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

Tashkent, Uzbekistan
11-15 November 2013
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Participants in the “Technical Workshop on Locusts in Caucasus and Central Asia”
Tashkent, Uzbekistan, 11-15 November 2013
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LIST OF ACRONYMS AND ABBREVIATIONS

AFD  Agence Française de Développement / French Development Agency
AGPM  Plant Production and Protection Division (FAO)
a.i.  Active ingredient
APLC  Australian Plague Locust Commission
ASDC  Automated System of Data Collection
CBS  Cross-border surveys
CCA  Caucasus and Central Asia
CIT  Calliptamus italicus (Linnaeus 1758), Italian Locust
DMA  Dociostaurus maroccanus (Thunberg 1815), Moroccan Locust
EC  Emulsifiable concentrate
ET  Economic Threshold
FAO  Food and Agriculture Organization of the United Nations
FTPP  FAO-Turkey Partnership Programme
GIS  Geographic Information System
GPS  Global Positioning System
ha  hectare
IGR  Insect Growth Regulator
IT  Information Technology
LMC  Locusta migratoria capito (Saussure 1884), Malagasy Migratory Locust
LMI  Locusta migratoria (Linnaeus 1758), Asian Migratory Locust
LV  Low Volume
LW-CCA  Locust Watch in Caucasus and Central Asia
MSCCAL  Management System of Caucasus and Central Asia Locusts
PPE  Personal Protective Equipment
PSMS  FAO Pesticide Stock Management System
RP  Regular Programme
SEC  FAO Subregional office for Central Asia
TCP  Technical Cooperation Programme (FAO)
TCPF  Technical Cooperation Programme Facility (FAO)
ULV  Ultra-Low Volume
UNDP  United Nations Development Programme
USA  United States of America
USAID  United States Agency for International Development
INTRODUCTION

1. The Technical Workshop on Locusts in Caucasus and Central Asia took place in Tashkent, Uzbekistan, on 11-15 November 2013. It was organized by the Food and Agriculture Organization of the United Nations (FAO) in the framework of the Five-year Programme aiming at improving national and regional locust management in Caucasus and Central Asia (CCA).

2. The following ten countries participated in the Technical Workshop: Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. The total number of participants was 24. The List of Participants is given in Annex I.

3. The Technical Workshop started with an opening speech of Mr Nurmatov, Deputy Minister, Ministry of Agriculture and Water Resources, Uzbekistan. He welcomed the delegates and thanked FAO for organizing the workshop. He noted that the present workshop marked ten years since the FAO organized the first regional meeting on locust control in Central Asia in Termez, Uzbekistan, in April 2003. Locusts remain very dangerous pests around the world, and their outbreaks threaten international food security. Uzbekistan faced outbreaks of the Moroccan Locust, *Dociostaurus maroccanus* (Thunberg, 1815) – DMA – in 2006 and 2010 and of the Asian Migratory Locust, *Locusta migratoria* (Linnaeus, 1758) – LMI – in 2012 and 2013. It was possible to successfully combat the outbreaks and prevent crop damage due to new, more efficient and economical control technology such as Ultra-Low Volume (ULV) spraying introduced in Uzbekistan. Bilateral cooperation with neighbouring countries also contributed to better regional locust management. To this end, Uzbekistan has agreements with Kazakhstan and Turkmenistan and similar agreements with Kyrgyzstan and Tajikistan are anticipated. Joint cross-border activities such as surveys, information exchange and control operations are implemented with all neighbouring countries, including Afghanistan. The Deputy Minister emphasized that the goal of the present workshop and the Five-Year Programme in general is to increase the regional collaboration on locust issues between the countries. He concluded by thanking FAO for organizing the workshop and delegates from all countries for attending it.

4. On behalf of FAO, Ms Annie Monard, Senior Officer, Team Leader, “Locusts and Transboundary Plant Pests” (AGPMM), welcomed the participants to the fifth annual meeting on locusts in Caucasus and Central Asia. She expressed her gratitude to Uzbekistan for hosting the meeting, organized in the framework of the Five-year Programme, in close collaboration with the Ministry of Agriculture and Water Resources of the Uzbek Republic and thanks to the United States Agency for International Development (USAID) and FAO funding. She recalled the risks associated to locust outbreaks and indicated that prevention, through regional cooperation and capacities development, was necessary to control such transboundary pests, as foreseen in the Five-year Programme. In addition, Ms Monard indicated that the second year of this Programme had ended and she thanked all delegates and colleagues involved in locust operations for their efforts, which contributed to the successful achievement of most of the activities planned. She added that the meeting will provide the opportunity to review the results of the 2013 locust campaigns and the preparation of the next ones; all aspects of the implementation of the Five-year Programme in 2013, such as training and internship, joint and cross-border activities; progress made on human health and environmental precautions, on spraying technology and equipment. The meeting would also allow learning lessons from Year 2, discussing the results and recommendations of the Locust Geographic Information System (GIS) workshop (held on 6-8 November 2013, just before the Technical Workshop), as well as preparing and agreeing on the activities to be implemented during Year 3 of the Five-year Programme. The FAO
Senior Officer mentioned that for the second consecutive year, a day would be devoted to practical demonstrations, focusing this year on human health and environmental aspects. She also introduced FAO consultants attending the regional meeting for the first time, Ms Greta Graviglia, in charge of operations and logistics, and Mr Harold van de Valk, Environmentalist Expert. She concluded wishing fruitful debates.

OFFICERS OF THE SESSION

5. The following officers were elected:

Chairperson: Mr Odiljon Isakov (Uzbekistan)

Vice-Chairperson: Mr Ilham Bayramov (Azerbaijan)

Drafting Committee: Mr Kiyomudin Ganiev (Tajikistan)

Mr Meret Geldiyev (Turkmenistan)

Ms Annie Monard, Senior Officer, FAO

Mr Alexandre Latchininsky, Consultant FAO, Locust Expert

Ms Greta Graviglia, Consultant FAO, Operations and Logistics

Ms Nadiya Muratova, Consultant FAO, GIS Expert

Mr Harold van der Valk, Consultant FAO, Environmentalist
AGENDA

6. The Agenda, as adopted, is given in Annex II.

SESSION 1: NATIONAL LOCUST CAMPAIGNS IN 2013 and forecasts in 2014

National locust campaigns in 2013 (countries’ presentations)

7. The delegates of all present countries made comprehensive presentations on their national 2013 locust campaigns. A summary of each presentation is provided in Annex III.

8. All delegates provided information on surveyed, infested and treated areas concerning all locusts and grasshoppers in 2013, as follows:

Table N.1 Surveyed, infested and treated area in CCA countries in 2013

<table>
<thead>
<tr>
<th>Country</th>
<th>Area (ha) – 2013</th>
<th>Surveyed</th>
<th>Infested</th>
<th>Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>approx. 310,000</td>
<td>186,200</td>
<td></td>
<td>174,901</td>
</tr>
<tr>
<td>Armenia</td>
<td>48,000</td>
<td>36,000</td>
<td></td>
<td>1,000</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>142,380</td>
<td>64,010</td>
<td></td>
<td>57,900</td>
</tr>
<tr>
<td>Georgia</td>
<td>125,000</td>
<td>40,000</td>
<td></td>
<td>23,600</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>16,575,000</td>
<td>5,086,900</td>
<td></td>
<td>3,678,300</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>84,336</td>
<td>57,353</td>
<td></td>
<td>53,741</td>
</tr>
<tr>
<td>Russian Federation*</td>
<td>18,503,730</td>
<td>**1,517,760</td>
<td></td>
<td>1,346,820</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>410,000</td>
<td>110,804</td>
<td></td>
<td>105,754</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>580,000</td>
<td>486,000</td>
<td></td>
<td>486,000</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>685,000</td>
<td>355,700</td>
<td></td>
<td>347,700</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>37,463,446</td>
<td>7,940,727</td>
<td></td>
<td>6,275,716</td>
</tr>
</tbody>
</table>

* Source of information: Informational Newsletter of Rosselkhozcenter N.2, 2014
** Above the Economic Threshold; the total infested area is 3,677,460 ha

9. The outstanding points from the well documented and illustrated presentations are the following:

- In most CCA countries, particularly in Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, locust infested areas increased in 2013 compared to 2012. In Azerbaijan, locust situation remained similar to 2012 while in Afghanistan, Armenia and the Russian Federation areas of locust infestations decreased. In the latter two countries, the decline was explained by the unfavourable weather, which resulted in delayed hatching and slower locust development. LMI produced a serious outbreak for the second year in a row in the Aral Sea zone in Uzbekistan. The Italian Locust, Calliptamus italicus (Linnaeus, 1758) –CIT– significantly increased in Kazakhstan and Georgia. In Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, DMA increased infested areas, which was often due to its breeding at higher altitudes and in areas with difficult access, which were difficult to survey and control. As a result, the total areas of locust infestations and treatments increased in CCA in 2013 compared to 2012, the later by almost 30 per cent.

- In Tajikistan, Turkmenistan and Uzbekistan, the Moroccan Locust breeding areas were again reported at higher altitudes than previously, which hampers the effective control operations.
- In Kyrgyzstan, an unusually early CIT hatching was recorded. In the south of the country it co-inhabited with DMA in the same areas, which has never been noted before.

- In Uzbekistan, late summer hatching of LMI was recorded for the second year in a row in the Aral Sea zone, which makes its monitoring very difficult and requires additional control efforts.

- The Turkmen and Azeri delegates raised concerns about increased locust infestations in areas bordering Iran.

- In Kyrgyzstan, a tragic accident occurred during locust treatments when an ANTONOV-2 aircraft crashed causing deaths of two pilots and a plant protection specialist. In Georgia, a light aircraft also crashed but did not involve any fatalities.

- The delegate from Uzbekistan requested FAO expertise to evaluate the complicated LMI situation in the Aral Sea zone in August 2014.

10. In the ensuing discussion, delegates from many countries underlined the importance of increased cross-border collaboration on locust issues with neighbours. Several countries praised the efficient and economical strategy of locust control offered by ULV technology. Delegates from Kyrgyzstan and Tajikistan thanked FAO for valuable assistance provided to these countries through the Technical Cooperation Projects, (TCP/KYR/3305 and TCP/TAJ/3401).

