A serious obstacle to locust control consisted in the higher than usual altitude of some DMA breeding areas, which were found at 1 800-2 200 m above sea level.

In 2013, the DMA outbreak is expected to continue and locust populations to increase. It is planned to execute anti-locust treatments on 400 000 ha, which would nevertheless represent a decrease of 10 percent as compared to 2012.

## **UZB**

In 2012 the total area treated against locusts was 282 500 ha, which represented a decreased by 35 percent as compared to 2011, primarily due to the decline of DMA. Some DMA breeding areas were found at altitudes of 1 800 to 2 500 m above sea level, which is higher than recorded in literature. At the same time, LMI infestations increased in the Amudarya delta and could result in an important threat in 2013.

In 2013 it is planned to control DMA on 250 000 ha and LMI on 100 000 ha, with a total area of 350 000 ha, i.e. an increase by at least 20 percent due to infestations by the Moroccan Locust in new habitats and the ongoing outbreak of the Asian Migratory Locust.

## Annex IV- Table of expenditures for Year 1

Res. & Act.	Description	TOTAL (USD) (up to 30 Sept. 2012)		USAID (USD)		FAO RP (USD)		FAO - TCP KYR (USD)	
		Budget Year 1	Exp. Year 1	Budget Year 1	Exp. Year 1	Budget Year 1	Exp. Year 1	Budget Year 1	Exp. Year 1
<b>R1 - Regional cooperation</b>		<b>159,600</b>	<b>121,352</b>	<b>58,900</b>	<b>25,896</b>	<b>94,000</b>	<b>94,016</b>	<b>6,700</b>	<b>1,440</b>
1.1. Facilitate regional exchanges to manage locust situations		159,600	121,352	58,900	25,896	94,000	94,016	6,700	1,440
1.1.1. Create/maintain regular regional information sharing of standardized data (N		68,600	30,336	58,900	25,896	3,000	3,000	6,700	1,440
1.1.2. Allow direct experience exchange (technical workshop)		91,000	91,016			91,000	91,016		
1.2. Develop coordination, including through transboundary policy		0	0			0	0	0	0
1.3. Identify the best long-term solution for sustainable regional cooperation		0	0					0	0
<b>R2 - National capacities</b>		<b>45,000</b>	<b>60,090</b>	<b>0</b>	<b>15,090</b>	<b>45,000</b>	<b>45,000</b>	<b>0</b>	<b>0</b>
2.1. Build up capacities through a vast Training-of-Trainers (ToT) programme		0	0					0	0
2.2. Make available and accessible background documentation and literature		45,000	46,993	0	1,993	45,000	45,000	0	0
a Bibliography & Material to be made available (e-committee on documentation)		0	1,993	0	1,993				
b Monographies		45,000	45,000			45,000	45,000		
c Practical guidelines									
2.3. Allow internships and post-graduate formation		0	13,098		13,098			0	0
a One-month internships		0	13,098	0	13,098				
b Fellowship: 2 or 3-year diploma for students									
2.4. Promote and support applied research		0	0					0	0
a Grants for applied research									
b Entomological and chemical equipment for laboratories									
<b>R3 - Locust issues and disasters better anticipated and mitigated</b>		<b>163,998</b>	<b>165,673</b>	<b>112,500</b>	<b>119,061</b>	<b>15,500</b>	<b>15,140</b>	<b>35,998</b>	<b>31,472</b>
3.1. Improve survey operations for better field locust monitoring		93,998	101,516	44,000	60,394	14,000	13,621	35,998	27,501
3.1.1. Strengthen human capacities (techn. assistance on survey)		35,998	48,393	0	20,892			35,998	27,501
3.1.2. Strengthen operational capacities (survey equipment)		57,621	53,122	44,000	39,501	13,621	13,621		
3.2. Organize regular cross-border surveys		13,500	33,192	13,500	29,221			0	3,971
3.3. Develop monitoring and analyzing systems		56,500	30,965	55,000	29,446	1,500	1,519	0	0
3.3.1. Extend use of Geographical Information System and remote sensing		56,500	30,965	55,000	29,446	1,500	1,519		0
3.3.2. Improve forecasting									
3.4. Enhance preparedness for risk reduction through harmonized national conting		0	0					0	0
<b>R4- Improved response mechanisms to locust outbreaks</b>		<b>296,100</b>	<b>196,646</b>	<b>63,000</b>	<b>104,876</b>	<b>63,000</b>	<b>63,124</b>	<b>170,100</b>	<b>28,646</b>
4.1. Allow early reaction and appropriate control operations		290,100	196,146	57,000	104,376	63,000	63,124	170,100	28,646
4.1.1. Strengthen human capacities (techn. assistance on control)		0	10,097	0	10,097				
4.1.2. Strengthen operational capacities (control equipment)		290,100	186,049	57,000	94,279	63,000	63,124	170,100	28,646
4.1.3. Enhance public-private partnership									
4.2. Promote less harmful pesticides and alternatives to conventional pesticides		6,000	500	6,000	500	0	0	0	0
4.2.1. Develop ULV formulations and related techniques		6,000	0	6,000	0				
4.2.2. Propose alternatives to conventional pesticides (demonstration)									
4.2.3. Encourage registration of more pesticides		0	500	0	500				
4.3. Promote joint cross-border control operations		0	0			0	0	0	0

