



Food and Agriculture Organization
of the United Nations

REPORT

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

21-24 November 2022



©FAO/B. Husenov

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

Dushanbe, Tajikistan, 21-24 November 2022

CONTENTS

ABBREVIATIONS AND ACRONYMS.....	iv
INTRODUCTION	1
OFFICERS OF THE SESSION.....	2
AGENDA	3
COMMEMORATION	3
SESSION 1: NATIONAL 2021 LOCUST CAMPAIGNS AND FORECASTS FOR 2022.....	3
National locust campaigns in 2022, forecasts for 2023 and preparation of the next campaigns (Item 4)	3
SESSION 2: PROGRAMME IMPLEMENTATION AND CAPACITY STRENGTHENING IN 2022	7
Overview on Programme implementation in 2022 and funding situation (Item 5)	7
Regional cooperation: Cross-border surveys (Item 6)	10
National capacities development in 2022 (Item 7)	11
<i>Training sessions (Item 7.1).....</i>	<i>11</i>
<i>Update on Background literature on the locust pests in CCA (Item 7.2)</i>	<i>14</i>
<i>Equipment delivered in 2022 to strengthen operational capacities (Item 7.3).....</i>	<i>15</i>
Development of a national locust contingency plan – pilot activity in Tajikistan (Item 8)	18
SESSION 3: DEVELOPING MONITORING AND ANALYSING SYSTEMS	18
Developments of ASDC in 2022 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2023 (Item 9)	18
Developments of CCALM in 2022 (progress made, issues encountered, lessons learnt and recommendations) and next steps for 2023 (Item 10)	20
Potential of drones for use in locust management (Item 11)	22
SESSION 4: RISK REDUCTION FOR HUMAN HEALTH AND THE ENVIRONMENT	23
Monitoring impact of locust control operations (Item 12)	23
<i>Monitoring impact of locust control operations - Human Health and Environment Monitoring Teams' work in Azerbaijan, Georgia (incl. pesticide residue analysis), Kyrgyzstan and Tajikistan, March-August 2021 (Item 12.1)</i>	<i>23</i>
<i>Monitoring impact of locust control operations - Development of a national monitoring system of the impact of locust control on human health and the environment in Uzbekistan (Item 12.2)</i>	<i>25</i>
Progress made on control operations, pesticides and biopesticides, and on safety and environmental precautions (Item 13).....	26
E-Committee on Pesticides and Biopesticides (Item 14)	27
Development of a Locust Pesticide Management System (Locust-PMS) - pilot activity in Georgia (Item 15)	28
Biopesticides in CCA: present and future (Item 16)	29

SESSION 5: LOCUST PROGRAMME IN CCA: WHAT IS NEXT?	30
Towards the establishment of a FAO Commission on locusts in CCA - Update (Item 17).....	30
Programme of work during 2023 (Item 18)	31
CLOSING	35
Any Other Business (Item 19)	35
<i>Short updates on Migratory Locust in Madagascar, Indonesia</i>	35
Adoption of the report (Item 20)	35
Closing address (Item 21)	36
ANNEXES	37
Annex I - List of participants	38
Annex II - Agenda.....	42
Annex III – Implementation of the Programme during Year 11 (1 October 2021-30 September 2022): budget and tentative expenditures.....	46
Annex IV – Minimal list of insecticides proposed for registration against locusts in CCA countries (E-Committee on pesticides and biopesticides, 2022)	48
Annex V – Tentative budget for Programme Year 12 (1 October 2022–30 September 2023)	50
Annex VI – Bilingual List of National Technical Focal Points	52

Tables

Table 1. Surveyed, infested and treated areas in 2022 in CCA.....	3
Table 2. Forecasted treated areas for 2023 in CCA countries	6
Table 3 - Workplan for Year 12 of Programme implementation (2023): activities	32