**Locust forecast for 2014 and preparation of the next campaign**

11. The countries provided locust forecast for 2014 in terms of the areas subject to treatment as follows (in ha):

**Table N.2 Areas (in ha) subject to treatments against locusts in CCA countries in 2014 (forecast)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Area (ha) - subject to treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>135,000</td>
</tr>
<tr>
<td>Armenia</td>
<td>4,000</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>60,000</td>
</tr>
<tr>
<td>Georgia</td>
<td>45,000</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>3,950,000</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>73,000</td>
</tr>
<tr>
<td>Russia Federation</td>
<td>1,402,570*</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>130,000</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>600,000</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>350,000</td>
</tr>
</tbody>
</table>

* Information provided on 2 December 2013 after the end of autumn egg-pod surveys.
SESSION 2: IMPLEMENTATION OF THE FIVE-YEAR PROGRAMME TO IMPROVE LOCUST MANAGEMENT IN CAUCASUS AND CENTRAL ASIA

Five-year Programme in 2013: overview on implementation and funding situation (Item 6 of the Agenda)

12. The Senior Officer, AGPMM, presented the implementation during Year 2 (1st October 2012 to 30th September 2013) of the “Five-year Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”, as per the adopted Roadmap. The implementation of Year 2 was considered successful since most of the activities scheduled against available funds had been carried out in a satisfactory way and countries had spared no efforts for its success. She mentioned that all details were provided in the related working paper and its comprehensive tables, and that specific reports would be presented on a number of activities. She presented the main achievements for Year 2 as follows:

13. Result 1 – Regional cooperation developed: National and regional monthly bulletins on locust situations and management issued from March to October 2013; office equipment delivered to Kyrgyzstan and delivery in progress for Tajikistan under the respective national FAO Technical Cooperation Programme (TCP) projects; Technical Workshop on Locusts in CCA held in November 2012.

14. Result 2 – National capacities strengthened: Progress made on background documentation with the list of references for each locust pest (950 entries) and the shortlist with related abstracts available in late 2012 and May 2013 respectively; ongoing preparation of the monographs on the three CCA locust pests; one-month internship organized in February 2013 for a total of four locust experts, from Tajikistan and Russia at the National Locust Control Centre of Morocco (February 2013) on locust management, and from Kyrgyzstan and Uzbekistan at the Australian Plague Locust Commission (APLC) on the use of biopesticides.

15. Result 3 – Locust issues better anticipated: One training session on locust monitoring and information management delivered jointly to the benefit of 19 locust/plant protection staff from Kazakhstan and Russia (Russia, May 2013); three joint or cross-border surveys organized, involving eight countries and 36 locust experts (Armenia/Azerbaijan/Georgia/Russia, April 2013; Russia/Kazakhstan, May 2013; Afghanistan/Tajikistan/ Uzbekistan, June 2013); background work for the elaboration of a common Geographic Information System (GIS) in CCA countries to be discussed and agreed upon during a Locust GIS Workshop (Uzbekistan, November 2013).

16. Result 4 – Response mechanisms to locust outbreaks improved: Two training sessions delivered on locust spraying using Ultra-Low Volume (ULV) technology to the benefit of 24 locust/plant protection specialists form Kyrgyzstan (April, 2013) and Tajikistan (April 2013); locust control equipment (sprayers, personal protective equipment) delivered to Kazakhstan for demonstration purposes, as per work plan of Year 1; locust control equipment (pesticides, sprayers, personal protective equipment and calibration kits) also delivered to Kyrgyzstan and Tajikistan for the 2013 locust campaign under the respective FAO’s national projects.

17. Result 5 – Impact on human health and the environment mitigated: Four training sessions) on mitigating and monitoring impact of locust control operations on human health and the environment delivered to the benefit of 49 locust/plant protection specialists from seven countries (Armenia, Azerbaijan, Georgia and Russia in Georgia, April 2013), Tajikistan (May), Kyrgyzstan (June) and Kazakhstan (September); related equipment delivered to the four host countries (Georgia, Kazakhstan, Kyrgyzstan and
Tajikistan); environmental experts recruited in Kyrgyzstan and Tajikistan under the respective national projects; brainstorming organized and work plan drafted on next steps for further reducing the risks associated to locust control for human health and the environment.

18. Result 6 – Public information and awareness increased: FAO Website “Locust Watch in CCA” updated; Regional Project against the FAO-Turkey Partnership Programme (FTPP) operational in May 2013; liaison ensured with some potential donors (namely Azerbaijan, France and the Russian Federation).

19. The Senior Officer highlighted some positive technical aspects, such as the reception of the monthly bulletins from Kazakhstan; the focus given on the strengthening of national capacities; the greater importance devoted to Result 5 as per recommendation of previous workshops; the excellent cooperation with the anti-locust centres in Morocco and Australia, which hosted a total of four one-month internships; and the fruitful cooperation with the private sector.

20. It was noted that some activities had to be postponed or cancelled. It concerned: i) the preparation of the Practical Guidelines for the management of the three locust pests in CCA and the video tutorial on ULV spraying, which will be postponed to Year 3, mainly due to the very demanding locust emergency in Madagascar for the two FAO officers also involved in the management of the Five-year programme; ii) the fellowship/post-graduate studies for three students, which did not start as planned during Year 2 because of the delayed start of the project funded against the FAO-Turkey Partnership Programme (FTPP); iii) the monitoring of impact of locust operations on human health and the environment as it was considered essential to first deliver training sessions and then to develop a work plan and submit it to countries during the annual workshop. In addition, delivery of equipment was still pending from Year 1 in Turkmenistan (about to be solved) and in Kazakhstan, where pending orders had to be cancelled.

21. Regarding organizational aspects, the Senior Officer indicated that activities had been organized from November 2012 up to September 2013. They implied: i) technical supervision, coordination, preparation and implementation of activities by the FAO staff; ii) recruitment and/or technical, administrative and operational management of 15 national consultants and seven international ones; iii) the organization of a number of national, regional and international travels as well as of two one-month internships for four experts and of seven training sessions for a total of 96 trainees; iv) the follow-up of equipment delivery and of the approval process of the FTPP project; and v) the monitoring of the activities and of the expenditures.

22. The Senior Officer indicated that it had been another challenging year but that despite very limited staff available at FAO, numerous activities had been successfully organized. She further noted that the use of e-mails was becoming a normal practice for exchanges and increased the reactivity of the CCA countries, and that the excellent support from the decentralized FAO offices had been very helpful.

23. The constraints and difficulties met during Year 2 were also reviewed. They included: i) the absence of monthly bulletins on the locust situation from Turkmenistan; ii) the difficulties and delays in delivering pesticides and office equipment to Kyrgyzstan and Tajikistan; iii) the delayed start of the project GCP/SEC/004/TUR funded against the FTPP due to an insufficient number of signatures from the concerned countries; iv) the time constraints of the FAO staff; and v) some difficulties in the recruitment process of national consultants (in Afghanistan and in Kazakhstan) and in the payment of Travel Expense Claims.
24. Amongst the lessons learnt, it was again observed that FAO presence at the national level does make a difference for Programme implementation. In 2013, there was still only one country with a fully-fledged FAO Representation (Afghanistan); other countries did either not have fully-fledged FAO Representations (Armenia, Azerbaijan and Georgia) or had FAO Representatives appointed but not yet a fully-fledged office (Kyrgyzstan and Tajikistan). In Uzbekistan, there was now a FAO project manager and three CCA countries only were without FAO offices (Kazakhstan, Russia and Turkmenistan). Another observation was that while joint training sessions do contribute to increased interaction and exchanges at the regional level, they imply however a higher cost since they involved more travels. The appropriateness of organizing such joint training sessions should therefore be evaluated on a case-by-case basis.

25. The following recommendations were made:

- That the signature of project documents, which is required by all countries to facilitate Programme implementation, is given the highest priority. This concerns project GCP/INT/134/USA (signed by Tajikistan only) and project GCP/SEC/004/TUR (to be signed by Azerbaijan, Turkmenistan and Uzbekistan). Countries are therefore once again urged to do their utmost to speed up the process.

- That countries go ahead with the proposed GIS approach as a follow-up to the related workshop held on 6-8 November in Uzbekistan.

- That in-depth discussions be held and a work plan agreed for Result 5 (Impact on human health and the environment mitigated) of the Five-year Programme.

- That fund-raising activities be increased, both by FAO and countries, in order to allow the implementation of all activities envisaged in the Five-year Programme.

26. The Senior Officer presented the funding situation and expenditures for Year 2. She said that the total budget of the Five-year Programme was the same as in 2012, i.e. USD 3.2 million, out of the total estimated budget of USD 7.8 million. No confirmation for the pledge made by the Russian Federation in 2010 was received despite regular exchanges on the subject. It was indicated that more recently, exchanges had taken place with the French Development Agency (Agence Française de Développement – AFD) as well as a high-level delegation from the Ministry of Agriculture of Azerbaijan, and this latter country had indicated it could act both as beneficiary and donor.

27. The expenditures for Year 2 amounted to USD 744,940 out of a total budget of USD 1,283,580, representing 58 per cent of the budget. Five funding sources had been effectively available: USAID project (42 per cent of the expenditures), TCP/TAJ/3401 for Tajikistan (28.3 per cent), TCP/KYR/3305 for Kyrgyzstan (28.2 per cent) and the FAO Regular Programme (1.5 per cent). The level of expenditures against the yearly budget was more than 99 per cent for USAID, around 70 per cent for each for the two TCPs and more than 44 per cent for the FAO Regular Programme.

28. No expenditures were done against the FTPP project (GCP/SEC/004/TUR) as it was declared operational in June 2013 only, i.e. nine months after the start of Year 2, too late to implement the activities planned against that funding. They were to be carried out (most of the training sessions) or to be launched (preparatory work for the fellowship programme) between February and June 2013. This had an impact on the USAID project because the training sessions were charged against it, instead of the two activities which had to be postponed (practical guidelines and video tutorial). In addition, as the locust GIS workshop was held on 6-8 November 2013 in Tashkent, it will be
charged against the USAID project in Year 3 and not 2, in order to streamline the use of available funds. Concerning the two TCPs and in view of the current level of expenditures, which is lower than expected because Insect Growth Regulators could not be purchased, and despite an increased number of training sessions, an extension of these projects will be requested until the end of 2014. The level of expenditures against the FAO Regular Programme is also lower than planned as a result of the late approval of the FTPP project (it has to contribute to the fellowship programme) and because the improvement of the website was postponed. The table of expenditures is provided in Annex II.

29. In addition, and following the official request for assistance from the Government of the Republic of Uzbekistan on 4 February 2013, the project TCP/UZB/3401 of the Technical Cooperation Programme Facility (TCPF) was approved by FAO in April 2013, for a total amount of USD 38,175. TCPF projects are intending to reply to a specific technical issue and have a very short duration and a relatively low budget.

