

REPORT

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

Tbilisi, Georgia,
17-21 November 2014



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

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

Tbilisi, Georgia, 17-21 November 2014

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LIST OF ACRONYMS AND ABBREVIATIONS

AGP	Plant Production and Protection Division (FAO)
AGPMM	“Locusts and Other Transboundary Plant Pests and Diseases” (FAO)
ASDC	Automated System of Data Collection
CBS	Cross-border survey
CCA	Caucasus and Central Asia
CCAL-WARMS	Caucasus and Central Asia Locusts Warning and Management System
CIS	Commonwealth of Independent States
CIT	<i>Calliptamus italicus</i> (Linnaeus 1758), Italian Locust
DB	Database
DEM	Three-dimensional terrain model
DMA	<i>Doclostaurus maroccanus</i> (Thunberg 1815), Moroccan Locust
EIT	Economic Injury Threshold
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (FAO)
EPPO	European and Mediterranean Plant Protection Organization
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
IPA	Interparliamentary Assembly (CIS)
LMC	<i>Locusta migratoria capito</i> (Saussure 1884), Malagasy Migratory Locust
LMI	<i>Locusta migratoria</i> (Linnaeus 1758), Asian Migratory Locust
LW-CCA	Locust Watch in Caucasus and Central Asia (FAO)
PPE	Personal Protective Equipment
REU	Regional Office for Europe and Central Asia (FAO)
RP	Regular Programme
SEC	Subregional office for Central Asia (FAO)
SGR	<i>Schistocerca gregaria</i> (Forskål, 1775), Desert Locust (SGR)
TCP	Technical Cooperation Programme (FAO)
ToT	Training-of-Trainers
ULV	Ultra-Low Volume
UIS	Unified Information System on Biological Hazards (IPA - CIS)
USAID	United States Agency for International Development

INTRODUCTION

1. The Technical Workshop on Locusts in Caucasus and Central Asia took place in Tbilisi, Georgia, on 17-21 November 2014. It was organized by the Food and Agriculture Organization of the United Nations (FAO) in the framework of the “Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”.
2. The following eight countries participated in the Technical Workshop: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, 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. Tengiz Kalandadze, Deputy Head of the National Food Agency (NFA), Ministry of Agriculture, Georgia. He welcomed all the attendees and noted that FAO’s assistance to Georgia on locust issues started in 1998 with an Italian locust [*Calliptamus italicus* (CIT)] control project in western Georgia. In 2011, the FAO regional workshop for ten Caucasian and Central Asian countries which took place in Tbilisi allowed to launch the Programme on locust management in CCA. FAO was very instrumental in helping to survey border areas with neighbouring countries. The NFA Deputy Head emphasized that the national capacity in plant protection has been strengthened. He indicated that in 2014 the total area of pest control treatments was twice as planned.
4. Ms. Iamze Mirazanashvili, from the FAO Office in Georgia, welcomed all participants and thanked the Georgian Government for hosting the workshop. She reminded that the FAO mandate in Georgia was to support national efforts to promote food security and sustainable development and that these priorities reflected the objectives and priorities of the Government set in the agricultural development strategy papers. Concerning food security, she indicated that the FAO Office was implementing or following a number of programmes, including the Programme to improve national and regional locust management in CCA, an important one. In that framework, Georgia benefitted from several trainings, including the latest one in Kakheti in 2014, as well as from equipment. She pointed out that regional approach advocated by FAO was particularly important against such mobile migrating pests as locusts.
5. Ms Annie Monard, Senior Officer, Team Leader, “Locusts and Other Transboundary Plant Pests and Diseases” (AGPMM), welcomed the participants to the sixth annual meeting on locusts in Caucasus and Central Asia. She expressed her regrets that two countries –Afghanistan and Turkmenistan– were not able to participate in the meeting (due to visa issue and last minute commitments). She stressed that locusts being a transboundary threat to food security, it was particularly important to develop a preventive strategy in controlling them. Since its inception in 2011 the Programme on locusts in CCA has contributed to strengthening national and regional management. This workshop would offer opportunity to report on achievements during Year 3 of its implementation, agree on the Workplan for Year 4, discuss a number of technical issues and review the Study on possible mechanisms for long-term regional cooperation on locusts in Caucasus and Central Asia (CCA).

OFFICERS OF THE SESSION

6. The following officers were elected:

- Chairperson: Mr Bezhan Rekhviashvili (Georgia)
- Vice-Chairperson: Mr Vladimir Pak (Kyrgyzstan)
- Drafting Committee: Mr Damed Sultanov (Azerbaijan)
- Mr Usarbek Mustafakulov (Tajikistan)
- Ms Annie Monard, Senior Officer, FAO (AGPMM)
- Ms Marion Chiris, Locust Programme Officer (AGPMM)
- Mr Alexandre Latchininsky, Locust Expert, FAO International Consultant

AGENDA

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

SESSION 1: NATIONAL LOCUST CAMPAIGNS IN 2014 AND FORECAST FOR 2015

National locust campaigns in 2014 (Item 4 of the Agenda)

8. The delegate of Kazakhstan reported that control of pests which fall under the category of “especially dangerous” was funded entirely by the central government. He presented a comprehensive overview on locust management in 2014, including human permanent and temporary resources, vehicles, etc. Pest monitoring is done using two types of Global Positioning System (GPS) technology: GPS trackers and GPS receivers. The technology allows for accurate and timely registration of points taken in the field. Locust control is applied to pest densities over the Economic Injury Threshold (EIT) which ranges from 5 to more insects per square meter but may vary because of vegetation, elevation, pest species and other conditions. In general, the 2014 year witnessed a continuing decline in locust infestations in Kazakhstan. The question of EIT initiated a discussion among the attendees who indicated that in the case of relatively dense rangeland vegetation (e.g. in USA) EIT could be as high as 15 to 20 individuals per square meter while in the desert and semi-desert conditions (e.g. in Uzbekistan) it could be 7 to 9 insects per square meter (e.g. in Uzbekistan). The delegate of Kazakhstan also indicated that cooperation agreement existed with Russia, Uzbekistan and China and that a similar agreement would be sign with Kyrgyzstan although joint survey were sometimes already carried out with this country.
9. The delegate of Kyrgyzstan indicated that the total surveyed, infested and treated areas in 2014 were slightly higher than in 2013. One contributing factor was high winter mortality of eggs from parasitoids and predators, which reached 18% on average. The locust campaign was complicated by CIT hatching in the same areas

than the Moroccan Locust [*Dociostaurus maroccanus* (DMA)]. Having an extended nymphal period, CIT threatens crops later in the season, when all DMA treatments were already completed. DMA control was particularly difficult at high altitudes where ground sprayers could not be used. As a result of plane crash in 2013, additional restrictions were imposed on aerial treatments and, consequently, some difficult to access areas of Jalal-Abad region remained untreated. The delegate emphasized the important role of vehicle-based ultra-low volume (ULV) sprayers which are particularly instrumental in mountainous areas.

10. In Tajikistan, areas of locust infestation in 2014 were lower than in 2013. The most recent peak was in 2011. In general, locust outbreaks became more frequent in the 21st century than before. In some mountainous areas katydids (Tettigoniidae) produced mass breeding. Locust control in the Republic is thoroughly planned and well organized and implemented. Personnel is regularly trained on all issues related to anti-locust operations. In some cases locust control staff faces security issues as locusts may lay eggs in mined areas in border regions with Uzbekistan with no access for ground control teams. The delegate of Uzbekistan inquired about the use of chlorpyrifos in Tajikistan, the product being banned in many countries including Uzbekistan. Delegate of Tajikistan explained that this pesticide was supplied by FAO in the framework of the Technical Cooperation Programme (TCP) project and that it was registered for locust control in Tajikistan. The delegate of Tajikistan reported that control operations in 2011-2014 applied to 248 000 hectares(ha) infested by locusts allowed to protect crops with a total saving of USD 100 million in protected agricultural crops. Delegates of several countries commented on this assessment by Tajik colleagues, who provided explanation on this figure (the locust treated areas impeding locust to reach agricultural lands).
11. The delegate of Uzbekistan reported that in the Republic, the area of potential locust breeding amounts to 1 million ha. In 2014, locust-infested areas were slightly lower than in 2013. About half of all treatments were done using ULV vehicle-mounted sprayers which showed high efficacy. Bilateral cooperation with Kazakhstan and Kyrgyzstan on border surveys was particularly valuable.
12. The delegate of Armenia said that in 2014 the locust situation in the country was calm. The main locust pest –CIT– remained at low densities of four to six individuals per square meter in most areas, only sometimes reaching 11 to 15 individuals per square meter
13. In Azerbaijan, locust infestations in 2014 remained approximately at the level of 2013. In addition to DMA, there were some areas with high densities of CIT. Thanks to the FAO Programme on locusts in CCA, the Republic had received a ULV sprayer AU8115 which had been mounted on a pick-up truck. The technology proved highly efficient and Azerbaijan was very interested in its further promotion for locust control in the country.
14. The delegate of Georgia emphasized that in the past three years the locust situation in the country significantly worsened. CIT was the dominant locust species. In some areas its egg-pod densities reached 800 per square meter. Anti-locust treatments were implemented with ground sprayers and light aircraft. ULV technology is increasingly used, both aerially and using vehicle-mounted ULV sprayers. Several delegates expressed interest in light aircraft use for locust control in Georgia and asked technical questions which were answered in detail by the Georgian delegate.
15. The delegate of Russia reported that the total areas of locust infestation and control in 2014 were lower than in 2013. Currently, there are 61 pesticide formulations registered

for locust control in Russia. Information on pesticide use and efficacy in the past five years was forwarded to Pesticide Referee Group (PRG) upon FAO request. Geospatial technologies are increasingly used in locust monitoring. Bilateral collaboration with Kazakhstan was instrumental for both countries; an effort was made to develop unified approaches to population assessments; a total of 288 620 ha were jointly surveyed in 2014; exchange of detailed information is done on a regular basis.

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

Country	Area (ha) – 2014		
	Surveyed	Infested	Treated
Armenia	56 000	37 000	1 000
Azerbaijan	362 000	145 000	53 556
Georgia	120 000	60 000	49 900
Kazakhstan	17 603 640	6 603 500	4 700 200 (plus 501 000 grasshoppers)
Kyrgyzstan	86 562	61 521	61 046
Russian Federation*	14 445 980	3 223 460 incl. above ET 1 049 680	1 010 140
Tajikistan	430 000 planned 301 050 done so far	87 805	82 633
Uzbekistan	700 000	354 700	345 100

Locust forecast for 2015 and preparation of the next campaign (Item 5)

16. The countries provided the following locust forecast in terms of the areas subject to treatment in 2015 (in ha):

Table 2. Forecasted treated areas for 2015 in the eight CCA countries participating in the workshop

Country	Area (ha) - subject to treatment
Armenia	4 000 – 5 000
Azerbaijan	55 000 – 65 000
Georgia	100 000 (centralized budget available for controlling 50 000 ha)
Kazakhstan	3 871 400
Kyrgyzstan	65 000
Russian Federation	Surveys in progress
Tajikistan	110 000 – 120 000
Uzbekistan	414 100

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

Five-year Programme in 2014: overview on implementation and funding situation (Item 6)

17. The Locust Programme Officer, AGPMM, presented the implementation during Year 3 (from 1st October 2013 to 30th September 2014) of the “Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”. During the year, the Programme allowed developing further regional cooperation and strengthening more national capacities on locust management through the organization of joint or cross-border surveys and trainings as well as internships abroad to the benefit of locust specialists from CCA countries. Two specific topics were also particularly developed: the locust Geographic Information System (GIS) in CCA and the reduction of risks associated with locust control on human health and the environment. More specifically, the main achievements for Year 4 are the following:

- **Result 1 – Regional cooperation developed:** National and regional monthly bulletins on locust situations and management issued from March to September 2014; Technical Workshop on Locusts in CCA held in Uzbekistan in November 2013; Study on possible mechanisms for long-term regional cooperation in CCA prepared; Office equipment delivered to Tajikistan.
- **Result 2 – National capacities strengthened:** Preparation of the monographs on the three locust pests in CCA on-going; One-month internship on locust management organized for two locust experts from Azerbaijan and Georgia at the National Anti-Locust Control Center of Morocco in March 2014; Preparatory work (calls for interest for students and hosting institutions) carried out by the ad hoc E-Committee and FAO in view of the organization of three post-graduate fellowships from academic year 2015/2016.
- **Result 3 – Locust issues better anticipated:** Training on locust monitoring and information management delivered in Uzbekistan; delivery of 6 GPS at this occasion; Technical assistance delivered and field survey conducted to assess the Asian Migratory Locust [*Locusta migratoria* (LMI)] situation in the Aral Sea area in August 2014; Two joint or cross-border surveys organized between Kyrgyzstan and Uzbekistan in April/May 2014 and between Afghanistan and Tajikistan in July 2014.