ABBREVIATIONS AND ACRONYMS

a.i.	Active ingredient
AQPP	Agency for Quarantine and Plant Protection (Uzbekistan)
ASA	Agro Services Agency (Ministry of Agriculture, Azerbaijan)
ASDC	Automated System of Data Collection
CBS	Cross-border survey
CCA	Caucasus and Central Asia
CCALM	Caucasus and Central Asia Locust Management System
CIT	<i>Calliptamus italicus</i> (Linnaeus 1758), Italian Locust
DCPPQ	Department of Chemicalization, Plant Protection and Quarantine (Ministry of Agriculture, Kyrgyzstan)
DMA	<i>Dociostaurus maroccanus</i> (Thunberg 1815), Moroccan Locust
EC	Emulsifiable concentrate
ET	Economic Threshold
FAO	Food and Agriculture Organization of the United Nations
FPPP	FAO-Turkish Partnership Programme
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectare
HH&E	Human Health and Environmental Monitoring [Team]
IGRs	Insect Growth Regulators
ISTT	Institute of Space Techniques and Technology
IT	Information technology
IVI	Integral Vegetation Index
JICA	Japan International Cooperation Agency
l	Litres
LMI	<i>Locusta migratoria migratoria</i> (Linnaeus 1758), Asian Migratory Locust
Locust-PMS	Locust Pesticide Management System
LPRG	Locust Pesticide Referee Group
MAEP	Ministry of Agriculture and Environmental Protection (Turkmenistan)
MEPA	Ministry of Environment Protection and Agriculture (Georgia)
MoA	Ministry of Agriculture
MoE	Ministry of Economy (Armenia)
NDVI	Normalized Difference Vegetation Index
NDWI	Normalized Difference Water Index
NFA	National Food Agency (Ministry of Environment Protection and Agriculture, Georgia)
NSPMD	”Locusts and Transboundary Plant Pests and Diseases” Team (FAO)

PG 3P	Practical Guidelines on the three locust pests in Caucasus and Central Asia
PG RR	Practical Guidelines on pesticide risk reduction for locust control in Caucasus and Central Asia
PPE	Personal Protective Equipment
PSC	Project Steering Committee
RP	Regular Programme (FAO)
SC	Suspension Concentrate
SE-LCE	State Entity “Locust Control Expedition” (Ministry of Agriculture, Tajikistan)
SFERA	FAO Special Fund for Emergency and Rehabilitation
TCP	Technical Cooperation Programme (FAO)
ToT	Training-of-Trainers
TW	Technical Workshop
UAV	Unmanned Aerial Vehicle
ULV	Ultra-Low Volume
UN	United Nations
USAID	United States Agency for International Development
USD	United States Dollar