30. The project TCP/UZB/3401 funded the recruitment of two Locust experts (one national and one international consultant) as well as operating expenses covering their travel costs. It aimed at carrying out a need assessment in order to evaluate the locust situation in the Aral Sea delta during May 2013; checking the extension and the intensity of the outbreak; evaluating additional requirements to cope with the locust outbreak; and assessing the need for a possible emergency assistance to control the LMI outbreak in the Aral Sea delta. The survey results were summarized in a document confirming the forecast. This document will be available on the FAO web site in the near future, in English and Russian. However, the available national budget did not allow the treatment of all infested areas. Therefore, further FAO assistance was requested but no TCP was further developed by FAO because of a number of constraints, which were shared with the country. They concerned, among others, FAO rules and regulations concerning the purchase of vehicles; difficulties previously encountered to provide Global Positioning System (GPS) or satellite phones; and the timely delivery and use of the pesticide requested. In addition, it would have been difficult for FAO, from an institutional and administrative point of view, to proceed with the approval of a new project considering that two other locust projects were not yet endorsed (signed) at the national level, namely GCP/INT/134/USA and GCP/SEC/004/TUR.

Regional cooperation in 2013 (Item 7 of the Agenda)

Regular Information Sharing

31. The Senior Officer, AGPMM, presented an overview of the national monthly bulletins received in 2013. She first reiterated the importance of gathering and sharing data on locust situations and related control activities to develop effective regional cooperation based on a better understanding of the various national situations.

32. During the 2013 campaign, FAO-AGPMM received 62 documents on the locust situation in CCA, including 60 monthly bulletins, which represented a significant increase compared to Year 1 of the Five-year Programme (55 documents including 41 bulletins received in 2012). One country only (Turkmenistan) did not send any bulletin in 2013. Six countries sent the bulletins regularly every month totalling seven bulletins each from April to October, and three countries sent six bulletins.

33. Great improvements were that the national monthly bulletin template was used; the majority of countries sent the monthly bulletin before the 5th of the successive month; data analysis was provided; and more countries included maps. However, there is still room for improvement as follows:
- All parts and sections of the monthly bulletin template should be duly filled in, even if no locust was reported or no control operation carried out, to provide information as complete and as precise as possible, among others the exact infested and treated locations and areas and the related administrative entities.

- The reference period should be clearly indicated for the information provided. This applies particularly to the figures of the treated areas (otherwise it is difficult to know how many hectares were treated during the considered month).

- Locust species concerned should be indicated together with the figures of the surveyed, infested and treated areas.

- Maps should be regularly provided.

- The deadline should be met and the bulletin sent to at least two e-mail address.

Cross-border and joint surveys

34. Georgia – Armenia – Azerbaijan – Russia. The delegate from Georgia presented the joint survey, which took place from 30 April to 1 May 2013, with participation of specialists from Armenia, Azerbaijan, Georgia and the Russian Federation. He emphasized that the survey was an important step in harmonization of regional anti-locust activities and specifically welcomed the participation of the Russian Federation in this event. The survey covered areas of Signagi and Akhmeta in Georgia. In the future, particular attention should be paid to the Eldar Valley, in Eastern Georgia and the area close to the Azerbaijan border, where locust infestations were very serious and where it was not possible to carry out surveys for two years in a row. Locust breeding areas are situated there in close proximity to crops with potentially big impact on local farmers. The delegate thanked FAO for providing this opportunity to conduct the CBS.

35. Tajikistan – Uzbekistan – Afghanistan. The delegate from Tajikistan reported on the joint survey which took place from 18 to 20 June 2013 in Sughd Province, Khujand, with participation of specialists from the above-mentioned countries. He emphasized the importance of the enhanced regional collaboration and information sharing across the borders and thanked FAO for supporting this important regional activity.

36. Russia – Kazakhstan. The delegate from the Russian Federation reported on the cross-border survey (CBS) between the above-mentioned countries, which took place on 18 May 2013 following the training on locust monitoring and information management for Russia and Kazakhstan organized in Astrakhan, Russian Federation. He noted that this was just one of a series of JCBS between the two countries which had taken place between the several bordering oblasts of Russia and Kazakhstan. The CBS allowed free information exchange between the locust managers of the two countries. The cross-border activities between Russia and Kazakhstan are supported by meetings of high-level officials of the Ministries of Agriculture.

National capacities’ development (Item 8 of the Agenda)

Situation update on locust survey and control equipment

37. The Consultant, Operations and Logistics, introduced Item 8a, updating participants on the status of the locust survey and control equipment pending from Year 1 and that was delivered during Year 2 of the Programme. In particular, she stressed that in Kazakhstan, the Micron sprayers took eight months to be custom-cleared and that the pending orders from Year 1 were cancelled (survey kits, GPS and satellite phones), due
to very high transportation costs including administrative fees and permissions. However, 12 partial sets of Personal Protective Equipment (PPE) were purchased locally in view of the training on “Monitor and mitigate the impact of control operations on human health and the environment” carried out in September 2013 in the country. In Uzbekistan, the last pending order for GPS was cancelled in January 2013 after a refusal letter issued by UNDP, which could not clear the item from Customs without permissions. On this subject, the delegate from Uzbekistan ensured that the GPS could be re-shipped and sent to the Uzbek National Centre for Plant Protection and Agrochemistry, at the Ministry of Agriculture and Water Resources, which will carry out custom clearance. UNDP will not be involved this time In Turkmenistan, the orders for PPE kits, survey kits and GPS are still on hold. However, due to the recent clarifications obtained by UNDP regarding the custom clearance procedure, which was shared with the country, the goods will be shipped soon.

38. Four test-mate kits were delivered during Year 2 to those countries which benefited of the Training on “Monitor and mitigate the impact of control operations on human health and the environment”, namely Kyrgyzstan, Georgia, Kazakhstan and Tajikistan.

39. During Year 2, FAO also supplied 6,400 litres of conventional pesticide in Ultra-Low Volume (ULV) formulation, as well as locust control equipment in Tajikistan and Kyrgyzstan against the FAO projects TCP/TAJ/3401 and TCP/KYR/3305, with the aim to contribute to the national campaigns in 2013. The equipment included Micron sprayers, control kits, PPE kits and office equipment (to be delivered in November 2013 in Tajikistan). The Insect Growth Regulator (IGR) (2,000 litres each country) in ULV formulation was not purchased: in Tajikistan it was not registered and consequently not authorized; for Kyrgyzstan, the minimum quantity the producer could provide was 3,120 litres, which could not be funded by the budget allocated for pesticides in one country only.

40. The Delegate from Kyrgyzstan asked why FAO did not provide pesticide to treat 16,000 to 18,000 hectares as foreseen in the Project and if the missing quantity could be still supplied with remaining funds. It was pointed out that the price of the conventional pesticide was higher than expected so the overall quantity planned had to be reduced. The request to provide additional pesticide will depend on availability of funding, to be checked during the discussion on the work plan for Year 3, and on the approval of project extension.

Training on locust monitoring: Russia and Kazakhstan

41. The delegate from Russia reported on the training on locust monitoring, which took place in Astrakhan, South Russia, from 13 to 17 May 2013, for the benefit of Russia and Kazakhstan. A total of 19 trainees represented Kazakhstan (6) and Russia (13) – only the cost related to six participants from Russia was covered by USAID. The training was conducted by Mr Alexandre Latchininsky, International Consultant, Locust Expert. Topics covered included biology, ecology and population dynamics of locusts, methods of density assessment, filling out the standard FAO forms, use of GPS in locust survey, and locust data reporting. In addition to the theoretical knowledge, participants gained practical experience in using GPS in the field. All trainees deemed the training very educational and highly successful and useful.

42. The delegate from Kazakhstan expressed gratitude to FAO and the Locust Expert, for the very valuable training on behalf of the Kazakh participants.
43. The delegate from Turkmenistan requested FAO to organize a locust monitoring training in Turkmenistan in 2014 with Mr Gapparov and Mr Latchininsky as trainers. He suggested that Turkmenistan would cover their in-country costs. The Senior Officer answered that she took note and that this question would be addressed during the session on planning the activities for the next year.

Training on ULV spraying: Kyrgyzstan

44. The delegate from Kyrgyzstan presented information on the training on ULV spraying which took place in Jalal-Abad from 22 to 26 April 2013. It was conducted by Mr Tim Sander, Pesticide Application Expert from the Micron Group, to the benefit of 12 trainees. The training covered theoretical and practical aspects of ULV technology. Participants learned how to calibrate a ULV sprayer depending on the pesticide used, how to use oil-sensitive papers to check the droplets deposit, how to clean up and maintain the sprayer after usage and other related questions. The training was conducted in highly interactive regime with the consultant encouraging questions from the audience. All participants considered the training as highly successful and useful, allowing them to familiarize with ULV technology. The delegate regretted that FAO did not allow to include more trainees in this valuable training.

Training on ULV spraying: Tajikistan

45. The delegate from Tajikistan reported on the training on ULV spraying which took place in Kurgan Tyube from 15 to 19 April 2013. It was conducted by Mr Tim Sander, Pesticide Application Expert from the Micron Group, to the benefit of 12 trainees. The training covered theoretical and practical aspects of ULV technology. Participants learned how to calibrate a ULV sprayer depending on the pesticide used, how to use oil-sensitive papers to check the droplets deposit, how to clean up and maintain the sprayer after usage and other related questions. The training was conducted in highly interactive regime with the consultant encouraging questions from the audience. All participants considered the training as highly successful and useful, allowing them to familiarize with ULV technology.

One-month internship on locust management in Morocco: Russia and Tajikistan

46. Delegates from Russia and Tajikistan informed about the internship at the National Locust Control Centre in Agadir, Morocco, in February 2013. The delegate from Russia explained that the person selected for the training came from the region of Stavropol, South Russia, which recently suffered from infestations of DMA, one of the targets of locust control in Morocco. All aspects of the training were very useful, including theoretical classes on locust biology, survey methodology and control operations. Acquired knowledge was shared with colleagues upon the return of the trainee back to Russia.