Under Result 3, development of the Locust GIS in CCA: regional Locust GIS Workshop in November 2013; selection of two pilot countries for testing the newly created Automated System for Data Collection (ASDC), Georgia and Uzbekistan; Training on ASDC use in Georgia in April 2014 (Armenia, Azerbaijan, Georgia and the Russian Federation) and in Uzbekistan in May 2014; Provision of two tablets each to Georgia and Uzbekistan and of one to Armenia, Azerbaijan and Russia for ASDC testing; Testing of the ASDC by the two pilot countries during the 2014 locust campaign; Visit of the GIS Expert in Kazakhstan and Russia in April and May 2014 to collect relevant information; Preparation of the technical specifications for the database of the regional GIS; Participation of the Locust Expert, FAO International Consultant, in the meeting of the Working Group on Ecological Safety of the Inter-Parliamentary Assembly (IPA) of the Commonwealth of Independent States (CIS), held in August 2014 in St. Petersburg, Russia, on unified information system on biohazards including locusts.

- **Result 4 – Response mechanisms to locust outbreaks improved:** Training session on locust spraying using ULV technology provided in May 2014 in Kazakhstan; Conventional pesticides in ULV formulation (2 400 liters) delivered to Kyrgyzstan in March 2014 under the national FAO TCP project.
 - **Result 5 – Impact on human health and the environment mitigated:** Pilot activity to develop an integral system for environmental and health monitoring of locust control carried out in June 2014 in Tajikistan; at this occasion, on-the-job training delivered to ten locust experts and one doctor in Khatlon Province, Tajikistan; Study on the "Fate of insecticides used for locust control on pasture in Kyrgyzstan" under preparation by two FAO Consultants, an International Expert, Toxicologist and a National Expert, Locust Expert [field mission carried out in July 2014 in Issyk-Ata and arrangements taken for the laboratory analysis of collected material, both in Kyrgyzstan and the Russian Federation (as a support of the latter country to the Programme)]; Environmental monitoring and sampling material supplied to Kyrgyzstan and Tajikistan as well as analytical standards for chemical analysis in Kyrgyzstan; Mission of a Pesticides Risk Reduction Expert in Kyrgyzstan in July 2014 to develop a national pesticide container management plan¹.
 - **Result 6 – Public information and awareness increased:** FAO Website "Locust Watch in CCA" regularly updated with monthly bulletins; Review process of the website started (new layout) to provide updated and comprehensive information and serve as a showcase, including for resource mobilization; Regional project covering Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan against the FAO-Turkey Partnership Programme (FTPP) effectively started in March 2014; On-going discussions with Japan for a three-year project covering Afghanistan, Kyrgyzstan, Tajikistan.
18. It was reminded that the Programme is supervised, managed, coordinated and implemented by the FAO "Locusts and Other Transboundary Plant Pests and Diseases" Team (AGPMM), in collaboration and with very good support of the Regional Office for Europe and Central Asia (REU), the Sub-regional Office for Central Asia (SEC) and the FAO Representations or offices in the concerned countries.
19. The Locust Programme Officer, AGPMM, highlighted various positive aspects, in particular the very good cooperation between the various stakeholders. Indeed, national capacities continued to be improved thanks to the excellent cooperation with the National Anti-Locust Control Center of Morocco: the internships on locust management organized in the Center provide with an outstanding occasion to get an overview on the functioning of a large and efficient national center outside CCA, which applies the preventive control strategy as a single country and as part of a region made of ten countries and uses modern technologies for locust control with due attention paid to human health and environment aspects. Strengthening countries' capacities was also facilitated by the very good cooperation with Micron Group, which offered high-level expertise for the delivery of a training session on ULV control techniques in Kazakhstan. Under Result 5, in the framework of the preparation of the "Study on the "Fate of insecticides used for locust control on pasture in Kyrgyzstan", the Russian Federation graciously offered to carry out confirmation laboratory analysis of the material collected in July 2014 in Kyrgyzstan; this was an excellent example of interregional cooperation within countries belonging to the Programme. Eventually, as

¹ The Delegate of Kyrgyzstan indicated that it was planned to develop also a legal document (normative act) on pesticide container management.

far as resource mobilization is concerned, Tajikistan had the outstanding initiative to submit a request for a regional project to Japan, to its own benefit and to the benefit of two other CCA countries, Afghanistan and Kyrgyzstan; discussions are in progress and this is also a very good example of common resource mobilization by a country and FAO, working hand in hand to the benefit of the region.

20. Two activities were postponed to 2015: the preparation of the Practical Guidelines for the management of the three locust pests in CCA and the video tutorial on ULV spraying, due to unavailability of experts and priority given to other activities. In addition, the training sessions on mitigating and monitoring the impact of locust control operations on human health and the environment, which was supposed to be held in Uzbekistan to the benefit of Afghanistan, Uzbekistan and Turkmenistan was cancelled due to the unavailability of Uzbekistan to host the training in August 2014.
21. The constraints and difficulties met during Year 3 were also reviewed. They included mainly the lack of signature of the Project Document and Project Agreement of project GCP/SEC/004/TUR, funded against the FTTP. As of November 2014, the situation was as follows: Kyrgyzstan and Tajikistan have signed both documents, Azerbaijan and Kazakhstan have signed the Project document only and Turkmenistan as well as Uzbekistan have signed none so far. The authorization to start with project implementation was granted in March 2014 but with a major constraint: only the countries having signed both documents can benefit from project activities, i.e. Kyrgyzstan and Tajikistan. An exception is made for the fellowships: nationals from the four countries having signed at least one of the two documents are eligible for this activity. As a result of the lack of signature, the start of the fellowship/post-graduate studies for three students was delayed (it will start with academic year 2015/2016) and some the planned activities for Year 3 against this project were funded against another source. The other constraint mentioned was the very limited participation of Turkmenistan in the activities, beyond the usual participation in the annual workshops and despite clear manifestations of interest during those meetings.
22. Two main recommendations were made:
 - a) The concerned countries were urged to sign both project documents and project agreements, which are required in order to allow the implementation of the FTTP project.
 - b) Countries and FAO should pursue joint efforts to mobilize additional funds for the Programme. Such resource mobilization should concern the still unfunded activities of the Programme. In addition, the request made by countries during the Locust GIS Workshop (November 2013, Uzbekistan), to extend the Programme and mobilize additional resources to install the GIS in all countries, was well noted and supported.
23. Afterwards, the Locust Programme Officer, AGPMM, presented the funding situation for Year 3. She indicated that the total budget of the Five-year Programme was of USD 3.2 million out of the total estimated budget of USD 7.8 million. There was no development regarding the pledge made by the Russian Federation in 2010 despite some exchanges on the subject. It was indicated that a three-year project to the benefit of Afghanistan, Kyrgyzstan and Tajikistan was currently under discussion with Japan. Overall, it was also reminded that CCA countries could act not only as beneficiary but also as donor and that efforts of all national locust experts were required to advocate and mobilize resources in their own country, both to their national authorities and with donors.

24. As of 30th September 2014, estimated expenditures for Year 3 amounted to USD 533 973, representing 73% of the annual budget of USD 735 950. There were five funding sources for the year: the project funded by the United States Agency for International Development - USAID (GPC/INT/134/USA), the project funded by the FAO-Turkish Partnership Programme – FTTP (GCP/SEC/004/TUR), two FAO national TCP projects for Kyrgyzstan (TCP/KYR/3305) and Tajikistan (TCP/TAJ/3401) and a contribution of the FAO Regular Programme (RP). It was indicated that a no-cost extension was granted for the national TCP project for Tajikistan (which had started in July 2012), up to November 2014. However, the proposal regarding the extension of the national TCP project for Kyrgyzstan was not accepted because this project, which had started earlier (February 2012) needed to be closed in December 2013, i.e. by the end of the FAO 2012-2013 biennium.
25. Details on each funding source were given. The level of expenditures of the FTTP project was of USD 32 421, representing 12% only of the budget of USD 267 810 during Year 3 of the Programme. This was due to the lack of signature and resulting cancellation of activities planned in Turkmenistan and Uzbekistan as well as the delay in the start of the fellowship.
26. The USAID project (GPC/INT/134/USA) had an excess of expenditures (122%), with expenditures amounting USD 376 673 and annual budget of USD 308 880. It was mainly due to the fact that it covered two training sessions (to the benefit of Kazakhstan on locust ground ULV spraying and of Uzbekistan on locust monitoring and information management), which were initially planned under the FTTP project. In addition, following a specific request from the Uzbek Ministry of Agriculture and Water Resources, the USAID project allowed an unscheduled field survey in the Aral Sea area, in western Uzbekistan. On the other side, the preparation of the practical guidelines did not start during Year 3 and the funding of the preparation of the Pesticide empty container management plan for Kyrgyzstan was moved from the USAID project to the FTTP project. Last, the study on the possible mechanisms for long-term regional cooperation on locusts in CCA was prepared within FAO (AGPMM and Legal Office), meaning that no cost were entailed at this stage for this activity.
27. The level of expenditures against the national TCP/KYR/3305 project for Kyrgyzstan was of 117% for Year 3 of the Five-year Programme. All the activities that could be carried out by project ending date were implemented and the technical support services (TSS) were also charged before project closure. Overall, total expenditures of the project, from February 2012 to December 2013, represented a bit less than 90% of the total budget of USD 367 000.
28. Expenditures of the national project TCP/TAJ/3401 for Tajikistan was of USD 60 849, i.e. 80% of the annual budget for Year 3 of USD 76 505. All activities were implemented during the year, except the video tutorial on ULV spraying. The level of expenditures of the whole project, which is coming to an end in November 2014, is of about 70% (due to Insect Growth Regulators which could not be supplied during Year 2 of the Programme).
29. Last, the level of expenditures against the FAO Regular Programme was of 16% for Year 3. It was noted that the E-Committee on fellowship had contributed to the preparation of the calls for interest for students and for hosting institutions on a voluntary basis and that the review of the website was made internally in FAO and did not involve costs.
30. The delegates thanked FAO for the overview provided. During the discussions, the delegate of Uzbekistan said that more detailed information had been requested to FAO

in order to allow the signature of the FPPP project by the authorities of his country. It was replied that such information, i.e. detailed expenditures for Uzbekistan and for the whole Programme, were provided in August 2014 in a letter of the Director-General of the FAO to the Minister for Agriculture and Water Resources, Uzbekistan. The supply of chlorpyrifos by FAO to Kyrgyzstan and Tajikistan was also raised by the delegate of Uzbekistan, in view of the potential risks for human health and the environment: it was replied by delegates and FAO experts that such delivery aimed at responding to countries' requests and needs and that it was in line with the national list of registered pesticides of the concerned countries and the recommendations made by the Pesticide Referee Group (PRG) concerning the dose rate to be applied for active ingredients whose efficiency is established according to the spraying technique and knowing the potential impact on human health and the environment. The FAO Senior Officer, AGPMM, also indicated that the next meeting of the PRG, to take place in December 2014, would address this issue and that an efficient alternative needed also to be found before banning any currently used pesticide. It was also recalled that in the framework of the Programme, an E-Committee on Pesticides had made recommendations in 2012 on the minimum list of pesticides that should be registered at the national level; this minimum list does not include any organophosphate insecticides.