Res. & Act.	Description	TOTAL (USD) (up to 30 Sept. 2012)		USAID (USD)		FAO RP (USD)		FAO - TCP KYR (USD)	
		Budget Year 1	Exp. Year 1	Budget Year 1	Exp. Year 1	Budget Year 1	Exp. Year 1	Budget Year 1	Exp. Year 1
	<b>R5 - Impact on human health &amp; environment mitigated/monitored</b>	<b>50,700</b>	<b>16,387</b>	<b>31,000</b>	<b>8,699</b>	<b>7,700</b>	<b>7,688</b>	<b>12,000</b>	<b>0</b>
	5.1. Mitigate impact of locust control operations on human health & environment	<b>19,700</b>	<b>16,387</b>	<b>0</b>	<b>8,699</b>	<b>7,700</b>	<b>7,688</b>	<b>12,000</b>	<b>0</b>
	Technical assistance	38,000	0	31,000	0			7,000	0
	Equipment - PPE, Testmate	12,700	16,387	0	8,699	7,700	7,688	5,000	
	Extension material								
	5.2. Monitor impact of locust control operations on human health & environment	<b>31,000</b>	<b>0</b>	<b>31,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>R6 - Public information and awareness increased</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	6.1. Develop awareness and education among local populations		0					0	0
	6.2. Enhance visibility of locust issues and management and of donor support		0			0	0	0	0
	6.2.1. Prepare and implement a communication plan								
	6.2.2. Create and update a website on locusts in Caucasus and Central Asia								
	<b>Other</b>	<b>30,000</b>	<b>8,595</b>	<b>25,000</b>	<b>3,362</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>5,233</b>
	Coordination (Locust Programme Officer)								
	Evaluation	3,000	3,362	3,000	3,362				
	FAO SEC								
	TSS	27,000	5,233	22,000	0			5,000	5,233
	<b>Sub-total</b>	<b>745,398</b>	<b>568,743</b>	<b>290,400</b>	<b>276,984</b>	<b>225,200</b>	<b>224,968</b>	<b>229,798</b>	<b>66,791</b>
	<b>Support cost</b>	<b>39,318</b>	<b>19,956</b>	<b>23,232</b>	<b>18,071</b>	<b>0</b>	<b>0</b>	<b>16,086</b>	<b>1,885</b>
	<b>Total</b>	<b>784,716</b>	<b>588,699</b>	<b>313,632</b>	<b>295,055</b>	<b>225,200</b>	<b>224,968</b>	<b>245,884</b>	<b>68,676</b>