47. The delegate from Tajikistan, who was the beneficiary of the internship, emphasized that the National Locust Control Centre was an excellent facility for this activity as it has many good experts. Numerous topics were covered during the training, including the environmental aspects of locust control such as methods of residue collection and analysis. The delegate was very enthusiastic about the internship and thanked FAO for the opportunity. He delivered a seminar to colleagues upon return to Tajikistan.
One-month internship on locust management in Australia (Uzbekistan and Kyrgyzstan)

48. The delegate from Uzbekistan, who was beneficiary of the internship, informed that the Australian Plague Locust Commission (APLC) in Canberra was the host institution for him and his colleague from Kyrgyzstan. The training covered different aspects of locust management, including the use of the biological control product based on the fungus *Metarhizium*. Field activities took place at the APLC base in Broken Hill. The internship was very useful. The delegate learned about locust rearing equipment and procured similar equipment of local origin upon return to Uzbekistan to equip the laboratory at the Uzbek Research Institute for Plant Protection. Constraints included the non-availability of locusts in the field, inability to visit the production facility of the biopesticide, and the medical emergency of the trainee. The trainees thanked the host institution and FAO for the opportunity.

49. The delegate from Georgia asked the opinion of Mr Gapparov regarding the possibility of application of *Metarhizium* from Australia under CCA conditions. Mr Gapparov responded that the efficacy of the fungus is questionable against DMA, which inhabits very dry areas. It might be possible to use *Metarhizium* against CIT although more research is needed to that end. As for LMI, there is no data so far to assess the efficacy of the fungus against this species under CCA conditions. Furthermore, he considered that it is necessary to be aware of potential human health and environmental side-effects of a foreign strain introduced in a different environment. So far there is no research on this subject in CCA.

50. Addressing the topic of side-effects of *Metarhizium*, the International Consultant, Environmental Expert, pointed out that although there might be some potential hazards, they would undoubtedly be lower than side-effects from a vast majority of chemical pesticides, including those used in CCA. The African strain of *Metarhizium* is registered in several countries in Africa, and its wide operational use in locust and grasshopper control proved safe for human health and environment.

51. The Senior Officer summarized what she heard from the reports from delegations who benefitted from internships and indicated that she would also like to share the feedback from the host countries. In a few words, Morocco welcomed the care devoted to select the two experts, recommended that same care be applied in the future and is ready to host other CCA experts. The same applies for Australia where most of the planned activities were carried out.

**Developing monitoring and analyzing systems (remote sensing): results of the Locust Geographic Information System (GIS) Workshop and steps forward (Item 9 of the Agenda)**

52. The International Consultant, GIS Expert, informed the delegates about the main results of the Locust GIS seminar, carried out on 6-8 November 2013 in Tashkent, as follows:

1. The Automated System of Data Collection (ASDC) with two applications was presented and a demonstration was carried out of field data collection by ASDC Inspector's application (installed on a tablet with GPS and mobile phone capacity);

2. The Locust GIS for CCA countries is being developed at national and regional levels. The National GIS is named MSCCAL – Management System of Caucasus and Central Asia Locusts – and is supported by ASDC. The database will be developed in accordance with the content of the standard forms of FAO. The regional GIS is named CCAL-WARMS (Caucasus and Central Asia Locusts Warning and Management System) and will combine national GIS databases and additionally include weather, remote sensing data, and maps for CCA countries.
53. Next steps of Locust CCA GIS development include the design of the national and regional GIS and their installation in two pilot countries. During 2014, developing the regional GIS includes: data collection with FAO support; creation of the GIS database and database management system by a programmer; identification of sources and frequency of meteorological fields, remote sensing products, approved methods and algorithms of analysis and forecasting for Asian, Italian and Moroccan Locusts by a GIS expert. In 2015, it includes: installing and starting to use the GIS in two pilot countries with FAO support; development of a specialized end-user interface for the National GIS by the GIS programmer; identification of regional cartographic materials in digital GIS format and tools for the preparation of reporting materials for the National Plant Protection Staff (NPPS), with the GIS expert. Furthermore, during the annual Technical Workshops on Locusts in CCA the results of the implementation of these tasks will be presented and discussed, and training on the use of the national GIS provided.

54. The delegate from Azerbaijan made a proposal to involve not only two countries in the GIS installation process. The Senior Officer explained that the pilot countries – one from the Caucasus and one from Central Asia – will test, adapt and later share their experiences with neighbouring countries. The delegates from CCA approved Uzbekistan and Georgia as the two pilot CCA countries.

SESSION 3: LOCUST CONTROL AND RISK REDUCTION FOR HUMAN HEALTH AND THE ENVIRONMENT

Importance of human health and environmental aspects in locust control

55. The International Consultant, Environmental Expert, introduced the topic on "Importance of human health and environmental aspects in locust control" noting that all insecticides are poisons by their nature, although some are more toxic than others. Insecticides for locust control are generally selected because of their efficacy and limited risk to human health and the environment, but none of the insecticides used, including the biopesticide Metarhizium acridum, are entirely specific to locusts. He outlined the types of risks for human health and the environment which can result from locust control. A case study was presented showing high occupational exposure of control agents using a type of vehicle-mounted sprayer now considered inappropriate for locust control. Various other cases of adverse environmental effects of locust control (on aquatic organisms and soil arthropods) were presented, as well as of the absence of such adverse effects (on livestock).

56. It is the responsibility of the entities involved in locust management in the region to control locusts and minimize damage to crops and pastures. However, it is also the responsibility of the same entities to protect human health and the environment. The protection of crops and pastures provided by locust control therefore always needs to be weighed against possible damage to other sectors of economic development. The consultant concluded by noting that health and environmental risks of locust control operations are real. It is therefore important to deal with these risks effectively, through: i) prevention (avoiding risks by applying good practices and procedures); ii) management (minimising adverse impact in case that problems or accidents do occur) and, iii) monitoring (knowing which adverse effects can occur when control operations are conducted).

57. In the discussion that ensued, the delegate from Russia noted that many of the adverse effects presented are known by locust control experts in the region. He indicated that many countries in CCA, such as Russia, have extensive environmental and health legislation with the aim to minimise adverse effects of locust control. In Russia, for
instance, large areas of the country are protected from pesticide applications and no locust control is allowed there.

58. The International Consultant, Locust Expert referred to the presented example of adverse effects of fipronil on termites in Madagascar. He noted that in some areas in CCA termites may be pests and questioned whether such side-effects of locust control could not be considered beneficial, as it might control two pests at the same time. The Expert responded that this may be the case in very specific situations but that termites, and other soil organisms, provide an important function in nutrient cycling in grasslands and that adverse effects on termites are certainly not generally beneficial.

Mitigating impact of locust control operations

59. The presentation on the topic “Mitigating impact of locust control operations” was cancelled due to lack of time and because participants in the workshop have broad knowledge about risk mitigation measures.

Monitoring impact of locust control operations

60. The Environmental Expert explained that Monitoring impact of locust control operations is the collection, analysis, interpretation and dissemination of data on the effects (both intentional and unintentional) of operational locust control. The main objective of monitoring is to identify what goes right in operational control, and what can be improved. The results of monitoring are used to optimise control techniques, improve cost efficacy of the control operations, and minimise adverse effects on human health and the environment. Monitoring is therefore an essential element of a locust control campaign.

61. FAO has developed a monitoring approach for Desert Locust control, in particular in West Africa, which may have elements appropriate for monitoring locust control in CCA. It consists of the following elements:

- Monitoring the quality of the insecticide applications
- Monitoring the health of the control agents
- Environmental monitoring
- Incident monitoring.

62. Monitoring is done at three levels, which differ in actors involved in monitoring; the monitoring activities that are carried out and time needed for them; the level of detail of information that is collected, and the functional links with the campaign organization, as follows:

- Rapid assessments
  These are conducted by the locust control teams themselves. Control teams do not have much time for monitoring and are not specialized in this activity. Therefore, rapid assessments take little time. They focus on the collection of insecticide application data, efficacy of the treatments, and alerting the campaign organization in case of problems.

- Specialized operational monitoring
  This type of monitoring is done by dedicated monitoring teams that are specifically trained for their task. The monitoring teams are well equipped and are independent for their logistics. Monitoring activities include environmental monitoring (e.g. non-target organisms, residues), health monitoring of control staff (e.g. cholinesterase inhibition), control efficacy (e.g. for slow acting insecticides) and investigation of
incidents. A specialized monitoring team may be on the site of the treatment for one or more days during and/or after the insecticide application, and will then move to assess a next control operation. The main objectives of specialized monitoring are to verify the overall quality of the treatments and to identify acute adverse effects caused by the locust control operations.

- **In-depth monitoring**
  In-depth monitoring is conducted by research teams from scientific institutes or universities. It may consist of experiments, long-term sampling, or epidemiological studies, among others. Generally, in-depth monitoring exercises are longer term, and research teams will be on a site for weeks to months. The main objective of in-depth monitoring is to establish causality between a locust control operation and observed or expected adverse effects on human health or the environment. Various tools have been developed by FAO for this monitoring approach (e.g. monitoring forms, check-lists, standard operating procedures).

Given the considerable areas annually treated against locusts in the CCA region, the development of an effective system to monitor the quality, and the impact on human health and the environmental of control operations is justified. While various countries monitor some aspects of locust control, in particular specialized operational monitoring may need to be strengthened.

**National capacities development in 2013 (cont.) – Item 8 of the Agenda**

**Training on mitigating and monitoring impact of locust control operations on human health and the environment**

63. National capacities on mitigation and monitoring the impact of locust control operations on human health and the environment were strengthened in 2013 through the organisation of four workshops: a regional workshop in Georgia, from 22-27 April, for participants from Armenia, Azerbaijan, Georgia and Russia and three national workshops in Tajikistan (27-31 May), Kyrgyzstan (3-7 June) and Kazakhstan (9-13 September). The total number of the trainees in these workshops was 49.

64. Delegates from various countries – Georgia, Kazakhstan, Kyrgyzstan and Tajikistan – reported on the contents and results of these workshops. They outlined that the workshops covered the following topics, both in theoretical and in practical sessions:

- Mitigation of the impact of locust control on human health and the environment: precautions to be taken before, during and after locust control operations, including the use of personal protective equipment (PPE), safe pesticide handling, storage and transportation, empty containers disposal, awareness, etc.
- Monitoring of the impact of locust control on human health and the environment: use of standard forms to monitor the impact of control operations and assess their potential effects on human health and non-target organisms, including the search for presence of pesticide residues in water and vegetation.
- For the regional workshop organized in Georgia, a refreshing day on ULV spraying was also to be included.