Regional cooperation in 2014 (Item 7)

Regular Information Sharing (Item 7a)

31. The Senior Officer, AGPMM, 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. In reply to her question concerning the use of the standard Locust Survey and Spray Monitoring Forms (agreed upon during the Regional Consultation held in 2009) at national level, all countries confirmed that they were using forms but not necessarily the above-mentioned ones. The Senior Officer highlighted again the need to gather standardized in particular in the context of the development of national and regional GIS, which will have to be adequately fed.
32. During the 2014 campaign, from 31 March to 7 November, AGPMM received 69 national monthly bulletins. This number increased again as compared to the previous years (62 documents including 60 bulletins in 2013, 55 documents including 41 bulletins in 2012, 42 documents including 31 bulletins in 2011, and 51 documents including 41 bulletins in 2010). One country only (Turkmenistan) did not send any bulletin for the third consecutive year. The Senior Officer, AGPMM, highlighted a number of other positive features in 2014, as follows:
 - Nine countries out of ten sent the national bulletin every month from April to October.
 - The majority of countries sent the monthly bulletin in time, i.e. before the 5th of the successive month.
 - The template of the national monthly bulletin was almost systematically used.
 - Data analysis was generally provided (no more table of figures were provided without synthesis or explanation).

33. However, she indicated that there was still room for improvement, as follows:
- Information as complete as possible should be provided and, to that end, all parts and sections of the monthly bulletin template should be duly filled in.
 - If no locust was reported or no control operations were carried out, the relevant parts of the bulletin have to be filled in and the bulletin sent in any case.
 - A summary has to be provided at the beginning of the national monthly bulletin.
 - The forecast concerns the expected development of the locust species, not the activities planned for the next month; such information can be provided in the section “Announcements”.
 - The reference period should be clearly indicated for the information provided. This applies particularly to the figures of the treated areas (it is indeed often difficult to know how many hectares were treated during the considered month).
 - Information should be consistent from one month to the next one. The easiest way for preparing the national bulletin is to use the one of the previous month as a basis to ensure continuity in information provided.
 - As far as possible, the concerned locust species should be indicated together with the figures of the surveyed, infested and treated areas.
 - When available, a map should be sent together with the bulletins; it is not yet the case for all countries.
34. To the question concerning the preparation of the national monthly bulletins, the delegates replied that they had not faced any particular issue. Two of them mentioned that delays in sending the national bulletins occurred when they were in the field. The Chairperson indicated that the GIS system, which was tested in Georgia during the 2014 locust campaign, had simplified the process: it was now possible and well appreciated to directly visualize the locust field situation.
35. As far as the regional monthly bulletin was concerned, the delegates expressed their satisfaction regarding its content and added that it was most useful to receive information on the locust situation in the neighbouring countries. It was requested and agreed that from the 2015 locust campaign, the regional bulletins would be sent by e-mail to the FAO National Consultants for the preparation of the national monthly bulletins, who would then ensure their dispatch at the national levels.

Website “Locust Watch in CCA” (Item 7b)

36. Concerning the website “Locust Watch in Caucasus and Central Asia” (LW-CCA)”, the Locust Programme Officer, AGPMM, indicated that it had been developed in 2010 and currently served mainly as a platform for publishing the bilingual regional monthly bulletins during the locust season. However, the website had become outdated and difficulties were sometimes encountered with the server. A review process of the website had therefore started and was ongoing with the double objective to provide updated and comprehensive information on the one hand and serve as a showcase for decision-makers and for resource mobilization by countries and FAO on the other hand. It will have a new layout, which will be in line with the updated FAO guidelines for official websites. The new website is expected to be available in early 2015. All FAO consultants’ reports will be uploaded. During the related discussions, it was agreed that countries would send useable pictures for the website and that a link to LW-CCA would be inserted in the national websites of the ministries of agriculture.

Cross-border surveys: Afghanistan/Tajikistan and Kyrgyzstan/Uzbekistan (Item 7c)

37. A joint survey was carried out between Afghanistan and Tajikistan on 24-26 June 2014. It was carried out in Tajikistan, near the border with Afghanistan, in the Khatlon province. It involved six locust experts in total, three from each country. Such joint activity was deemed very useful.
38. A cross-border survey (CBS) between Uzbekistan and Kyrgyzstan was presented by the delegates of the relevant countries. It took place on April 26 – May 4, 2014 and concerned 35 000 ha in three regions of Uzbekistan (Andizhan, Fergana and Namangan oblasts) and three regions of Kyrgyzstan (Batken, Jalal-Abad and Osh oblasts), all within the Fergana Valley. It was attended by five Locust Experts from Uzbekistan and six from Kyrgyzstan. The area was known to have DMA permanent breeding areas in the past; however, some of them ceased to exist because of intensive agricultural development, particularly in Uzbekistan. The survey allowed identifying areas close to the border between the countries with high risk of DMA infestation. Both countries benefitted from this activity which contributed to free information exchange between the locust control services of the two countries. The delegate from Uzbekistan emphasized that the CBS is one of the most valuable activities of the Programme on locusts in CCA, and he thanked FAO for supporting this activity. The delegate from Kyrgyzstan proposed that in the future, such CBS should also include Tajikistan in the area where the borders of the three republics meet and where DMA is known to produce infestations.
39. The delegate of Uzbekistan explained that there is a very dangerous situation with DMA at the border between Uzbekistan and Tajikistan along the River Kafirnigan valley. The current visa regimen between the countries makes it extremely difficult to survey and treat the near-border areas. In the past years, numerous back and forth movements of DMA swarms were observed between Tajikistan and Uzbekistan, resulting in damages to agricultural crops. Delegate from Tajikistan indicated that swarm flights of DMA are governed by relief and meteorology and can have various directions. The delegate of Uzbekistan stressed the high importance of this transborder DMA issue between Uzbekistan and Tajikistan and requested FAO to send an independent expert with knowledge of the region and locust bio-ecology to lead a CBS between the two countries in the coming year. In addition to this CBS, it was also proposed that another CBS should involve three countries together to properly cover the area in the Fergana Valley, i.e. three oblasts in Kyrgyzstan (Batken), Tajikistan (Sughd) and Uzbekistan (Fergana).

National capacities' development in 2014 (Item 8)

Training on locust monitoring and field survey in Aral Sea area: Uzbekistan (Item 8a)

40. The delegate of Uzbekistan presented the training session on locust monitoring and information management which took place from 11 to 15 August 2014 in Nukus, Autonomous Republic of Karakalpakstan, Uzbekistan. Fifteen specialists from Uzbek locust control and plant protection services benefitted from the training which was delivered by the Locust Expert, FAO International Consultant. The training included three days of theoretical training and two days of practical exercises. For this event, FAO delivered six GPS units. Practical training on the use of GPS was deemed the most valuable part of the training by all participants. The training allowed strengthening the national capacity in locust survey and information management. Special attention

was given to filling out the FAO Survey and Spray Monitoring forms as well as to preparing the national locust bulletins.

41. After the training, the FAO International and National Locust Experts, together with the specialists from the Karakalpakstan locust control service, conducted a week-long survey of the Asian Migratory Locust situation in the Aral Sea zone. This activity was done upon the request from Uzbek Ministry of Agriculture and Water Resources. The survey covered 180 000 ha in the delta of the Amudarya River. Adult LMI of *transiens* phase laying eggs were found on approximately 1 000 ha. Recommendations how to handle the situation were given to the Karakalpakstan locust control service. Uzbekistan requested FAO to provide the full report in Russian.
42. The Locust Expert, FAO International Consultant, complemented the presentation by the delegate of Uzbekistan with photos and maps. He answered questions of delegate from Kyrgyzstan regarding the number of generations of LMI. Although typically this species is univoltine in CCA, there are documented cases of second generation which occurred in late summer. With global warming, the possibility of the second LMI generation in CCA cannot be discarded. Evidently, this presents serious problems for locust control services in the affected areas.

Training on locust Ultra-Low-Volume spraying: Kazakhstan (Item 8a)

43. The delegate of Kazakhstan thanked both FAO and the trainer, Mr Timothy Sander, Technical Manager, Micron Sprayers Limited, for the very interesting workshop, which had been organized in Schuchinsk from 19 to 23 May 2014 to the benefit of 12 specialists of the Committee of State Inspection in Agro-industrial Complex, Ministry of Agriculture at central, province and district levels.
44. Mr Sander indicated that the workshop was very successful. He mentioned that ULV was used for many years in Kazakhstan and that it had been the opportunity to reinforce the knowledge but also to introduce new equipment as well as maintenance, one of the key issues. He underlined that for any future training, maintenance will be considered as important as initial calibration.

One-month internship on locust management in Morocco: Azerbaijan and Georgia (Item 8b)

45. The delegate of Georgia, who was the beneficiary of the internship together with a Locust Expert from Azerbaijan, informed about the internship with the National Anti-Locust Control Centre (CNLAA) in Agadir, Morocco, in March 2014. He emphasized that the National Anti-Locust Control Centre was an excellent hosting centre for this activity as it had many very good specialists, very high professionals able to share their experience in the best possible way. The first part of the internship took place in the Centre premises and the second in the field, close the Atlas mountains, at 200 km East of Agadir and an altitude of 2 000 m. All topics concerning locust management were covered during the training, both at theoretical and practical levels. The delegate was very enthusiastic about the internship and thanked warmly FAO for the opportunity. The delegate of Azerbaijan said that his colleague from Georgia had made a detailed and well-illustrated presentation covering all topics and added that his Azeri colleague had learnt a lot. Delegates of both countries said that knowledge gained was shared upon return during the 2014 campaign.
46. As snow fell when the delegates were in the field, a question concerned the effect of snow on hopper development. It was indicated that after the 1st instar, only pesticides

had a significant effect on hoppers. In any case, there were not yet any DMA hoppers at that time in that area as hatching starts usually in April.

Update on background documentation (monographs) - (Item 8c)

47. The Locust Expert, FAO International Consultant, presented the updated situation with the three monographs on the main CCA locust species, CIT, DMA and LMI. The work started in 2011 and it is coming to its completion: the monographs are 70-90% ready now. In order to make the participants familiar with the contents and layout, selected chapters from the monographs were copied on flash-drives which will be distributed to all attendees after the workshop, as follows:

- CIT: intraspecific variation
- DMA: natural enemies
- LMI: migrations

Situation update on fellowships on locust management (Item 9)

48. The Locust Programme Officer, AGPMM, and the Locust Expert, FAO International Consultant, presented the situation regarding the FAO-funded fellowships for post-university education on locust issues. Funded through FAO-Turkey Partnership Programme (FTPP), three fellowships are available for PhD or MS studies for the benefit of nationals of the countries, which have signed the project document, i.e. Azerbaijan, Kazakhstan, Kyrgyzstan and Tajikistan. Together with FAO Experts, the E-Committee on fellowships, which worked under the coordination of the Locust Expert and is composed of six Locust Experts from CCA, developed calls for interest, both for candidates and host institutions. The calls for interest were presented to the attendees and more specifically: the 11 themes that had been selected by the E-Committee and that the fellowship may concern, the selection criteria and the packets of documents to be provided for expression of interest from potential candidates and hosting institutions.

49. In the ensuing discussion, delegates of Kyrgyzstan and Tajikistan requested that each of the four above-mentioned eligible countries has one slot for candidate for fellowships. The Locust Programme Officer, AGPMM, clarified that the selection of the candidates would be strictly merit-based, regardless of their national origin (within the eligible nations). She reiterated that the currently available funding was sufficient only for three fellowships; however, the situation may change in the future if more donors would contribute to the CCA locust Programme. Language requirements were a topic of a heated debate among the delegates. The Locust Expert clarified that the working knowledge of Russian was a mandatory requirement for the candidates and that the knowledge of foreign languages was necessary to satisfy entering requirements for post-university studies in hosting institutions. Age and gender requirements for candidates were discussed by the delegates. It was explained that there was no age restrictions for the candidates but that to get the maximum benefit of such postgraduate studies the candidates should be far from retirement. It was also mentioned that female candidates may be given a preference according to the FAO gender policy. As for the hosting institutions, any university or institute in CCA (or beyond, for Master of Science -MS- studies), which has demonstrated expertise in the 11 themes chosen for these fellowships, were eligible to express interest in hosting an FAO fellow.