## Annex V- Equipment delivery (Year 1)

<b>COUNTRY</b>	<b>FINAL RECIPIENT</b>
<b>Afghanistan</b>	Plant Protection and Quarantine Department, Ministry of Agriculture, Irrigation and Livestock (MAIL) Kabul, Jamal-Mana, Ministry of Agriculture <i>Focal points: Mr Ghulam Mohammad SAEDI/Mr Mohammad Iqbal KARIMI</i>
<b>Armenia</b>	State Non-Commercial Organization (SNCO), "Center of veterinary, food safety and phytosanitary services", Ministry of Agriculture <i>Focal points: Mr DANIELYAN/Mr Gevorg ARUTYUNYAN</i>
<b>Azerbaijan</b>	State Phytosanitary Control Service, Ministry of Agriculture <i>Focal points: Mr Alladin AIVAZOV/Mr Ilham BAYRAMOV/Ms Khoshgadam ALASGAROVA</i>
<b>Georgia</b>	Phytosanitary Department, The National Food Agency, Ministry of Agriculture <i>Focal points: Mr Zurab LIPARTIA/Mr Bejan REKHVIASHVILI</i>
<b>Kazakhstan</b>	Committee of State Inspection in Agroindustrial Complex, Ministry of Agriculture <ul style="list-style-type: none"> <li>- GU National Methodical Center of phytosanitary diagnostics and forecasts" (survey equipment)</li> <li>- Republican State Enterprise "Phytosanitaria " (control equipment)</li> </ul> <i>Focal point: Mr Mukhtar ZHANABAEV</i>
<b>Kyrgyzstan</b>	Department of Chemistry and Plant Protection, Ministry of Agriculture and Melioration <i>Focal points: Mr Zhanybek DERBISHALIEV/Mr Vladimir PAK</i>
<b>Russia</b>	Federal State Budget Institution "Russian Agricultural Center (Rosselchozhcenter), Ministry of Agriculture <i>Focal points: Mr Alexander MALKO/Mr Dmitry GOVOROV</i>
<b>Tajikistan</b>	State Republican Unitary Enterprise (SRUE) "Locust Control", Ministry of Agriculture <i>Focal point: Mr Kiyomiddin GANIEV</i>
<b>Turkmenistan</b>	Plant Protection Service, Ministry of Agriculture <i>Focal point: Mr Meret GELDIYEV</i>
<b>Uzbekistan</b>	Department for Foreign Investments and Monitoring of Projects Ministry of Agriculture and Water Resources of The Republic of Uzbekistan <i>Focal points: Mr Odiljon ISAKOV/Mr Furkat GAPPAROV</i>

## Annex VI- Minimal list of pesticides proposed for registration against locusts for the countries of Caucasus and Central Asia (as of 11 October 2012)