65. The workshops had been considered useful by participants and their contents generally met the expectations of the participants. In particular new techniques, such as cholinesterase inhibition testing and field monitoring of adverse effects (e.g. on honey bees) were considered very useful. Also the hand-outs and background materials provided had been well received. The delegate from Kyrgyzstan informed the meeting
that elements of this workshop had already been incorporated in national training of locust control staff. The delegate from Tajikistan indicated that several aspects covered in the workshop were covered in a national manual on locust control. The delegates from Armenia, Azerbaijan and Russia confirmed the intervention made by the delegate from Georgia. They also expressed their warm appreciation to Georgia for the excellent organization of the regional workshop.

Progress made on safety and environmental precautions

66. Country delegates shared updates on progress made on safety and environmental precautions taken during locust control operations:

- **Afghanistan** noted that locust control staff is properly trained, particularly in the use of PPE. Shepherds are instructed to move their livestock away from areas to be treated against locusts. The Afghan delegate indicated as a problem that no medical check-ups of locust control staff are conducted.

- **Armenia** confirmed that they give great importance to safety during locust control operations. The Armenian delegate expressed his concern that farmers would sometimes treat their own fields against locusts, but would not always respect appropriate safety measures.

- **Azerbaijan** indicated that all control operators are instructed before the start of the campaign, in particular with respect to the different insecticides being used and good application practices. PPE is worn by all relevant staff. Control operators sign a log on safety briefing. Special care is taken not to treat sensitive areas such as water bodies and beekeeping areas. Posters have also been developed to inform the population about precautionary measures to be taken in case of locust control treatments. Empty containers are punctured and stored in a dedicated facility. Since treatments are often done in areas with highly venomous snakes, district hospitals are alerted so ambulances can be dispatched in case of any accidents, including snake bites.

- **Georgia** informed the workshop that before the locust control campaign a plan is developed, which includes activities on human health and environmental risk reduction. All control staff is trained and equipped with PPE. Great care is taken to calibrate the sprayers and ensure that the correct dose rate of the insecticide is applied. Local administrative representations are informed about upcoming control operations. No poisoning incidents have been noted in 2013, nor was any honeybee mortality reported, the latter due to early information to beekeepers who were able to move the hives six to seven kilometers away two or three days before treatments.

- **Kazakhstan** indicated that it takes all measures necessary to reduce risks to human health and the environment. This includes mandatory medical check-ups of control staff, information of the population of exact dates and locations of locust control, and great attention is paid to the selection of insecticides, depending on the location of treatments and other factors.

- **Kyrgyzstan** provided a detailed description of risk reduction measures taken. They included the trainings of operators (39 people in 2013) in proper insecticide handling and application and the use of PPE. Medical assistance is available for control staff if needed. Local populations are always informed about upcoming control operations and written treatment notifications done before commencement of the insecticide application at least two days in advance. Environmental
monitoring was done by the national consultant, using FAO monitoring forms, and no adverse effects had been observed. Empty pesticide containers are collected, punctured and stored in a pesticide store. The local populations are also informed that they should not use former pesticide bottles for other purposes, such as storage of foodstuffs.

- **Russia** informed the workshop that specific legislation regulates safe handling of pesticides and that this had recently been amended to become even stricter. Efficacy of the locust control treatments is monitored as a standard procedure, and adverse effects on other organisms are studied. Before authorization of an insecticide, they are tested through a rigorous registration process with respect to recommended dose rates and pre-harvest or re-entry periods. Experts from the Russian Agro Centre divisions (*Rosselchozhcentre*) need to be present during locust control operations.

- **Tajikistan** underlined the importance of risk reduction of locust control operation. A manual on locust control was elaborated with sections on proper insecticide use and safety issues. The newly adopted plant protection and pesticide legislation also regulates the application of pesticides. Annual seminars are organized before the locust control campaign to inform local populations and responsible people about the planned operations. Medical check-ups of control staff are mandatory, and staff is trained on good application practices. Plots (to be) sprayed are marked with flags – red flags for plots to be treated and white flags for already treated plots – as a means to inform populations about risks. Empty insecticide containers are popular for re-use and are therefore destroyed.

- **Turkmenistan** indicated that before control campaigns, a comprehensive plan is developed, which is endorsed by the Cabinet of Ministers. All staff is also trained and an agronomist supervises the treatments. Following complaints by silkworm breeders of mortality after aerial control, this type of treatments has been discontinued to reduce the risk of drift onto mulberry plantations. Used insecticide containers are collected and are burned on a site far away from habitations. The delegate from Turkmenistan noted that in spite of the precautions taken, human errors are always possible and locust control should be monitored closely.

- **Uzbekistan** noted that sanitary standards exist in the country for pesticide storage, transportation and use. The delegate further informed the workshop that of the 347,000 ha treated this year, about half were sprayed with ULV equipment, all vehicle mounted (Ulvamast AU8115). Portable ULV sprayers (e.g., Ulva+ AU 8000) are not yet used since it cannot be guaranteed that operators will properly use the necessary PPE. Using these sprayers is therefore considered too risky. Manual sprayers tend to be used with water-based formulations instead.

**Progress made on spraying technology and equipment, pesticides and biopesticides**

67. Country delegates shared new information on spraying technology and equipment, pesticides and biopesticides for locust control. The presentations given by the delegates showed that there is an increasing use of ULV pesticide application equipment in many countries. The improved productivity and cost-efficiency of ULV spraying was mentioned by various delegates as a very positive aspect, i.e. increased daily work rates could be achieved at lower costs. Uzbekistan and Kyrgyzstan indicated that half or more of the areas sprayed against locusts in 2013 had been treated with ULV equipment. Kyrgyzstan reported an assessment done in the country which showed a cost of USD 1.9 per ha for insecticide application with ULV sprayers against USD 3.7 per ha for tractor-mounted sprayers. Armenia noted that while it had received ULV
sprayers through the Programme, it did not have ULV insecticide formulations. Turkmenistan reported use of ULV sprayers in low volume mode, i.e. using water-based emulsifiable concentrates (EC) formulations. Russia informed the workshop that the use of ULV insecticides are limited by law, and no ULV formulations are presently registered (although some were in the past). Given the large number of other application equipment available, and the coverage of up to 120000 ha treated per day that can be achieved with it, Russia did not see the need to introduce ULV sprayers in locust control.

68. As far as the introduction of new insecticide is concerned, Georgia indicated that after two years of field testing, *Metarhizium* had been registered for use against locusts in 2013. Russia reported that various strains of *Metarhizium* were being tested in the country against locusts and other pests. Furthermore, during locust surveys particular attention is being paid to the presence of natural enemies of locusts. When high densities of natural enemies (e.g. blister beetles) are observed, insecticide treatments may be dispensed with.

**Future activities in CCA to promote risk reduction for human health and the environment**

69. The FAO's Environmental Expert introduced possible future activities to promote risk reduction for human health and the environment. He explained that the proposed activities had been based on the Five-year Programme, previous technical workshops, discussions held during the training workshops on health and environment conducted in 2013, and experiences in other regions. He indicated that the listed activities were by no means exhaustive, although budget constraints would quite certainly not allow all proposals to be implemented.

70. The following activities were proposed:

- Developing and harmonizing policy for risk reduction of locust control
  - Conduct national reviews of present risk reduction measures in locust control to identify strengths and weaknesses and define national priority measures (activity mirroring similar exercises ongoing in Kyrgyzstan and Tajikistan).
  - Establish common environmental and health standards for locust control in CCA.

- Promoting less harmful pesticides and alternatives to conventional pesticides
  - Develop a regional programme for comparative efficacy assessments of conventional insecticides, with the aim to implement and further develop the “minimum list” of insecticides for locust control elaborated during the previous technical workshop.
  - Assess data gaps and constraints for registration of *Metarhizium* for locust control, and where needed, provide technical assistance to national registration authorities, or plant quarantine authorities, for authorization of the import and use of this biopesticide.
  - Conduct large-scale, well-monitored, operational treatment(s) with *Metarhizium* which would be monitored by regional CCA team of experts.

- Mitigating impact of locust control operations on human health and the environment
  - Organize a workshop on risk mitigation and monitoring for Afghanistan, Turkmenistan & Uzbekistan.
  - Develop a generic training module and materials on risk reduction for locust control agents and private companies (after regional guidelines have been elaborated).
  - Produce generic information and extension materials.
Conduct an assessment of insecticide storage for locust control and of disposal/recycling practices of empty insecticide containers, with the aim to identify improvements. The activity would also include the establishment of the FAO Pesticide Stock Management System (PSMS) for locust control. The outcome of the assessment could be implemented through other FAO coordinated projects in the region focussing on obsolete pesticide disposal and sound pesticide management.

- Monitoring impact of locust control operations on human health and the environment
  - Develop and integral system for monitoring control quality, and health and environmental risks of locust control. This could include a pilot activity in country with dedicated locust control organization and another one in a country with decentralized locust control structure.
  - Establish or strengthen health monitoring of locust control operators, including the adoption of a “pesticide use passport”, training of medical staff, and follow-up assistance for cholinesterase monitoring (the latter only in countries using Organophosphate Pesticides).
  - Implement use of the FAO/CCA Spray Monitoring Form (to be linked with proposed GIS activities).
  - Compile and analyse existing information in CCA about residue levels of insecticides on crops and pastures after locust control. Conduct selected residue behaviour studies for insecticides most used in locust control in CCA.

71. In the discussion that ensued, the delegate from Russia indicated that he felt that the development of common environmental and health standards for locust control would not be appropriate since national legislation and requirements already exist. Furthermore, he noted that obtaining agreement on such common standards by all countries might prove to be very difficult. He also noted that much research had already been done on the use of *Metarhizium* for locust control in Uzbekistan. He suggested that funding the Laboratory for Locust Research, Uzbek Research Institute of Plant Protection would be very beneficial, making it a testing centre for different strains of *Metarhizium* in CCA. Finally, the delegate from Russia offered support, both technical and financial, in conducting insecticide residue trials with the aim to better understand the possible risks that could occur for consumers and livestock after locust control operations. His offer was welcomed by the workshop participants.

**Practical demonstrations on human health and environmental aspects**

72. With the aim to show some practical demonstrations on human health and environmental aspects, a visit was made to the Uzbek Research Institute for Plant Protection. The delegates visited the Laboratory of Locust Research and the various sections of his laboratory. They included the testing of insecticides (both chemical and biological) and the development of new biological control agents against locusts (e.g. with the entomopathogen *Beauveria*). The locust breeding facilities of the Laboratory were visited, which uses locally developed climate chambers and allows for breeding of Moroccan, Italian and Migratory Locusts. The taxonomic reference collection was also visited.