Study on possible mechanisms for long-term locust regional cooperation and management in CCA (Item 10)

50. The Locust Programme Officer, AGPMM, reminded delegates that during the “Regional Consultation on Locust Management in Caucasus and Central Asia” (October 2009, Almaty, Kazakhstan), the idea of a regional body had been raised and that it had been agreed to start building a technical network in the framework of the “Five-year Programme to improve national and regional locust management in CCA” and that a comprehensive study on all options for long-term cooperation would be prepared during its implementation, and more specifically during Year 3.
51. In 2014, a study on possible mechanisms for long-term regional cooperation on locusts in CCA was therefore prepared jointly by the “Locusts and Other Transboundary Plant Pests and Diseases” Team (AGPMM) of the Plant Production and Protection Division (AGP) and the Legal Office (LEG) of FAO. Its purpose was to facilitate the identification of the best long-term solution for sustainable regional cooperation and locust management in the ten concerned Caucasian and Central Asian countries: Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan.
52. It was said that the study included four parts. First, it presents the context and background regarding its preparation. Second, it examines, from a technical point of view, the objectives that a body for regional cooperation and locust management in CCA should aim to achieve, the core functions and the expected activities that would take place in order to reach those objectives. Third, it reviews the institutional options for establishing a regional cooperation mechanism, including its possible mandate, the countries’ responsibilities, the procedures to be followed for its creation, its governance, administrative and financial implications, among other aspects. Fourth, as a conclusion, the document proposes a summary of all possible mechanisms and addresses the way forward. In annex, it also includes a recapitulative table on the main features of the various possible mechanisms for long-term regional cooperation and locust management in CCA.
53. On the technical side, the Locust Programme Officer, AGPMM, indicating that while at national level, countries should be responsible for implementing the locust preventive strategy and curative control in case of failure, the mandate of any regional platform could be promoting the locust preventive strategy and facilitating cooperation between countries to better document and address locust issues, especially in border areas. Four possible core functions, and their related activities, had been identified as follows: Information exchange; Coordination; Improving locust management; and Assistance to countries. It was said that the role and functions of the regional platform or body would depend on how much it is intended to be a technical forum and information resource, or how much it is expected to be a decision-making body. However, the minimum that any regional platform should ensure was information exchange.
54. The Legal Officer, who attended remotely the workshop, presented afterward the institutional options for regional cooperation. She indicated that the arrangements necessary to create an international mechanism depended on the objectives, functions and activities that the mechanism intended to fulfil. A consultative forum or network, mainly based on information exchange, may use existing national facilities and personnel in order to exchange information. It would be relatively cheap. If the intention was to create a regional organization with a permanent structure, this would have legal and financial implications and a formal interstate treaty was likely to be the most appropriate instrument. The following options were presented to the delegates:

- **Regional network:**
 - Regional network established independently of any organization;
 - Regional network established within FAO's framework.
 - **Regional organization:**
 - Regional organization in the framework of the Commonwealth of Independent States (CIS);
 - Regional organization established independently of any organization.
 - **Regional Commission established within the framework of FAO:**
 - Regional Commission under Article VI of the FAO Constitution;
 - Regional Commission under Article XIV of the FAO Constitution.
55. The Locust Programme Officer, AGPMM, also provided concrete examples concerning the institutional management of the Desert Locust [*Schistocerca gregaria* (SGR)] and more specifically on the Desert Locust component of the FAO Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (the so-called the EMPRES Programme) as well as on the three FAO Article XIV regional commissions for controlling the Desert Locust. She indicated that the main features of these Desert Locust commissions were: first that they were permanent bodies, thus warrant of the sustainability of the regional cooperation and of the preventive strategy applied; secondly, that they had played a major role in developing this locust preventive strategy, which was possible also thanks to the inputs provided in the framework of the EMPRES Programme- Desert Locust component; and third, that countries had a strong ownership of their Commission, because they were the decision-makers and contributed financially to its budget (for ex. in the Western Region, they had even agreed in 2009 on their own to triple their annual contribution, effective from 2011)
56. The Plant Protection Officer, FAOSEC, indicated that a FAO Article XIV Commission on Aquaculture and Fisheries in CCA had been approved by the FAO Council in 2009, including nine countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan) thanks to a FFTP funding. So far, five countries had officially accepted the agreement. He said that the Commission had been working quite efficiently but that the initial funding was now almost finished and that countries had not paid their contributions. He also mentioned the case of European and Mediterranean Plant Protection Organization (EPPO), which could provide with a framework for regional organization although it did not cover the ten countries concerned by locusts in CCA. The delegate of Georgia indicated that EPPO seemed not to be an appropriate framework as far as management of migratory locust pests was concerned.
57. Discussions were carried out on the opportunity to have a FAO Article XIV Commission or a unit within FAO. Several delegates pointed out that they needed more time to review the study, that they had to refer to their Governments and that this was a matter for high-level decision-makers. The delegate of Russia said that regional cooperation was needed but that countries had also to be realistic about the possible payment of contributions by all concerned countries; for this reason, he was in favour of a technical network. Some other delegates supported this option. At the end of the debates, the Chairperson said that all countries agreed that coordination was required, with the main objective to allow information exchange. Independently from the final decision on the institutional mechanism, the delegates of most countries suggested that Mr Latchininsky should be the coordinator of the regional platform.
58. In conclusion, the Locust Programme Officer, AGPMM, asked the countries to refer to their ministries and present the study and to send their individual feedback by the end

of December 2014. It was agreed that FAO would send an official letter to the Programme National Focal Points, transmitting the study and requiring such feedback first. A summary of the replies would then be made by FAO and shared with all countries.

59. Before closing this Item of the Agenda, considering that the “Five-year Programme to improve national and regional locust management in CCA” was not fully funded for the time being, delegates agreed that its results and activities should nevertheless be reached and implemented, subject to resource availability. As a consequence, the initially envisaged duration of five years was not valid anymore and the Five-year Programme was renamed as follows: “Programme to improve national and regional locust management in CCA”. It was said once more that mobilisation of financial resources should be a priority for countries and FAO in the next two years.

Five-year Programme during Year 4 (2015): Workplan (Item 11)

60. The Locust Programme Officer, AGPMM, indicated that there were mainly two funding sources for Year 4, the USAID and the FTTP projects since the national TCP project for Tajikistan would end at the end of November 2014 (it would cover only the participation of the Tajik delegates in the 2014 annual workshop). The Locust Programme Officer presented all results and possible activities for Year 4. On the basis of the needs which had been mentioned during the week and following the discussions, the decisions described hereafter were taken by the delegates. The activities below will be covered by the USAID project except when specified otherwise.
61. Under Result 1, two activities would be undertaken, as every year: the preparation of the national and regional monthly bulletins (Activity 1.1.1) and the organization of the annual workshop (Activity 1.1.2). No funds were allocated to Activity 1.3 for the identification of the best long-term solution for regional cooperation in view of the outcome of the discussions held under the related Item of the Agenda.
62. Under Result 2, the elaboration of the practical guidelines (Activity 2.1.c) would start during Year 4. In addition, three fellowships which should start in academic year 2015/2016, would be covered by the FTTP project (Activity 2.3. b).
63. Under Result 3, it was decided that the three Caucasian countries, Armenia, Azerbaijan and Georgia, would benefit from a training on locust monitoring and information management; it would be organized in Georgia (Activity 3.1) and be coupled with a joint survey, involving the three countries as well as the Russian Federation (Activity 3.2). Two other cross-border surveys would also take place: between Kyrgyzstan, Tajikistan and Uzbekistan in the Fergana Valley; and between Tajikistan and Uzbekistan in the Kafirnigan River Valley, Babatag Mountains. In the latter case, the Programme would allow for an independent expert to participate. Budget was also allocated to the development of a locust GIS in CCA (Activity 3.3) and more specifically for: (a) the development of the regional GIS; (b) technical support (by remote) for collection of data using the ASDC to Georgia, the Russian Federation and Uzbekistan; and (c) the development of a pilot national GIS for Georgia.
64. Although it would be included in Year 5 of the Programme, the Locust Programme Officer took the occasion to briefly present Activity 3.4., which relates to the development of contingency plans. In fact, in the USAID project, it is planned to have a regional workshop allowing to develop a canvass for contingency plans, i.e. a tool that countries could develop afterwards at the national level. It was agreed that such workshop would be organized immediately before or after the next annual workshop

(in autumn 2015) in order to ensure the best possible cost-benefit and because the participants in both workshops would be the same Locust Experts.

65. Under Result 4, two video tutorials would be prepared during Year 4 (Activities 4.2.1 and 4.2.2), one on ULV spraying (with the shootings already made in 2012 in Morocco) and the other one on alternatives to conventional pesticides (use of either IGRs or biopesticides). This second video would be made in Madagascar, taking advantage of the ongoing control operations (in lieu of the initially envisaged demonstration in one of the CCA countries), thus allowing reducing costs and save funds for other activities.
66. Under Result 5, the training on monitoring and mitigating the impact of locust control operations on human health and the environment (Activities 5.1.1 & 5.2.1), which could not be held as planned in 2014, would be organized in 2015 in Uzbekistan to the benefit of both Uzbekistan and Afghanistan (this second country had reiterated its interest in 2014; confirmation of such interest will be checked in 2015). In addition, under the FTTP project and as part of the pilot activity to develop an integral system for environmental and health monitoring in Tajikistan, the Programme would contribute to the establishment and functioning costs of a Monitoring Team during the 2015 locust campaign (Activity 5.2.3). Also under the FTTP project, Kyrgyzstan would benefit from a similar assistance to develop an integral system for environmental and health monitoring, including the visit of an Expert (also Activity 5.2.3). Last, an E-Committee would be created under the FTTP project in order to review the available laws, regulations and guidelines on the management of pesticide containers in CCA and make recommendation to improve it (Activity 5.1.3).
67. Under Result 6, the update and review of the website “Locust Watch in CCA” (Activity 6.2.2) would be covered but done internally in FAO, thus involving no costs on the available projects.
68. In total, the agreed budget for Year 4 is of USD 552 000. It includes USD 352 000 for the USAID project and USD 196 000 for the FTTP project as well as USD 4 000 for the national TCP for Tajikistan before its closure. The details are presented in the below table.

SESSION 3: DEVELOPING MONITORING AND ANALYSING SYSTEMS (REMOTE SENSING)

Background information on the Locust Geographical Information System (GIS) in CCA (Item 12)

69. The GIS Expert, FAO International Consultant, presented background information on the Locust Geographical Information System (GIS) in CCA, specifically the work carried out and main decisions taken during the first years of the Programme. In particular she informed that during Year 1 (2012) the collection of information on nature and availability of remote sensing and weather data at national level and a study on existing national GIS in CCA countries were done. The Technical Workshop on Locusts in CCA, held in Bishkek, Kyrgyzstan, in November 2012, allowed presenting the main findings and recommendations of the study and the countries agreed that a common system of collection, storage and sharing of standardized and georeferenced information was needed for locusts in CCA.

70. In November 2013, a Locust GIS Workshop was held in Tashkent, Uzbekistan. The newly designed Automated System of Data Collection (ASDC) and the main features of the regional locust GIS for CCA were presented to nine countries' representatives. Two pilot countries were designated to introduce and develop the national GIS including the testing of the ASDC (one from Caucasus, one from Central Asia): Georgia and Uzbekistan.
71. In 2014, the following steps were undertaken: (1) ASDC Testing, i.e. field data collection by Georgia and Uzbekistan, with FAO support. To that end, specific training sessions on ASDC were organized during the locust campaign; (2) Preparation of technical specifications for the GIS database and database management system (i.e. interaction between regional and national GIS). Such activities were reviewed in detail in the following items of the Agenda.