Pesticides			a.i. concentration	Recommended dose rate, l/ha	WHO Class (1)	Mode of action		Speed of action (2)	Persistence (3)	Impact on non-target organisms (4)	Barriers	Registered in CCA countries	Used in CCA countries (5)
Active ingredient (a.i.)	Trade name	Formulation				Con-tact	Ingestion						
<b>PYRETHROIDS</b>													
<i>Recommended to register at least one emulsifiable concentrate (EC) and one formulation for ULV from below pyrethroid pesticides</i>													
<b>Alpha-cypermethrin</b>	Fastac 10% /or analog/	OWSC	100 g/l	0,07-0,1	(II)	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No	9	3
<b>Deltametrin</b>	Decis 2,5% /or analog/	EC	25 g/l	0,3-0,4	U	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No	9	4
<b>Deltametrin</b>	Decis 12,5	OS (ULV)	12,5 g/l	1,0	U	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No	2	1
<b>Zeta- cypermethrin</b>	F'juri 10% /or analog/	WE	100 g/l	0,1	(II)	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No	8	2
<b>Lambda-cyhalothrin</b>	Karate /or analog/	EC	50 g/l	0,1-0,15	II	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No	9	4
<b>Esfenvalerate</b>	Sumi-alpha 5% /or analog/	EC	200 g/l	0,2-0,3	(II)	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No	8	2
<b>NEONICOTINOIDS</b>													
<b>Imidacloprid</b>	Confidor 20% /or analog/	WSC	200 g/l	0,05-0,07	(II)	Yes	Yes	M?	Medium	Hazardous for pollinators	?	6	3
<b>INSECT GROWTH REGULATORS – BENZOYL UREAS</b>													
<i>Recommended to use only against 1-3 instar nymphs, in blanket coverage or barrier treatments</i>													
<b>Diflubenzuron</b>	Dimilin 48% /or analog/	SC	480 g/l	0.02 blanket 0.03-0.06 in barrier 1:1	U	No	Yes	L	Long	Hazardous for aquatic arthropods	Yes	7	4
<b>Diflubenzuron</b>	Dimilin OF6	OS (ULV)	60 g/l	0.15 blanket 0.3 in barrier 1:1	U	No	Yes	L	Long	Hazardous for aquatic arthropods	Yes	4	3
<b>Teflubenzuron</b>	Nomolt 5% (ULV)	OS (ULV)	50 g/l	0.175 blanket 0.3 in barrier 1:1	U	No	Yes	L	Long	Hazardous for aquatic arthropods	Yes	3	1

PHENYL-PYRAZOLES													
Recommended to use only in barrier (swath) treatment													
<b>Fipronil</b>	Adonis 4% /or analog/	EC	40 g/l	0,1 in barrier 1:2	U	Yes	Yes	M	Long	Hazardous for pollinators	Yes	6	4
<b>Fipronil</b>	Adonis 7,5	OE (ULV)	75 g/l	0,53 in barrier 1:2	U	Yes	Yes	M	Long	Hazardous for pollinators	Yes	1	1
BIOPESTICIDES													
Recommended to register at least one of the two listed biopesticides													
<b>Azadirachtin</b>	Green Gold 0,3%	OE	3 g/l	0,15-0,25	(U)	Yes?	Yes?	L	?	?	?	1	0
<b>Fungus <i>Metarhizium acridum</i></b>	Green Guard <i>Metarhizium</i>	WS	?	0,5	(III)	Yes	No	L	Medium	?	?	1	0

1) Class of risk to human health of the World Health Organization (WHO) is indicated for the formulated pesticides on the basis of on the Report of the 9<sup>th</sup> meeting of the Pesticide Referee Group (PRG), 2004

II – moderately hazardous;

III – slightly hazardous;

U –non-hazardous under normal use

For pesticides not covered by FAO PRG, 2004, the WHO class is indicated in parentheses, analogous to similar pesticides

(2) Speed of action is indicated on the basis of on the Report of the 9th meeting of the Pesticide Referee Group (PRG), 2004

H – high (1-2 hours)

M – medium (3-48 hours)

L – low (>48 hours)

For pesticides not covered by FAO PRG, 2004, the speed of action is indicated in parentheses, analogous to similar pesticides

(3) Duration of the toxic effect is indicated on the basis of various scientific publications:

S – short (1-3 days)

M – medium (3-10 days)

L – long (>10 days)

(4) Impact on non-target organisms is indicated on the basis of the Report of the 9th meeting of the Pesticide Referee Group (PRG), 2004 and scientific publications

(5) Used during last five years (2008-2012)

In cases the relevant information on certain criteria was insufficient, the question mark (“?”) is used

#### Abbreviations:

A.I., a.i.	active ingredient
EC	emulsifiable concentrate
g/kg	gramme per kilogramme
g/l	gramme per litre
IGR	insect growth regulators
OWSC	oil water suspension concentrate
OPC	organophosphorous compound
SC	suspension concentrate
ULV	ultra low volume
WDG	water dispersible granules
WG	water soluble granules
WS	water suspension
WSC	water soluble concentrate