73. Furthermore, delegates were informed about the information system and forecasting model for pests in cotton, which had been developed by the Institute. The information system is used to coordinate pest management measures, such as the best time to introduce biological control agents or carry out other pest management measures. A visit was also made to the laboratory responsible for quality assurance of the national bio-factories producing various natural enemies of crop pests in Uzbekistan.
74. The International Consultant, Environmental Expert, gave a field demonstration of vegetation sampling for insecticide residue analysis. He explained the various steps in the sampling procedure, precautions to avoid contamination of the sample, its transport to the residue laboratory and quality assurance measures that should be taken. Furthermore, the Monitoring Form for Locust Operations, developed by FAO, was briefly introduced.

SESSION 4: FIVE-YEAR PROGRAMME: WORK PLAN FOR YEAR 3 (ITEM 11 OF THE AGENDA)

75. The Senior Officer presented the Work Plan for Year 3 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 work plans.

76. For Year 3 (1st October 2013 - 30 September 2014), the total available funding is of a bit more than USD 730,000, from the two regional projects, FTPP and USAID (37 per cent and 42 per cent of the budget for Year 3 respectively), the two national projects (TCP) for Kyrgyzstan (7 per cent) and Tajikistan (10 per cent) and the FAO's Regular Programme (RP) contribution to the Five-year Programme (4 per cent). It was reminded that a no-cost budget revision and an extension until the end of 2014 will be requested for the two national projects and that the available funding hereby presented depends on its approval. The availability of FAO RP funding will also have to be confirmed. With regard to the budget breakdown and after discussions held, Result 2 (National capacities strengthened) gets the highest share (which is mainly due to the activity 1.3 “Allow internships and post-graduate education” under FTPP), followed by Results 1 “Regional cooperation developed for better locust management”) and Result 3 “Locust issues and disasters better anticipated and mitigated.

77. Afterwards, the Work plan was reviewed in detail with delegates. It was confirmed that the first activity under Result 1, “Facilitate regional exchanges to manage locust situations” foresaw the recruitment of national consultants for the preparation of the monthly bulletins throughout Year 3 (Activity 1.1.1). Activity 1.1.2 “Allow direct experience exchange” included the costs related to the current Technical Workshop while activity 1.2 “Develop coordination” was up to the countries. It was suggested that, similarly to what was done in Year 2, the national annual Action Plan for survey and control operations 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). Regarding the identification of the best long-term solution for sustainable regional cooperation (Activity 1.3), the FAO Senior Officer explained that an International expert, with financial, legal and economics background, will be recruited to carry out a study and make recommendations for the next Technical Workshop.

78. The Senior Officer reminded that Activity 2.1 under Result 2 “Training of Trainers” still had no funding; then the FAO Locust Expert explained that background documentation (Activity 2.2) was made available: lists of publications on all three species of locusts and resumes for the most important ones. Work on the three locust monographs still continues. With regard to the Guidelines, it was reiterated that the activity had to be postponed but that the related budget allocated under the Programme was still available. Concerning the selection of students attending post-graduate education (Activity 2.3 b), it was stressed that an E-Committee had been established, chaired by the FAO Locust expert. Such Committee will draft the criteria for the identification of potential hosting institutes or universities. It was also clarified that students could be selected for a Master (two years) or a PhD (three years) and that the post-graduate education of a GIS specialist should be taken into consideration. The delegate from
Russia proposed to consider universities in CCA countries including Russia. In fact, this choice could be less expensive and avoid problems with visa and foreign languages. The delegates from Afghanistan, Kyrgyzstan and Tajikistan expressed their interest in being taken into consideration for this activity. The FAO Senior Officer invited the delegates to prioritize their needs, to reflect and to select the best candidate that may serve best the locust control in their respective countries. With regards to activity 3.3 “Develop monitoring and analyzing systems”, it was reminded that most of the budget was related to the GIS workshop which was organized just before the current one (6-8 November 2013), as well as the activities that will be carried out during Year 3 related to the subject.

79. Discussions also took place on those activities which are implemented for some countries only (depending on the years). Recommendations formulated during previous workshops were also taken into account, i.e. to continue organizing one-month internships for two locust/plant protection specialists at the same time, developing joint activities and benefitting from the presence of an international consultant when possible during cross-border or joint survey, allowing the three Caucasian countries and the Russian Federation to participate simultaneously in joint activities and in particular those related to GIS, etc. On this basis, the following was decided for Year 3:

- One-month internship on locust management (survey and control techniques in the respect of human health and the environment, campaign management, pesticides management, etc.) will be organized to the benefit of two countries in Morocco in February 2014 (Activity 2.3 a) for an Azeri and a Georgian Locust/Plant Protection specialist.

- A joint training session on locust survey (Activity 3.1.1) will be organized to the benefit of one country, which should be Turkmenistan. The delegate of Turkmenistan informed that upon his return, he will liaise with the Ministry of Agriculture in order to ensure the execution of this activity in the country as diplomatic channels are required. However, it was also mentioned that in case this activity could not take place in that country, it will be organized in Uzbekistan.

- Two joint/cross-border surveys (Activity 3.2) will be organized against the national TCPs and the USAID funding, one between Kyrgyzstan and Uzbekistan and one between Tajikistan, Afghanistan and Turkmenistan. As done in Year 2, one CBS could be organized immediately after the training session on locust survey (Activity 3.1.1), in presence of the International Consultant, Locust Expert (trainer).

- As far as Activity 3.3.1 “Extend use of Geographic Information System and remote sensing” is concerned, Georgia and Uzbekistan will be the pilot countries. A Programmer will be recruited to develop the database while the GIS International Expert will visit both countries to gather information and to carry out training in Georgia followed by field training, if possible together with specialists from the two other Caucasian countries and the Russian Federation.

- One training session on ULV spraying (Activity 4.1.1) will be organized in one country and delivered by a Locust Control Expert, and Kazakhstan was selected as beneficiary country in Year 3.

- As far as Activity 4.1.2 “Strengthen operational capacities (control equipment)” is concerned, following the request by the delegate from Kyrgyzstan to supply additional pesticide not provided during Year 2 against TCP/KYR/3305, the FAO International consultant, Operations and Logistics, suggested that the exact amount in USD and quantity will be provided after consultation with the supplier.

- For activity 4.2.1 “Develop ULV formulation and related techniques”, material to prepare a video tutorial on ULV spraying will be collected.
- Activity 4.2.2 “Propose alternatives to conventional pesticides (demonstration)” was postponed to Year 4; during Year 3 information will continue to be gathered on the subject.

- One joint training session (technical assistance) on mitigation and monitoring of impact on human health and the environment (Activity 5.1a) will be organized in Uzbekistan to the benefit of Afghanistan, Turkmenistan and Uzbekistan. This activity will be funded by USAID and FTTP Projects.

- One assessment of pesticide storage and empty container management related to locust control will be organized in Kyrgyzstan (Activity 5.1b) against the USAID funded project.

- Assistance to develop an integral system for monitoring of control quality and impact on human health and the environment (Activity 5.2a) will be provided to Tajikistan, which could be organized together with technical support from Russia. This activity will be funded against the TCP project after the approval of the budget revision and no-cost extension.

- Study on residue behavior on crops and pastures of widely used locust control insecticides (Activity 5.2c) will be conducted in Kyrgyzstan with technical support from Russia and funded against the FTTP Project. Compiling existing information on residue levels on crops and pastures (Activity 5.2d) will be carried out by Russia and Uzbekistan.

- The delegate from Azerbaijan suggested that extension materials on locust biology and management be produced with FAO logo for the benefit of all countries.

80. The Work plan for Year 3, reflecting the above decisions and indicating related budget, is provided hereafter.

81. The countries where control operations are fully or partially delegated to private companies were encouraged to organize Round tables with all entities involved; 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)

ANY OTHER BUSINESS

82. The delegate from Turkmenistan proposed to host the next annual meeting in Ashgabat. The Senior Officer thanked the delegate but reminded him that some issues might impede the organization of the event in the country, such as the release of visa for the participants and the communication problems with UNDP (there is no FAO Office in the country that may assist in the organization of the event). It was agreed that the proposal would have been discussed with the relevant authorities upon the delegate’s return in Turkmenistan and that if no confirmation had not been provided by the 31st December 2013, the workshop would have been organized in Tbilisi, Georgia.

ADOPTION OF THE REPORT

83. The Report is adopted unanimously with amendments made.

CLOSING REMARKS

84. Mr Isakov, the Chairperson, thanked all the delegates for the fruitful meeting.
Annex I - List of participants

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Annex II – Approved Agenda

Technical Workshop on Locusts in Caucasus and Central Asia (CCA)
Tashkent, Uzbekistan, 11-15 November 2013

Provisional agenda

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

Session 1: National locust campaigns in 2013 and forecasts for 2014
4. National locust campaigns in 2013 (countries’ presentations)
5. Locust forecast for 2014 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 2013: overview on implementation and funding situation
7. Regional cooperation in 2013
   - Regular information sharing
   - Cross-border/ joint surveys
     - Armenia – Azerbaijan – Georgia – Russia (countries’ presentations)
     - Afghanistan – Tajikistan – Uzbekistan (countries’ presentations)
     - Russia – Kazakhstan (countries’ presentations)
8. National capacities’ development in 2013
   - Situation update on locust survey and control equipment
   - Training on locust monitoring:
     - Kazakhstan & Russia (countries’ presentations)
   - Training on locust Ultra-Low Volume spraying:
     - Kyrgyzstan (country presentation)
     - Tajikistan (country presentation)
   - Training on mitigating and monitoring impact of locust control operations on human health and the environment:
     - Armenia – Azerbaijan – Georgia – Russia (countries’ presentations)
- Kazakhstan (country presentation)
- Kyrgyzstan (country presentation)
- Tajikistan (country presentation)

- One-month internship on locust management:
  - In Morocco: Russia & Tajikistan (countries’ presentations)
  - In Australia: Kyrgyzstan & Uzbekistan (countries presentations)

9. Developing monitoring and analyzing systems (remote sensing): results of the Locust Geographic Information System (GIS) Workshop and steps forward

10. Update on background documentation

11. Five-year Programme during Year 3 (2014): work plan

### Session 3: Locust control and risk reduction for human health and the environment

12. Importance of human health and environmental aspects in locust control
13. Mitigating impact of locust control operations
14. Monitoring impact of locust operations
15. Progress made on safety and environmental precautions (countries’ feedback)
16. Progress made on spraying technologies products and biopesticides (countries’ feedback)
17. Future activities in CCA to promote risk reduction for human health and the environment
18. Practical demonstrations on human health and environmental aspects (subject to availability of biological material)