Developments on the Automated System of Data Collection (ASDC) (Item 13)

Training on GIS and ground surveys using the Automated System of Data Collection (ASDC) (Item 13 a)

72. The GIS Expert presented this item and informed that two training sessions on ASDC use were organized during the 2014 locust campaign for the two pilot countries with the objective to allow them testing the system. The first three-day training took place on 26-28 April 2014 in Gurjaani, Georgia. It benefited to 17 trainees of the national Plant Protection services of Georgia as well as of Armenia, Azerbaijan, and the Russian Federation, which had requested to participate also. The practical part was conducted in Dedoplistskaro municipality, eastern border region in Kakheti, and Signagi municipality, in Alazany valley. It was devoted to field demonstration of data collection using ASDC and improving skills of the participants to use the touch-screen for selection of appropriate forms, entering, saving and sending data. The participants used five tablets, provided by FAO (two for Georgia and one each for the other three countries), and increased their knowledge which resulted in an enhanced capacity of the Center of Veterinary, Food Safety and Phytosanitary Services of Armenia, the Plant Protection Center of Azerbaijan, the National Food Agency of Georgia and the Russian Agricultural Center (Rosselkhozcenter). It was recommended that the ASDC interface be translated into national language; to modify ASDC so that it provides the ability to enter coordinates of the full area (up to 6 points) and a draft record be kept in the system allowing to correct some part of information in the field.
73. The second three-day training took place on 21-23 May 2014 in Karshi, Uzbekistan. The theoretical part of the training was devoted to explanations of the basic principles of locust data collection by ASDC, which simulates the FAO standard Locust Survey and Spray Monitoring forms. The practical part of the training was conducted in Dehkonobod district, at the border area with Turkmenistan, and in Nishan district, in Kashkadarya oblast. It was devoted to field demonstration and to improving skills of eight Uzbek participants to use ASDC for data collection. The participants practically mastered the procedure of filling and sending forms both for survey and locust control operations. The two tablets were transferred to local experts to conduct a survey using ASDC in Guzar district, Kashkadarya oblast, and in areas of Sudoch'e and Karadzhar lakes, in Karakalpakstan. It was recommended the ASDC interface be translated into Uzbek language. The delegate of Uzbekistan also presented the training to the participants.

Testing ASDC at the national level (Item 13b)

74. The delegates of Georgia and Uzbekistan presented the results obtained while testing the ASDC at the national level during the 2014 locust campaign. Out of the 55 reports made by Georgia, 44 records were registered during locust survey operations on an area of 12 000 ha, carried out from 27 April to 30 July, and 11 records were made during control operations on 2 400 ha, conducted from 06 June to 29 July. At the end of the exercise, Georgian specialists recommended to provide number format with decimals for some fields (surveyed, infested, treated or damaged area, the concentration of active ingredient of insecticide), to measure the imago density per square meter, to indicate more than one type of biotope and add the possibility to save forms and to complete and send them later. The delegates of Georgia reiterated their high interest in contributing to the development of the national and regional locust GIS for CCA countries and informed about the plan to purchase about 60 tablets with ASDC (with the assistance of donors under project not directly related to the locust programme). The delegate of Georgia said that a training of trainers on ASDC use would be useful in his country.
75. As to the results of ASDC testing by Uzbekistan, the delegate informed that at present time a total of 28 records were made, including 17 records registered during locust survey operations and 11 records during control operations. The delegates noted that there were some difficulties such as language barrier and technical problems with mobile or Internet communications to send information. He also said that additional training on ASDC use would be needed for Uzbek specialists.
76. The delegate from Russia underlined the benefit from the ASDC training received in April and indicated that tablets were very easy and practical to use in the field. He said that the Russian Agricultural Center (Rosselkhozcenter) had decided to buy about 100 tablets for own branch offices at the beginning of next year. The delegate also agreed to consider the Russian Federation as third pilot country and to carry out the ASDC testing in 2015 in Saratov oblast where 38 tablets will be purchased for 38 districts.
77. In conclusion, it was agreed that during Year 4, further testing of the ASDC would be made by the three pilot countries, Georgia, the Russian Federation and Uzbekistan, and that remote assistance would be provided by the GIS Expert, FAO International Consultant. In addition, the national GIS would also be developed in Georgia and started to be tested in 2015.

Development of the regional GIS (Item 14)

78. The GIS Expert presented a summary of the Technical Specifications which had been developed during Year 3 of the Programme for the creation of a database and a database management system for the regional Locust GIS in CCA countries. Its name is "Caucasus and Central Asia Locusts Warning and Management System" (CCAL-WARMS). In particular, the delegates were familiarized with the four following subsystems: (1) for providing data in a uniform format allowing information exchange between regional and national GIS; (2) for field data collection; (3) for control, recording, storage and analysis of field data; (4) downloading additional materials such as meteorological fields, satellite imagery, satellite products, three-dimensional terrain model (DEM), maps, etc. The GIS expert presented also the softwares, hardwares and structures of regional GIS's databases (DB), including DB of tablets, field data; locust national statistical reports (current and historical) and additional materials. Moreover, a list of approved methods of analysis and forecasting for the Asian, Italian and

Moroccan locusts, meteorological fields on a regular grid (temperature, precipitation, wind) for CCA region, cartographic and remote sensing products were discussed with the CCA delegates. During the discussions, the delegates asked that the identification be not related to the tablets (i.e. identity number) but to the scouts, who should be able to log in from any tablets equipped with ASDC.

79. The delegates approved the Technical Specifications for the creation of a database and a database management system for the regional Locust GIS in CCA. Next step, in early 2015, will be the development and initial testing of the regional locust GIS in CCA.

Practical demonstrations by countries: field use of ASDC (Item 15)

80. A practical demonstration of the field use of the ASDC was organized, thanks to the tablets made at disposal by the GIS Expert, Georgia, Armenia, Azerbaijan, the Russian Federation and Uzbekistan.

Developments on unified information system on biohazards, including locusts, for CIS members (Item 16)

81. The Locust Expert, FAO International Consultant, informed the delegates about the creation of the Unified Information System on Biological Hazards (UIS Biohazard) in the framework of the Interparliamentary Assembly (IPA) of the countries members of the Commonwealth of Independent States (CIS). CIS currently includes: Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Uzbekistan and Ukraine; Turkmenistan is an associated member. The IPA consists of national parliamentary delegations; its overarching mission is law-making and alignment of national laws in the CIS. There are several permanent committees and one of them is the Committee on Agrarian Politics, Natural Resources and Ecology. Several years ago, this Committee initiated work on developing a unified information system on biological hazards for all CIS countries. Locusts (three locust species inhabiting CIS – LMI, CIT and DMA) were included as one of the biohazards of the proposed Information System. FAO experience in managing transboundary locust pests was considered extremely valuable, and therefore FAO staff and consultants attended several meetings of the above Working Group.
82. On 22 November 2012, in St. Petersburg, the Committee on Agrarian Politics, Natural Resources and Ecology adopted a resolution to create the Unified Information System “Biohazard”. This resolution describes goals, structure and functions of the System. Subsequently, this document was sent to national parliaments of CIS countries for comments which are currently being analyzed by IPA. The Locust Expert explained that UIS “Biohazard” will mostly be based on satellite data, and as such, it has common features with the current regional Locust GIS. There was no discussion on the subject.

SESSION 4: LOCUST CONTROL AND RISK REDUCTION FOR HUMAN HEALTH AND THE ENVIRONMENT

Mitigating impact of locust control operations (Item 17)

Development of a plan for insecticide storage and container management for locust control in Kyrgyzstan (Item 17a)

83. The delegate of Kyrgyzstan reported on the visit of the Pesticide Expert, FAO International Consultant, in July 2014, in his country. He presented the current situation regarding pesticide container management at the national level. He said that some pesticide storage facilities do not conform to sanitary requirements and asked for recommendation to that end and also indicated that there were cases of re-use of small-size pesticide containers by public and two ways to address the situation: one is to work with suppliers to ensure returning the containers, the second is to incinerate the empty containers. The work is being done to potentially use plastic containers as fuel during incineration at cement factories or may for manufacturing plastic sewage pipes.
84. The Pesticide Expert, who attended the meeting remotely by Skype, gave two recommendations on the basis of his mission to Kyrgyzstan. He said first that there is currently an excellent opportunity to train technical personnel on packaging regulation. Second, it is necessary to discontinue using packaging which does not conform to international standards. Furthermore, he recommended that the pesticide warehouse fitting international standards be located at a safe distance from public places. Regarding container re-utilization, the pesticide expert said that plastic pesticide containers should not be re-used except if a) plastic recycler had a system for removing the diesel fuel solvent that could then be disposed after an environmentally acceptable plastic flake washing process or b) the cement kiln could be persuaded to use the diesel rinsed plastic containers as fuel for cement clinker production. In any case, the best choice would be to return to the formulator the emptied but unrinsed ULV formulation containers, either in purpose built refillables or just as recapped drums.
85. The Pesticide Expert recommended that one of the criteria for pesticide procurement should be the appropriate packaging. Ideal packaging is the one which should not be destroyed, but rather collected at the end of the spraying operations. Government should set the highest standards of pesticide stewardship and provide mechanisms (legislation) for its strict implementation.
86. The Senior Officer, AGPMM, made a comment that farmers should not be trained on pesticide use but rather informed because locust control is implemented by specialized technical organizations, not end-users. She proposed to organize an E-Committee which would review all existing data on pesticide container management from CCA countries and develop technical specifications for the packaging to conform to international standards. During the discussion, the delegate of Russia pointed out that in Russia and Kazakhstan pesticide handling was heavily regulated by legislation. He proposed to provide to all interested parties the relevant pieces of legislation. The delegate of Uzbekistan indicated that pesticide legislation in his country was introduced in 1996 after fatal incidents with people who reused the containers from pesticide sumicidin. After that the retailers were obligated to return containers to producers after use. In Uzbekistan, 80% of pesticides are manufactured locally and the containers are returned.

87. The delegate of Kyrgyzstan emphasized that the situation varies from one country to another. In Kyrgyzstan all pesticides are imported and there are problems with container disposal. Delegates of several other countries supported the need to share the best practices of pesticide stewardship, including the relevant legislation, among all countries. Opinions on the necessity of an E-Committee divided: delegate of Armenia supported it while delegate of Russia doubted its usefulness. Finally, the Senior Officer, AGPMM, informed the attendees that the question on returning empty pesticide packaging would be considered during the upcoming Pesticide Referee Group meeting in December 2014 in Tunisia but that, in the past, it appeared that there were so many logistics issues that FAO had eventually chose the option of equipping the countries with drum rinsing and crushing units.
88. In conclusion, the delegates agree that a E-Committee would review the material received from the countries concerning pesticides container management and would make recommendations, which would be presented at the next annual workshop.

Monitoring impact of locust control operations (Item 18)

Pilot activity to develop a monitoring system on quality control and efficacy of locust treatments in Tajikistan (country's presentation) - (Item 18a)

89. The delegate from Tajikistan reported in detail on the pilot activity. A mission was conducted by an Environmental Expert, International Consultant, in June 2014, with the objectives of developing a proposal for the structure and functioning of an integral system for monitoring of quality, human health and environmental effects of locust control operations in Tajikistan; and conducting on-the-job training of monitoring techniques during locust control operations. The delegate indicated that the following topics were covered: proper pesticide selection and application, quality of pesticide spraying, respect of the pesticide rates, etc. He indicated that nine Locust Experts and ten seasonal workers participated in the monitoring of acetyl-cholinesterase inhibition. The training tests were carried out two times to define the level of acetyl-cholinesterase inhibition (indicating too long or too acute exposure to pesticides) residue in the blood of participants. The tests were repeated two additional times every two weeks after the workshop. Every trainee got a passport on safety use of pesticide. The cooperation with bee keepers while applying pesticide was also discussed in detail during the activity.
90. The Environmental Expert, International Consultant, who attended the meeting remotely by Skype, thanked the delegate from Tajikistan for his very good presentation. He indicated that the monitoring of locust control operations is usually done by a small team of specialists and not by the control team in order to both avoid additional work for the latter and respect independence of the assessment. He also said that the monitoring of locust control operations should be part of any locust control programme and has three objectives: 1) assess the efficacy of the control operations; 2) monitor the human health issues; and 3) check possible effects on the environment.
91. The Environmental Expert made four recommendations. First, a small team of up to four persons should be established by Tajikistan for the next locust campaign with FAO support. It will be independent and visit control teams in the field, i.e. in various districts and on different sites. From 2016 onwards, the country should be in a position to take it over completely. Second, environmental monitoring has to be linked with the GIS, starting with the integration of the ecologically sensitive areas in the system. Third, as it is essential to collect good and complete information to properly monitor, it is recommended to use the FAO Spray Monitoring Form to get minimum amount of

data for each treatment, as well as the newly developed Environmental and Human Health monitoring form for locust control operations. Fourth, an individual health passport/logbook should be established for field workers mentioning each pesticide use (nature, date and purpose), thus allowing traceability in case of issue. This was discussed in 2013 during the annual Technical Workshop held in Uzbekistan; it will be implemented in 2015 in Tajikistan and it would be appropriate that other countries could start using such health passport/logbooks to better track human health issues and avoid them.

92. The Locust Programme Officer, AGPMM, thanked for the clear presentations and indicated that FAO support of a monitoring team for the 2015 locust campaign in Tajikistan was considered to be fully part of the pilot activity.
93. The delegate of Kyrgyzstan, which had benefitted from a training on monitoring and mitigating the impact of locust control operations on human health and the environment in 2013, suggested that a Training-of-Trainers (ToT) be conducted with FAO assistance to train two specialists from each country. The Locust Programme Officer replied that a ToT on various topics, including this one, was planned in the Programme but that no funds were available for the time being.
94. On her suggestion to include the Environmental Monitoring Form in the Automated System for Data Collection, the Environmental Expert insisted on the need to incorporate the maximum of important information and first of all on sensitive areas.
95. The Senior Officer, AGPMM, provided some details on how the environmental concerns are managed in Madagascar in the context of the current emergency programme, mentioning that a Human Health and Environmental Management Plan had been prepared by Experts prior to the launch of the first campaign and implemented since then; and that the exact coordinates of all ecologically sensitive areas were inserted in the GPS of all spraying aircraft and maps distributed to the ground control teams.
96. To the question from the delegate of Kyrgyzstan on the high budget in Madagascar compared to the one in CCA, the Senior Officer reiterated that it was to combat a locust plague with hopper bands and swarms spread throughout the whole territory while usually the Migratory Locust is located in the south-western part only, and that this current situation was threatening the livelihood & food security of 13 million persons in a country where the food insecurity was already at a high level.

Study on the fate of insecticides used for locust control on pasture in Kyrgyzstan - residue analysis (country's presentation) - (Item 18b)

97. The delegate of Kyrgyzstan reported on the preparation of the Study, the objective of which was to assess pesticide residue in pastures for various insecticides used for locust control. He informed that numerous insecticides were used for locust control in his country, including chlorpyrifos (240 g ai/ha), fipronil (4 g ai/ha), alpha-cypermethrin (10 g ai/ha) and lambda-cyhalothrin (7.5 g ai/ha). These four insecticides belonging to different chemical classes were studied for the residue quantities in rangeland forage to answer the question whether a 30-day withholding period was enough for safe re-entry of livestock in treated areas.
98. The study was conducted by an, Toxicologist Expert, FAO International consultant from Krasnodar, Russia, who has a 20-year experience in studying pesticide residues, together with a Locust Expert, FAO National Consultant, from Kyrgyzstan. Rangeland

vegetation was treated with these four insecticides using Micron AU 8000 and ULVA+ portable sprayers. Untreated plots were used for comparison. Vegetation samples were collected and put into portable refrigerator bag and subsequently placed into a freezer. Sample analysis has just started in Bishkek Control Toxicological Laboratory (analytical standards were provided by FAO to that end). The second half of samples was sent to Russia for confirmation analysis but it perished because it was sent without the necessary refrigeration.

99. The delegate of Russia informed that since the broker had used a simple postage box, not the frozen cold one, to send the 14 samples to Russia, the Russian customs did not allow receiving them and they were destroyed. They would have been useless in any case. The delegate indicated that Russia was ready to repeat the procedure and conduct the analyses if this is technically possible.
100. The Kyrgyz delegate said that available liquid samples could be sent to Russia. The delegate of Russia confirmed readiness to conduct the analyses subject to double-check by Kyrgyzstan with Krasnodar laboratory that it is equipped to test liquid samples instead of solid ones.
101. The Locust Programme Officer thanked the Russian delegate for the very good cooperation and his availability. She also indicated that the protocol which had been developed by the Russian Expert had been commented by an Environmental Expert, FAO International Consultant. Last, it was good that a solution had been found to conduct the confirmation analysis in Russia, should it be technically feasible.

Presentation of compilation of existing information on residue levels on crops and pastures in Russia (Item 18c)

102. The delegates of Russia explained that the Russian Agro Center does not work on residue analysis and that there are two other agencies, *Rosselkhoznadzor* and *Rospotrebnadzor*, which do that. Pesticide residues after pest control treatments are studied selectively by these two organizations. Ecotoxicological analysis, including residues, is done during pesticide registration. It is only in case of emergency situations (e.g. pesticide poisoning of cattle) that residue analyses are done during the operational usage of a pesticide. There are specific laboratories for that, such as, for example, one in Saratov. It acquired the national certification and executes analyses of cereal crops upon requests from end-users. All relevant information can be provided for FAO.
103. The delegate of Georgia inquired what was done if residues were found. The Russian delegate explained that in five years, the selective testing had never detected residues exceeding the allowed limits. This means that crop producers are very serious and conscientious in their work.

Progress made on safety and environmental precautions - (Item 19)

104. The countries reported one by one on the progress made during Year 3 of the Programme:
 - Azerbaijan: Personal Protective Equipment (PPE) units are provided to all workers involved in pesticide applications. Before the start of the campaign, briefings are conducted regarding safety measures when applying pesticides. During treatments,

doctors from the various areas are informed about the first aid measures to be taken in case of poisoning incidents. There were no cases of pesticide related incident though. District plant protection specialists inform the public about treatments. Mass media is also used. Treated areas are flagged, notices are posted about treatments.

- Armenia: If it is necessary to do treatments, the Ministry of Agriculture orders them and the private companies execute them according to required standards, under the control of the Ministry.
- Georgia: Locust control operations are carried out by the National Food Agency. There are no private companies which do treatments. Before the campaign, farmers and other villagers are well informed. Treatments are planned and coordinated with local governments. Campaign lasts for three months. In 2014, locust infestations were heavy but all treatments were executed without any incidents.
- Kazakhstan: All treatments are regulated by state laws. Every pesticide is applied according to label and recommendations. There were no case of pesticide poisoning of people or cattle.
- Kyrgyzstan: The public is informed two days before treatments. All workers involved in treatments use PPE. Impact on non-target organisms was monitored. All data were entered into FAO standard forms. Special attention is allocated to container management.
- Russian Federation: Pesticide applications are done in strict accordance with laws and regulations. There were no serious incidents. When treatments are implemented with federal budget, the regional offices of Russian Agro Center supervise them and provide reports.
- Tajikistan: Everything is done according to the plant protection law. Safety is extremely important. No incidents were reported.
- Uzbekistan: safety briefings are organized and PPE are provided to all workers involved in treatments. All pesticide applications are done according to pesticide labels and recommendations.

Progress made on spraying technologies products and biopesticides (Item 20)

105. The delegate of Uzbekistan presented the progress with biological means of locust control in his country. In 2011-2012, a biopesticide formulation, "Green Guard"®, based on fungus *Metarhizium acridum*, was tested against CIT and DMA and yielded up to 90% mortality at a volume of 0.5 l/ha. The formulation was registered in 2012 but its high cost – about 22.50 USD per ha – precluded it from being purchased with state funds.
106. Currently the locust laboratory of the Uzbek Institute for Plant Protection is developing a biopesticide, Alpha-Nur, based on *Beauveria tenella* fungus. In tests against DMA conducted in very dry conditions, the biopesticide yielded 89% mortality 23 days after treatment. The titer of conidia was 1×10^{10} conidia per liter and the application rate was 1 l/ha. New formulation is currently under development, which will allow increasing the titer of conidia.

107. During the discussion, the delegates asked questions about the efficacy of the biopesticide and its speed of action. The delegate of Uzbekistan indicated that mortality started to be observed from seven to 11 days after treatment but that the locusts stopped eating and moved slowly five days after spraying. It was explained that the new, improved formulation will make the price of the biopesticide comparable to that of chemical pesticides. To a question from the Senior Officer, AGPMM, it was replied that, as far as Green Guard® is concerned, the biopesticide was a dry powder in packs or emulsifiable concentrate suspension in bags (the preferred one). It was then necessary to dilute and dissolve before application with traditional sprayers used. The storage has to be done at up to 10°C for a maximum of one year. Delegates from several countries expressed high interest in the work conducted in Uzbekistan and asked the Uzbek delegate to keep them informed on the progress in this direction.

ANY OTHER BUSINESS

Management of the locust plague in Madagascar

108. The Senior Officer, AGPMM, made a presentation on the FAO Three-year Response Programme to the locust plague in Madagascar (2013-2016), providing details on the its implementation during the first locust campaign (September 2013-August 2014) and the beginning of the second one (September 2014-August 2015) as well as the current financial constraints, which could hamper its complete execution. A video on the survey and control operations realized in March 2014 from the aerial bases was also presented.
109. To the delegate of Kyrgyzstan, who asked if such huge infestations had an annual occurrence, the Senior Officer, AGPMM, explained that the previous plague started in 1997 and came to an end in 2000 and that during the following decade, the locust situation was relatively calm, without major or widespread infestations.
110. The delegate of Russia asked about treatments against adults when he saw an helicopter spraying a swarm of flying locusts. The Senior Officer, AGPMM, confirmed that the main targets were the hopper bands which are sprayed with Insect Growth Regulators using the barrier treatment technique (with swath of 500 m or 600 according to the vegetation cover). She mentioned that, as there are three successive generations of breeding during the rainy season, which could result in an exponential increase of the locust populations, any opportunity to reduce the parental generation is taken and the maximum possible use of the aircraft is done, in particular if crops are directly threatened.
111. Following a question from the Locust Expert, FAO International Consultant, a discussion started concerning the efficiency of biological products and their use during the current plague. The Senior Officer, AGPMM, explained that a biopesticide was part of the pesticides currently used in Madagascar to combat the plague but that its use was limited to areas close to highly sensitive ones (national parks, natural reserves, etc.) and that no control of efficiency had been made after limited treatments with this biopesticide during the previous campaign. She also mentioned that due to its slow action, it was not the most appropriate product during a plague. However, it should be fully part of a locust preventive strategy and become the preferred pesticide during recession periods, when small infestations located far from the crops have to be annually treated.
112. The delegate of Tajikistan requested which formulation was used and which volume was applied by hectare. The Senior Officer, AGPMM, indicated that all pesticides

sprayed were in ULV formulation, that all aircraft (the three helicopters and the fixed-wing aircraft) were fitted with ULV spraying equipment and that for ground control operations one ULV vehicle-mounted sprayer and ULV knapsacks sprayers had been delivered; that a volume of one litre per hectare was sprayed by all spraying platforms; that the figure of more than 1.2 million ha treated during the 2013/14 locust campaign corresponded to both the treated (full-cover treatments) and the protected (barrier treatments) areas in a proportion of approximately one and two thirds respectively.