### Closing

19. Any other business
20. Adoption of the report
21. Closure address
## Year 1

### Regional cooperation

- **Facilitate regional exchanges to manage locust situations**: USAID 144,000, TURKEY 115,000, RP 2013/14 20,000, TOTAL 180,000

### National capacities

- **Training-of-Trainers (ToT) programme - locust management**: USAID 45,000, TURKEY 141,500, RP 2013/14 20,000, TOTAL 186,500

### Locust issues and disasters better anticipated and mitigated

- **Enhance preparedness for risk reduction - contingency plans**: USAID 38,000, TOTAL 38,000

### Improved response mechanisms to locust outbreaks

- **Allow early reaction and appropriate control operations**: USAID 38,000, TOTAL 38,000

## Year 2

### Regional cooperation

- **Locust management**: USAID 65,000, TURKEY 22,000, RP 2013/14 20,000, TOTAL 107,000

### National capacities

- **Training-of-Trainers (ToT) programme - locust management**: USAID 22,000, TURKEY 22,000, RP 2013/14 38,000, TOTAL 82,000

### Locust issues and disasters better anticipated and mitigated

- **Enhance preparedness for risk reduction - contingency plans**: USAID 38,000, TOTAL 38,000

### Improved response mechanisms to locust outbreaks

- **Allow early reaction and appropriate control operations**: USAID 38,000, TOTAL 38,000

## Year 3

### Regional cooperation

- **Locust management**: USAID 19,000, TURKEY 5,500, RP 2013/14 5,500, TOTAL 30,000

### National capacities

- **Training-of-Trainers (ToT) programme - locust management**: USAID 0, TURKEY 0, RP 2013/14 0, TOTAL 0

### Locust issues and disasters better anticipated and mitigated

- **Enhance preparedness for risk reduction - contingency plans**: USAID 0, TOTAL 0

### Improved response mechanisms to locust outbreaks

- **Allow early reaction and appropriate control operations**: USAID 0, TOTAL 0
### Description - Activities envisaged for Year 3

<table>
<thead>
<tr>
<th>Beneficiaries countries</th>
<th>TOTAL BUDGET for Year 3</th>
<th>AVAILABLE FUNDS FOR YEAR 3 (as of November 2013)</th>
</tr>
</thead>
</table>

#### 4.3. Promote joint cross-border control operations

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>R5 - Impact on human health and the environment mitigated and monitored</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>5.1. Mitigate impact of locust control operations on human health and the environment</td>
<td>47,000</td>
<td>20,000</td>
<td>27,000</td>
<td>0</td>
<td>0</td>
<td>40,000</td>
</tr>
<tr>
<td>a) Technical assistance</td>
<td>none</td>
<td>7 countries</td>
<td>AFG-UZB-TUK</td>
<td>Kyr</td>
<td>28,000</td>
<td>5,000</td>
</tr>
<tr>
<td>b) Empty containers management</td>
<td>all but RUS</td>
<td>GEO-KAZ-KYR-TAJ</td>
<td>15,000</td>
<td>15,000</td>
<td>4,000</td>
<td>4,000</td>
</tr>
<tr>
<td>c) Equipment - PPE, Testmate</td>
<td>no funding</td>
<td>no funding</td>
<td>no funding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Extension material</td>
<td>no funding</td>
<td>no funding</td>
<td>no funding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2. Monitor impact of locust control operations on human health and the environment</td>
<td>none</td>
<td>none</td>
<td>TAJ</td>
<td>none</td>
<td>none</td>
<td>Kyr</td>
</tr>
<tr>
<td>a) Pilot activity to develop an integral system for monitoring of control quality and efficacy</td>
<td>none</td>
<td>none</td>
<td>TAJ</td>
<td>none</td>
<td>none</td>
<td>Kyr</td>
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<tr>
<td>b) Strengthening health monitoring of locust control staff</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>c) Residue analysis for insecticides most used in locust control in CCA</td>
<td>none</td>
<td>none</td>
<td>RUS/UZB</td>
<td>none</td>
<td>none</td>
<td>none</td>
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<tr>
<td>d) Compile and analyse existing information in CCA about residue levels on crops and pastures following locust control</td>
<td>none</td>
<td>none</td>
<td>RUS/UZB</td>
<td>none</td>
<td>none</td>
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<tr>
<td>R6 - Public information and awareness increased</td>
<td>5,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>6.1. Develop awareness and education among local populations</td>
<td>no funding</td>
<td>no funding</td>
<td>no funding</td>
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<td>0</td>
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<tr>
<td>6.2. Enhance visibility of locust issues and management and of related donor support</td>
<td>no funding</td>
<td>no funding</td>
<td>no funding</td>
<td>5,000</td>
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<td>6.2.1. Prepare and implement a communication plan</td>
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<td>no funding</td>
<td>no funding</td>
<td>5,000</td>
<td>0</td>
<td>0</td>
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<tr>
<td>6.2.2. Create and update a website on locusts in Caucasus and Central Asia</td>
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<td>all</td>
<td>all</td>
<td>5,000</td>
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<tr>
<td>Other</td>
<td>29,500</td>
<td>26,000</td>
<td>3,500</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Supervision, coordination, management of Five-year Programme</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>3,000</td>
<td>3,000</td>
<td>3,500</td>
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<td>Evaluation (year 5)</td>
<td>(year 5)</td>
<td>(year 5)</td>
<td>(year 5)</td>
<td></td>
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<tr>
<td>TSS</td>
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<td>all</td>
<td>all</td>
<td>26,500</td>
<td>23,000</td>
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<tr>
<td>Sub-total</td>
<td>674,000</td>
<td>266,000</td>
<td>237,000</td>
<td>33,000</td>
<td>46,500</td>
<td>71,500</td>
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<tr>
<td>Support cost</td>
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<td>22,880</td>
<td>30,810</td>
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<td>3,255</td>
<td>5,005</td>
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<tr>
<td>Total</td>
<td>735,950</td>
<td>308,880</td>
<td>267,810</td>
<td>33,000</td>
<td>49,755</td>
<td>76,505</td>
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</tbody>
</table>

* **Note:** The availability of FAO Regular Programme has to be confirmed.

* **Note:** The no-cost extension and budget revision of projects TCP/KYR/3305 and TCP/TAJ/3304 have to be approved yet.
## Annex IV –Table of expenditures estimate, Year 2 of the Five-Year Programme

<table>
<thead>
<tr>
<th>Res. &amp; Act</th>
<th>Description</th>
<th>TOTAL (USD) (up to 30 Sept. 2013)</th>
<th>USAID (USD)</th>
<th>Turkey (USD)</th>
<th>FAO RP (USD)</th>
<th>FAO - TCP KKY (USD)</th>
<th>FAO - TCP TAJ (USD)</th>
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<tr>
<td></td>
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<td>Budget Year 2</td>
<td>Exp. Year 2</td>
<td>Budget Year 2</td>
<td>Exp. Year 2</td>
<td>Budget Year 2</td>
<td>Exp. Year 2</td>
</tr>
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<td>R1 - Regional cooperation</td>
<td>115.660</td>
<td>113.509</td>
<td>91.000</td>
<td>90.801</td>
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<td>0</td>
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<tr>
<td>1.1. Facilitate regional exchanges to manage locust situations</td>
<td>115.660</td>
<td>113.509</td>
<td>91.000</td>
<td>90.801</td>
<td>0</td>
<td>0</td>
<td>11.000</td>
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<tr>
<td>1.1.1. Create/maintain regular regional information sharing of standardized data (Nat.)</td>
<td>37.660</td>
<td>34.849</td>
<td>19.000</td>
<td>18.189</td>
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<td>0</td>
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<td>1.1.2. Allow direct experience exchange (technical workshop)</td>
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<td>78.660</td>
<td>72.000</td>
<td>72.612</td>
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<td>1.2. Coordinate, including through transboundary policy</td>
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<td>1.3. Identify the best long-term solution for sustainable regional cooperation</td>
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<td>R2 - National capacities</td>
<td>225.500</td>
<td>65.807</td>
<td>43.000</td>
<td>40.455</td>
<td>141.500</td>
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<tr>
<td>2.1. Build up capacities through a vast Training-of-Trainers (ToT) programme</td>
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<td>0</td>
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<tr>
<td>2.2. Make available and accessible background documentation and literature</td>
<td>20.000</td>
<td>3.630</td>
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</tr>
<tr>
<td>a Bibliography &amp; Material to be made available (e-committee on documentation)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<td>Monographs</td>
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<tr>
<td>2.3. Allow internships and post-graduate formation</td>
<td>189.500</td>
<td>55.849</td>
<td>26.000</td>
<td>36.825</td>
<td>141.500</td>
<td>0</td>
<td>6.000</td>
</tr>
<tr>
<td>a One-month internships</td>
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<td>62.177</td>
<td>26.000</td>
<td>36.825</td>
<td>141.500</td>
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<td>6.000</td>
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<tr>
<td>b Fellowship: 2 or 3-year diploma for students</td>
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<tr>
<td>2.4. Promote and support applied research</td>
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<td>0</td>
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<tr>
<td>a Grants for applied research</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>b Entomological and chemical equipment for laboratories</td>
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<tr>
<td>R3 - Locust issues and disasters better anticipated and mitigated</td>
<td>152.657</td>
<td>71.287</td>
<td>82.000</td>
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<td>15.000</td>
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<tr>
<td>3.1. Improve survey operations for better field locust monitoring</td>
<td>85.657</td>
<td>44.188</td>
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<td>31.660</td>
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<td>3.1.1. Strengthen human capacities (techn. assistance on survey)</td>
<td>85.657</td>
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<td>29.014</td>
<td>15.000</td>
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<tr>
<td>3.1.2. Strengthen operational capacities (survey equipment)</td>
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<td>2.646</td>
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<tr>
<td>3.2. Organize regular cross-border surveys</td>
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<td>18.519</td>
<td>20.000</td>
<td>18.514</td>
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<tr>
<td>3.3. Develop monitoring and analyzing systems</td>
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<td>47.000</td>
<td>8.280</td>
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<td>3.3.1. Extend use of Geographical Information System and remote sensing</td>
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<tr>
<td>3.3.2. Improve forecasting</td>
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<td>3.4. Enhance preparation for risk reduction through harmonized national contingency plans</td>
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<tr>
<td>R4 - Improved response mechanisms to locust outbreaks</td>
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<td>4.1. Allow early reaction and appropriate control operations</td>
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<td>267.893</td>
<td>16.000</td>
<td>4.105</td>
<td>22.000</td>
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<td>-930</td>
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<td>4.1.3. Enhance public-private partnership</td>
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<tr>
<td>4.2. Promote less harmful pesticides and alternatives to conventional pesticides</td>
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<tr>
<td>4.2.1. Develop ULV formulations and related techniques</td>
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<td>4.2.2. Propose alternatives to conventional pesticides (demonstration)</td>
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<td>4.3. Promote joint cross-border control operations</td>
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</tr>
<tr>
<td>Description</td>
<td>TOTAL (USD) (up to 30 Sept. 2013)</td>
<td>USAID (USD)</td>
<td>Turkey (USD)</td>
<td>FAO RP (USD)</td>
<td>FAO - TCP Kyr (USD)</td>
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<tr>
<td>R5 - Impact on human health &amp; environment mitigated/monitored</td>
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<td>165,403</td>
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<tr>
<td>Equipment - PPE, Testmate</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>Extension material</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R5.2. Monitor impact of locust control operations on human health &amp; environment</td>
<td>46,000</td>
<td>78,055</td>
<td>22,000</td>
<td>45,932</td>
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<td>R6 - Public information and awareness increased</td>
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<td>0</td>
<td>5,000</td>
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<tr>
<td>6.1. Develop awareness and education among local populations</td>
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<tr>
<td>6.2. Enhance visibility of locust issues and management and of donor support</td>
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<td>0</td>
<td>5,000</td>
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<td>6.2.1. Prepare and implement a communication plan</td>
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<td>5,000</td>
<td>0</td>
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<tr>
<td>6.2.2. Create and update a website on locusts in Caucasus and Central Asia</td>
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<td>0</td>
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<td>5,000</td>
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<tr>
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<tr>
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<tr>
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<td>278,438</td>
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<td>Support cost</td>
<td>127,833</td>
<td>60,166</td>
<td>20,000</td>
<td>34,814</td>
<td>69,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>1,283,580</td>
<td>744,940</td>
<td>315,000</td>
<td>313,252</td>
<td>350,000</td>
<td>25,000</td>
<td>11,110</td>
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Annex V – National locust situation in 2013 and forecast for 2014