Presentation of newly-published book “Bioecology of acridids in Uzbekistan and control measures”

113. Mr F. Gapparov, from Uzbekistan, presented the book (in Russian) he has published in 2014 about the three locust species and grasshoppers in Uzbekistan. The targets are the students, researchers, and plant protection and locust experts. Delegate from Kazakhstan asked whether it was possible to purchase the books for CCA on Programme funds and the Locust Programme Officer, AGPMM, explained it was not likely due to the fact that the project already covers monographs, which were intended to be comprehensive books on the three locust species throughout CCA.

ADOPTION OF THE REPORT

114. The Report is adopted unanimously with amendments made.

CLOSING REMARKS

115. Mr Rekhviashvili, the Chairperson, thanked all the delegates for the fruitful meeting. The Senior Officer, AGPMM, also thanked the delegates for their participation and wished them back a safe trip back. Last, the participants expressed their gratitude to Georgia for having hosted the workshop.

ANNEXES

Annex I - List of participants

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Annex II – Approved Agenda

Technical Workshop on Locusts in Caucasus and Central Asia (CCA)
Tbilisi, Georgia, 17-21 November 2014
Approved Agenda

Opening

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

Session 1: National locust campaigns in 2014 and forecasts for 2015

4. National locust campaigns in 2014 (countries' presentations)
5. Locust forecast for 2015 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 2014: overview on implementation and funding situation
7. Regional cooperation in 2014
 - a) Regular information sharing
 - b) Presentation of the revised website "Locust Watch in CCA"
 - c) Cross-border/ joint surveys
 - Kyrgyzstan – Uzbekistan (countries' presentations)
 - Afghanistan – Tajikistan (countries' presentations)
8. National capacities' development in 2014
 - Training:
 - on locust monitoring: Uzbekistan (country's presentation)
 - on locust Ultra-Low Volume spraying: Kazakhstan (country's presentation)
 - One-month internship on locust management:
 - Azerbaijan & Georgia in Morocco (countries' presentations)
 - Update on background documentation (monographs)
9. Situation update on fellowships on locust management
10. Study on possible mechanisms for long-term locust regional cooperation and management in Caucasus and Central Asia (CCA)
11. Five-year Programme during Year 4 (2015): workplan

Session 3: Developing monitoring and analysing systems (remote sensing)

12. Background information on the Locust Geographical Information System (GIS) in CCA

13. Developments on the Automated System of Data Collection (ASDC)

- Training on GIS and ground surveys using the Automated System of Data Collection (ASDC):
 - Armenia/Azerbaijan/Georgia/the Russian Federation (countries' presentations)
 - Uzbekistan (country's presentation)
- Testing ASDC at the national level (pilot countries' presentations: Georgia and Uzbekistan; feedback from Armenia, Azerbaijan and the Russian Federation)

14. Development of the regional GIS

15. Practical demonstrations by countries: field use of ASDC

16. Developments on unified information system on biohazards, including locusts, for CIS members

Session 4: Locust control and risk reduction for human health and the environment

17. Mitigating impact of locust control operations:

- Development of a plan for insecticide storage and container management for locust control in Kyrgyzstan (country's presentation)

18. Monitoring impact of locust control operations:

- Pilot activity to develop a monitoring system on quality control and efficacy of locust treatments in Tajikistan (country's presentation)
- Study on the fate of insecticides used for locust control on pasture in Kyrgyzstan - residue analysis (country's presentation)
- Presentation of compilation of existing information on residue levels on crops and pastures in Russia

19. Progress made on safety and environmental precautions (countries' feedback)

20. Progress made on spraying technologies products and biopesticides (countries' feedback)

Closing

21. Any other business

22. Adoption of the report

23. Closure address

Annex III – Work Plan for Year 4 of the Programme and related budget

Res. & Act.	Description - Activities envisaged for Year 4	Beneficiaries countries				TOTAL BUDGET for Year 4	AVAILABLE FUNDS FOR YEAR 4 (as of November 2014)		
		Year 1	Year 2	Year 3	Year 4		USAID 2011-2015	TURKEY 2012-2016	TCP TAJ July 2012-Nov. 2014*
R1 - Regional cooperation						108.500	105.000	0	3.500
1.1. Facilitate regional exchanges to manage locust situations		all	all	all	all	108.500	105.000		3.500
1.1.1. Create/maintain regular regional information sharing of standardized data (Nat. Cslt for bulletins)		all	all	all	all	30.000	30.000		
1.1.2. Allow direct experience exchange (technical workshop 2013)		all	all	all	all	78.500	75.000		3.500
1.2. Develop coordination, including through transboundary policy		all	all	all	all				
1.3. Identify the best long-term solution for sustainable regional cooperation		(year 3)	(year 3)	(year 3/year4)	(year 3/year4)				
R2 - National capacities						175.500	34.000	141.500	0
2.1. Training-of-Trainers (ToT) programme - locust management		no funding	no funding	no funding	no funding				
2.2. Make available/accessible background documentation on locust pests		all	all	all	all	34.000	34.000		
a Biblio & Material to be made available (e-committee)		all	all	all	all				
b Monographies		all	all	all	all				
c Guidelines		all	all	all	all	34.000	34.000		
2.3. Allow internships and post-graduate formation						141.500		141.500	
a One-month internship		KAZ	KYR+RUS+TAJ+UZB	AZE/GEO	no funding				
b Fellowship: 2 or 3-year diploma for 3 students & E-committee		none	none	3 students	3 students	141.500		141.500	
2.4. Promote and support applied research		no funding	no funding	no funding	no funding				
a Two grants for applied research		no funding	no funding	no funding	no funding				
b Entomological and chemical equipment for 6 laboratories		no funding	no funding	no funding	no funding				
R3 - Locust issues and disasters better anticipated and mitigated						100.000	100.000	0	0
3.1. Improve survey operations for better field locust monitoring						40.000	40.000	0	
3.1.1. Strengthen human capacities (techn. consultations on survey)		AFG-TAJ-KYR	RUS&KAZ	UZB	ARM-AZE-GEO	40.000	40.000		
3.1.2. Strengthen operational capacities (survey equipment)		all	none	none	none				
3.2. Organize regular cross-border surveys		4	4	2	*ARM-AZE-GEO RUS *KYR-TAJ-UZB *TAK-UZB	20.000	20.000		
3.3. Develop monitoring and analyzing systems		all	all	all	all	40.000	40.000		
3.3.1. Extend use of Geographical Information System and remote sensing		all	all	all with 2 pilot countries	all with 3 pilot countries	40.000	40.000		
3.3.2. Improve forecasting		(year 5)	(year 5)	(year 5)	(year 5)				
3.4. Enhance preparedness for risk reduction - contingency plans		(year 5)	(year 5)	(year 5)	(year 5)				
R4- Improved response mechanisms to locust outbreaks						40.000	40.000	0	0
4.1. Allow early reaction and appropriate control operations									
4.1.1. Strengthen human capacities (techn. consultations on control)		AZE	TAJ-KYR	KAZ	none				
4.1.2. Strengthen operational capacities (control equipment)		all but RUS	TAJ-KYR	KYR	none				
4.1.3. Enhance public-private partnership		none	all	all	all				
4.2. Promote less harmful pesticides and alternatives to conventional pesticides						40.000	40.000		
4.2.1. Develop ULV formulations and related techniques		all (video)	all (video)	all (video)	all (video)	20.000	20.000		
4.2.2. Propose alternatives to conventional pesticides (demonstration)		all (video)	all (video)	all (video)	all (video)	20.000	20.000		
4.2.3. Encourage registration of more pesticides		all	all	all	all				

Res. &	Description - Activities envisaged for Year 4	Beneficiaries				TOTAL BUDGET for Year 4	AVAILABLE FUNDS FOR YEAR 4		
		Year 1	Year 2	Year 3	Year 4		USAID 2011-2015	TURKEY 2012-2016	TCP TAJ July 2012-Nov. 2014*
R5 - Impact on human health and the environment mitigated and monitored						60.000	20.000	40.000	0
5.1. Mitigate impact of locust control operations on human health and the environment						15.000	10.000	5.000	
5.1.1. Strengthen human capacities (techn. assistance)						10.000	10.000		
5.1.2. Strengthen operational capacities (PPE)									
5.1.3. Pesticides and empty containers management								5.000	
5.1.4. Produce extension material for mitigating impact of locust treatments						no funding	no funding	no funding	no funding
5.2. Monitor impact of locust control operations on human health and the environment						45.000	10.000	35.000	
5.2.1. Strengthen human capacities (techn. assistance)						10.000	10.000		
5.2.2. Strengthen operational capacities (Testmate, environmental material, etc.)									
5.2.3. Develop integral system for environmental and health monitoring						35.000		35.000	
5.2.4. Facilitate impact assessment & analysis of material (residue analysis)									
R6 - Public information and awareness increased						0	0	0	0
6.1. Develop awareness and education among local populations						no funding	no funding	no funding	no funding
6.2. Enhance visibility of locust issues and management and of related donor support									
6.2.1. Prepare and implement a communication plan						no funding	no funding	no funding	no funding
6.2.2. Create and update a website on locusts in Caucasus and Central Asia						all	all	all	all
Other						33.600	30.000	3.600	0
Supervision, coordination, management of Five-year Programme									
Evaluation									
TSS						33.600	30.000	3.600	
Sub-total						517.600	329.000	185.100	3.500
Support cost						34.400	23.000	10.900	500
Total						552.000	352.000	196.000	4.000

*TCP/TAJ/3304 ends in November 2014 and its budget includes only participation of delegates in the annual workshop of Year 4.

Note: No availability of FAO Regular Programme this year.

Annex IV – Table of expenditures for Year 3

Res. & Act.	Description	TOTAL (USD) (1st Oct.-30 Sept. 2014)		USAID (USD)		Turkey (USD)		FAO RP (USD)		FAO - TCP KYR (USD)		FAO - TCP TAJ (USD)	
		Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3
R1 - Regional cooperation		144,000	125,456	115,000	111,710	0	0	19,000	5,570	3,500	893	6,500	7,283
1.1. Facilitate regional exchanges to manage locust situations		124,000	125,456	95,000	111,710			19,000	5,570	3,500	893	6,500	7,283
1.1.1. Create/maintain regular regional information sharing of standardized data		46,000	37,853	23,000	30,105			13,000	2,190	3,500		6,500	5,558
1.1.2. Allow direct experience exchange (technical workshop)		78,000	87,603	72,000	81,605			6,000	3,380		893		1,725
1.2. Develop coordination, including through transboundary policy		0	0										
1.3. Identify the best long-term solution for sustainable regional cooperation		20,000	0	20,000	0								
R2 - National capacities		195,500	24,945	45,000	24,945	141,500	0	9,000	0	0	0	0	0
2.1. Build up capacities through a vast Training-of-Trainers (ToT) programme		0	0										
2.2. Make available and accessible background documentation and literature		20,000	0	17,000	0			3,000	0				
a Bibliography & Material to be made available (E-committee on documentation)		3,000	0					3,000	0				
b Monographies		0	0										
c Practical guidelines		17,000	0	17,000	0								
2.3. Allow internships and post-graduate formation		175,500	24,945	28,000	24,945	141,500	0	6,000	0				
a One-month internships		28,000	0	28,000									
b Fellowship: 2 or 3-year diploma for students		147,500	0			141,500	0	6,000	0				
2.4. Promote and support applied research		0	0						0				
a Grants for applied research		0	0										
b Entomological and chemical equipment for laboratories		0	0										
R3 - Locust issues and disasters better anticipated and mitigated		132,000	144,260	80,000	138,573	27,000	0	0	0	5,000	829	20,000	4,858
3.1. Improve survey operations for better field locust monitoring		27,000	31,092	0	31,092	27,000	0						
3.1.1. Strengthen human capacities (techn. assistance on survey)		27,000	28,846		28,846	27,000	0						
3.1.2. Strengthen operational capacities (survey equipment)		0	2,246		2,246								
3.2. Organize regular cross-border surveys		35,000	21,450	10,000	17,341					5,000	0	20,000	4,109
3.3. Develop monitoring and analyzing systems		70,000	91,718	70,000	90,140						829		749
3.3.1. Extend use of Geographical Information System and remote sensing		70,000	91,718	70,000	90,140						829		749
3.3.2. Improve forecasting		0	0										
3.4. Enhance preparedness: harmonized national contingency plans		0	0										
R4- Improved response mechanisms to locust outbreaks		65,000	57,921	0	33,488	22,000	0	0	0	38,000	24,433	5,000	0
4.1. Allow early reaction and appropriate control operations		60,000	57,921	0	33,488	22,000	0			38,000	24,433		
4.1.1. Strengthen human capacities (techn. assistance on control)		22,000	22,569		22,569	22,000	0						
4.1.2. Strengthen operational capacities (control equipment)		38,000	35,352		10,919					38,000	24,433		
4.1.3. Enhance public-private partnership		0	0										
4.2. Promote less harmful pesticides and alternatives to conventional pesticides		5,000	0									5,000	0
4.2.1. Develop ULV formulations and related techniques		5,000	0									5,000	
4.2.2. Propose alternatives to conventional pesticides (demonstration)		0	0										
4.2.3. Encourage registration of more pesticides		0	0										
4.3. Promote joint cross-border control operations		0	0										