AFGANISTAN
The Moroccan Locust (DMA) is the main locust pest, particularly in the northern part of the country, in the provinces of Baghlan, Kunduz, Takhar and Badakhshan. The 2013 locust control campaign involved 70 permanent staff, 800 volunteers and 50 seasonal workers as well as 50 vehicles and 11 ULV vehicle-mounted sprayers (Ulvamast). In some areas, mechanical control methods were applied to control DMA hopper bands. A total of 310,000 ha were surveyed and 174,901 ha were treated against DMA. Pesticides used were mostly synthetic pyrethroids. DMA swarm flights from Tajikistan were recorded in 2013. It is expected that in 2014, about 135,000 ha will need to be treated against locusts, mostly DMA.

ARMENIA
In 2013, the locust situation remained generally calm. Rainy and cool weather slowed down locust development. Locust monitoring was conducted on 48,000 ha out of which 36,000 ha were infested by locusts. CIT density did not exceed the Economic Threshold (ET). Area treated this year was 1,000 ha, using a pyrethroid insecticide.

The locust situation is expected to remain calm in 2014. CIT is expected to infest 4,000 ha. An invasion of DMA swarms from adjacent countries of Georgia and Azerbaijan should not be ruled out entirely.

AZERBAIJAN
Hatching of DMA started on April 8, 2013. Hopper density reached 250 to 300 per square m. Out of 142,380 ha surveyed, 64,010 ha were found infested and control treatments were carried out on 57,900 ha against DMA. Pesticides used were several pyrethroids and chlorpyrifos. ULV technology was introduced thanks to FAO support; difficulties in its application included frequent changes in wind direction in the treated areas. More pesticides in ULV formulation are needed in the future. Other limitations in locust management consist in the lack of specialists and literature in local language.

It is expected that anti-locust treatments in 2014 will be needed on 60,000 ha.

GEORGIA
Locust situation worsened in 2013. Out of 125,000 ha surveyed, 40,000 ha were infested with densities exceeding the Economic Threshold (ET). Some DMA hotspots were found where they had never been registered before, at 200 km from the historical breeding areas and at higher than usual altitudes. The total area treated was 23,600 ha, which represents a 50 per cent increase compared to 2012. Ground treatments were applied to 16,800 ha and aerial treatments were done on 6,800 ha. About 90 per cent of all treatments were done using ULV technology. Pesticides sprayed included deltamethrin and alpha-cypermethrin for ground treatments and chlorpyrifos and diflubenzuron for aerial treatments.

The infested area in 2014 is expected to reach 45,000 ha out of which 25,000 ha are planned to be treated using the state funding. Particular attention will be given to infestations in eastern Georgia near the border with Azerbaijan.

KAZAZAKSTAN
The total area surveyed against locusts was 16,575,000 ha out of which 5,086,900 ha were infested including 3,702,100 ha with densities exceeding ET. Area infested by LMI and particularly by CIT significantly increased compared to 2012. In north-western regions of the country – Kostanai, Aktope and West Kazakhstan oblasts – there were CIT swarm flights from Russia. Chemical treatments were carried out on 112,600 ha against DMA, 353,000 ha
against LMI, and 3,212,000 ha against CIT, for a total of 3,678,300 ha treated, which represents over 50 per cent increase compared to 2012.

In 2014, according to the preliminary forecast, it is planned to treat 3,950,000 ha against locusts. Additionally, treatments against non-swarming grasshoppers will be implemented against local funding from infested oblasts.

KYRGYZSTAN
Hatching of CIT started on the 15th of April 2013, unusually early, and nine days earlier than in 2012. In the south, populations of CIT and DMA were mixed, which has not been recorded earlier. Locust infestations there are situated 500 to 1,500 m from crops, which created a serious threat to agriculture. Out of 84,336 ha surveyed, 57,353 ha were infested and 53,741 ha treated, which almost doubled the area treated in 2012. About 85 per cent of all treatments were done using ULV technology. About 12,000 ha of locust infestations were situated in areas with such an extremely difficult access that it was impossible to carry out ground control operations. Therefore an aircraft was hired to conduct the treatments but after having treated a small area it crashed and caused three fatalities, two pilots and one plant protection specialist. Consequently, a large portion of remote areas remained untreated. Pesticides used in treatments were alpha-cypermethrin, lambda-cyhalothrin and fipronil. Chlorpyrifos received through the FAO TCP project arrived in August when the treatments were over, so it will be use during the next campaign.

In 2014, the planned area of anti-locust treatments will be 73,000 ha, including 43,400 ha against DMA and 29,600 ha against CIT.

RUSSIAN FEDERATION
Because of unfavourable weather conditions weather in the spring, the areas infested by locusts decreased compared to 2012. Out of over 15 million ha surveyed, over 1.5 million ha were infested with densities exceeding ET. The total area treated was 1,346,820 ha, which is lower than in 2012. Some areas, for example, Orenburg oblast, experienced CIT outbreaks which moved across the border to Kazakhstan. Besides, in some locust affected regions such as Saratov and Astrakhan oblasts, and Republic of Kalmykia, emergency situations were declared.

In 2014, it is expected that locust infested areas subject to treatment will be 1,402,570 ha. Most locust outbreaks will be concentrated in the Volga Federal District.

TAJIKISTAN
Drought contributed to worsening the locust situation. The total surveyed area exceeded 400,000 ha. DMA infested areas increased, some of which being situated at high elevations in areas with very difficult access, particularly because of land mines in neutral zones. The total treated area was 105,754 ha which represented a 60 per cent increase compared to 2012. Eighty-five per cent of this area was treated against DMA and 15 per cent against CIT. More than half of treatments were implemented in Khatlon oblast. Most treatments were done by tractors. In 2014 it is planned to treat locust infestations on 130,000 ha.

TURKMENISTAN
In 2013, the most complicated situation with DMA occurred in the areas of Balkan oblast bordering Iran and in the foothills of Kopetdag Mountains. Some DMA infestations occurred in the areas bordering Uzbekistan and Afghanistan. Out of 580,000 ha surveyed the infested area was 486,000 ha, and 100 per cent of it was treated. Insecticides used belonged to the class of pyrethroids.

In 2014 it is planned to carry out locust control operations on 600,000 ha. The DMA outbreak is expected to continue and locust populations to increase.
UZBEKISTAN
In 2013 the locust situation was serious in the Qashkadarya and Surkhandarya oblasts in the south of the country, where DMA infested large areas. DMA infestations were also important in Samarkand and Jizzak oblasts. As in 2012, some DMA breeding areas were found at higher than usual altitudes of 1,800 to 2,500 m above sea level, which is higher than recorded in literature. LMI outbreak continued in the Aral Sea zone. Out of 685,000 ha surveyed 355,700 ha were infested, and the total areas of anti-locust treatments amounted to 347,700 ha, which represents a 23 per cent increase compared to 2012. The following equipment was used in the treatments: 128 tractor sprayers, 300 motorized and knapsack sprayers, two ANTONOV-2 aircraft, five ultra-light aircraft, 25 vehicle-mounted ULV sprayers and 52 water trucks. About half of all treatments were done using ULV technology. Insecticides used belonged to four chemical classes: pyrethroids, IGRs, neonicotinoids and phenyl-pyrazoles. In total 800 staff were involved in treatments.

In 2014 it is planned to control locusts on 350,000 ha.

Table N.3 Comparison of areas treated against locusts in CCA countries in 2012 and 2013

<table>
<thead>
<tr>
<th>Countries</th>
<th>Summary/Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>174,901 ha treated, 25,000 less than in 2012</td>
</tr>
<tr>
<td>Armenia</td>
<td>1,000 ha treated, half of what was treated in 2012</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>57,000 ha treated, which is 50% more than in 2012</td>
</tr>
<tr>
<td>Georgia</td>
<td>23,600 ha treated, almost twice the areas as in 2012</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>Approximately 3.7 million ha treated, 65% more than in 2012</td>
</tr>
<tr>
<td>Russia</td>
<td>1.34 million ha treated, 300,000 less than in 2012</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>105,754 ha treated, 60% more than in 2012</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>486,000 ha treated, about 50,000 more than in 2012</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>347,700 ha treated, 23% more than in 2012</td>
</tr>
</tbody>
</table>
Annex VI – Maps of treated areas in 2012 and 2013 and forecast for 2014 in CCA countries

Map of Central Asia and the Russian Federation
Map of Caucasus