Res. & Act.	Description	TOTAL (USD) (1st Oct.-30 Sept. 2014)		USAID (USD)		Turkey (USD)		FAO RP (USD)		FAO - TCP KYR (USD)		FAO - TCP TAJ (USD)	
		Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3	Budget Year 3	Exp. Year 3
R5 - Impact on human health & environment mitigated/monitored		103,000	79,803	20,000	31,627	43,000	30,216			0	0	40,000	17,960
5.1. Mitigate impact of locust control operations on human health & environment		47,000	22,153	20,000	10,523	27,000	11,630					0	
5.1.1. Strengthen human capacities (techn. assistance)		28,000	10,523	5,000	10,523	23,000	0						
5.1.2. Strengthen operational capacities (PPE)		4,000	0			4,000	0						
5.1.3. Pesticides and empty containers management		19,000	11,630	15,000			11,630						
5.1.4. Produce extension material for mitigating impact of locust treatments		0	0										
5.2. Monitor impact of locust control operations on human health & environment		56,000	57,650	0	21,104	16,000	18,586			0	0	40,000	17,960
5.2.1. Strengthen human capacities (techn. assistance)		0	10,523		10,523								
5.2.2. Strengthen operational capacities (Testmate, environmental material, etc.)		0	0										
5.2.3. Develop integral system for environmental and health monitoring		40,000	17,960									40,000	17,960
5.2.4. Facilitate impact assessment & analysis of material (residue analysis)		16,000	29,167		10,581	16,000	18,586						
R6 - Public information and awareness increased		5,000	0	0	0	0	0	5,000	0	0	0	0	0
6.1. Develop awareness and education among local populations		0	0										
6.2. Enhance visibility of locust issues and management and of donor support		5,000	0					5,000	0				
6.2.1. Prepare and implement a communication plan		0	0										
6.2.2. Create and update a website on locusts in Caucasus and Central Asia		5,000	0					5,000	0				
Other		29,500	51,833	26,000	0	3,500	0	0	0	0	26,273	0	25,560
Coordination (Locust Programme Officer)		0	0										
Evaluation		3,000	0	3,000									
FAO SEC		26,500	0	23,000		3,500							
TSS		0	51,833								26,273		25,560
Sub-total		674,000	484,218	286,000	340,343	237,000	30,216	33,000	5,570	46,500	52,428	71,500	55,661
Support cost		61,950	49,719	22,880	36,330	30,810	2,205	0	0	3,255	5,996	5,005	5,188
Total		735,950	533,937	308,880	376,673	267,810	32,421	33,000	5,570	49,755	58,424	76,505	60,849

Annex V – National locust situation in 2014 and forecast for 2015

ARMENIA

In 2014 the area of locust monitoring was 56 000 ha out of which 37 000 ha were infested. CIT was observed in 4-5 regions with densities of 4 to 6 individuals per square meter. Only in two areas in Ararat oblast CIT density was 11 to 19 individuals per square meter. The treated area was about 1 000 ha. DMA and LMI were not observed.

Forecast for 2015: Locust infestations will be spotty.

AZERBAIJAN

In 2014 the surveyed area was 362 000 ha out of which 145 000 ha were infested and 53 556 ha treated. In Imishlin and Bejlagan districts as well as in Djejrjajchel steppe at the border with Georgia mass breeding of DMA occurred. In Balakan and Zakatalinsky districts new areas of CIT mass breeding were detected on 30 000 ha out of which 2 700 ha were treated with cypermethrin.

Forecast for 2015: Locust infestations are expected on 80 000 to 120 000 ha out of which it is planned to treat 55 000 to 65 000 ha.

GEORGIA

In 2014 out of 120 000 surveyed 100 000 ha were infested with locusts, mostly in Eastern Georgia. High densities of early-instar nymphs (50 – 300 individuals per square meter) were found on 40 000 ha in five districts. Locust treatments were done on 49 874 ha including 10 000 ha by light aircraft and 39 874 ha by vehicle-mounted sprayers. For these treatments, National Food Agency procured pesticides of five different active ingredients and three chemical classes (pyrethroids, organophosphates and IGRs).

Forecast for 2015: Locust infestations are expected in southeast Georgia on 100 000 ha; the National Food Agency plans to implement treatments on 50 000 ha, which is not sufficient.

KAZAZAKSTAN

In 2014, locust nymphal survey was done on 17 603 640 ha. The area infested was 6 603 500 ha including 4 712 890 ha with densities exceeding the Economic Threshold. The treated area was 4 700 200 ha with most of the treatments – 4 111 400 ha – against CIT.

Forecast for 2015: Locust treatments are planned on 3 871 400 ha.

KYRGYZSTAN

In 2014 the surveyed area was 86 562 ha out of which 61 521 ha were infested. Locust treatments were implemented on 61 046 ha, including 9 302 ha (15.2%) by tractor sprayers and 51 744 ha (84.8%) by vehicle-mounted ULV sprayers.

Forecast for 2015: Locust treatments are planned on 65 000 ha including 51 000 ha against DMA and 14 000 ha against CIT.

RUSSIAN FEDERATION

In 2014 locust surveys were conducted on 14 445 980 ha out of which 3 223 460 ha were infested including 1 049 680 ha with densities exceeding the economic threshold. Treatments were applied to 1 010 140 ha with pesticides procured through federal budget (21 million roubles) and regional budgets (44 million roubles). 1 160 different sprayers were used including 29 aircraft. Together with Kazakhstan, 52 joint or cross-border surveys were conducted on a total area of 288 000 ha.

Forecast for 2015: It will be submitted later after finishing all the surveys and analysing their data.

TAJKISTAN

In 2014 the surveyed area was 430 000 ha out of which 87 805 ha were infested and 82 633 ha were treated against locusts. DMA treatments were done on 65 700 ha and CIT treatments on 16 400 ha. 47 ULV and tractor sprayers and 850 hand-held and knapsack sprayers were used in the treatments.

Forecast for 2015: Locust infestations are expected on the area of 110 000 to 120 000 ha.

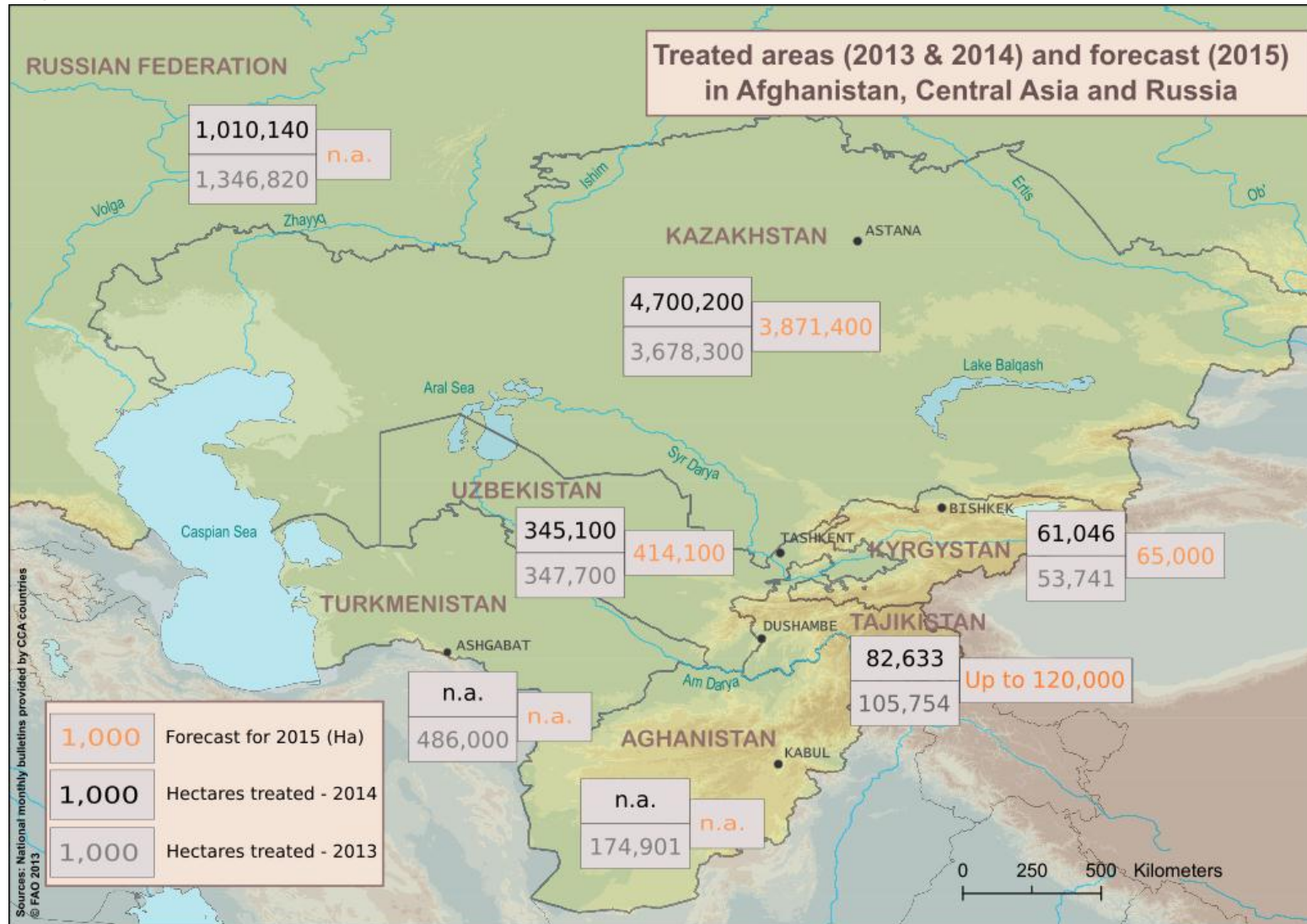
UZBEKISTAN

In 2014 the surveyed area was 700 000 ha out of which 354 700 ha were infested with locusts. Treatments were done on the area of 345 100 ha, mostly with locally manufactured insecticides. During the campaign 149 tractor sprayers, 97 knapsack and hand-held sprayers, 6 ultra-light aircraft, one AN-2 aircraft, 30 vehicle-mounted ULV sprayers, 50 water trucks and 715 seasonal employees were involved in the operations.

Forecast for 2015: Locust infestations are forecasted to cover 489 800 ha out of which it is planned to treat 414 000 ha. The finalized forecast will be prepared in December.

Annex VI – Maps of treated areas in 2013 and 2014 and forecast for 2015 in CCA countries

Map of Central Asia and the Russian Federation



Map of Caucasus