INTRODUCTION

1. The Technical Workshop on Locusts in Caucasus and Central Asia (CCA) took place in person on 21-24 November 2022. It was organized by the Food and Agriculture Organization of the United Nations (FAO) in the framework of the interregional and multi-funded “Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”.
2. The following nine CCA countries participated in this Technical Workshop (TW), Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. Participants also included representatives from the Embassy of Japan and from the Japan International Cooperation Agency (JICA) Office in Tajikistan as well as from FAO and a few observers. The list of participants is provided in Annex I.
3. The TW was opened by Mr Jabbor Nosirzoda, Deputy Minister for Agriculture of Tajikistan, who welcomed all participants on behalf of his country. He thanked FAO for organizing the workshop, being confident that it will be beneficial for mutual cooperation. He pointed out that Locusts pose serious threat to the region with very large of infestation annually. In a country relying on agriculture as Tajikistan, successful locust management is thus crucial in order not to jeopardize the national food security. The Tajik Government follows the situation with highest attention and it is also active in promoting regional cooperation, of primary importance in view of transboundary nature of those pests. The Deputy Minister added that FAO strongly supports regional cooperation as well as improvement of national capacities in locust management. Gratitude was expressed to the Government of Japan and JICA for significant support and continuous partnership. The Deputy Minister wished fruitful workshop to all participants and enhanced cooperation in view of sustainable development and food security.
4. Ms Kozue Araki, Second Secretary, Embassy of Japan in Tajikistan, welcomed all participants on behalf of the Embassy, noting that the TW is being held face-to-face for the first time since 2019 due to the pandemic. While the “Project for improvement of locust management” (Phase 1), funded by Japan/JICA, benefitted three Central Asian countries, the ongoing Phase II will further strengthen cooperation with additional three countries. She stressed the importance of adequate monitoring with a view of reducing control operations, resulting in a lower quantity of pesticides used and reduced costs. Expressing the hope that such project will contribute to food security and livelihoods, she wished active participation and exchange of best practices during this TW.
5. Mr Oleg Guchgeldiyev, FAO Representative in Tajikistan (by zoom) indicated that the TW was an important event tackling the regional cooperation for locust management to reduce the locust impact on the food security in the region. Tajikistan has successfully controlled locusts on its territory thanks to its own efforts and also with the support of the JICA-funded project implemented by FAO as well as FAO emergency projects. Mr Guchgeldiyev highlighted the importance of strengthening control measures especially in the southern areas of the country, due to reduced capabilities in Afghanistan since last year. He also stressed the need to find a solution in view of sustainable management, which should not rely on projects only, including to continue exchange of information and use of new technologies to increase countries’ capacity. He thanked all participants for coming to Dushanbe and for the important efforts made to improve life of farmers.
6. Mr Akihira Sano, Representative of the JICA Tajikistan Office, stressed that the “Project for improvement of locust management (Phase 2)” is very important and special for JICA since it brings countries together to combat locusts. Although such pests do not recognize border, they unite countries; this is crucial as locusts can cause serious damage resulting in reduced income for farmers. Exchange of information and of experience is very effective to improve locust management. As such, the project contributes to livelihood and food security. He thanked FAO for the great efforts made for implementing the project through capacity strengthening and equipment delivery. He also thanked the Ministry of Agriculture of Tajikistan for hosting the TW.

7. Mr Shoki Al Dobai, Team Leader, Locusts and Transboundary Plant Pests and Diseases (NSPMD) welcomed all participants in this twelfth annual regional technical workshop on locusts in Caucasus and Central Asia, organized as part of the FAO “Programme to improve national and regional locust management in CCA”. He expressed thanks to the Deputy Minister for Agriculture of Tajikistan for opening the workshop and the country for hosting this event. He also thanked the representatives of Japan and JICA for their presence and highly valuable support to the Programme. He acknowledged the valuable support of the FAO Office in Dushanbe for the organization of this event. It is actually the third time that Tajikistan hosts such annual TW, this being a special occasion after two years of a global pandemic. He regretted that out of the ten CCA countries, Afghanistan locust experts could not attend.
8. The Team Leader indicated that this TW would allow discussing many important topics, including the 2022 national anti-locust campaigns and preparations for the 2023 ones, the implementation of the Programme, the latest developments regarding use of the “Caucasus and Central Asia Locust Management System (CCALM)”, risk reduction associated with locust control operations, including biopesticides, and the way forward in view of the creation of an FAO Commission on locusts in CCA. He stressed how important this topic was, as locust sustainable management can only be achieved with a strong regional cooperation in addition to strengthening national capacities. In this respect, he recalled that the tenth anniversary of the Programme had been celebrated the previous year. A lot of achievements have been reached since then, thanks to the active participation of all countries and the outstanding support of resource partners, in particular JICA, the United States Agency for International Development (USAID) and the FAO-Turkey Partnership Programme (FTPP). Deep gratitude was expressed to those partners for continuous trust and support.
9. The Team Leader provided information on the structure of this four-day TW, indicating also that this specific workshop was organized thanks to the project funded by JICA as well as to a contribution from the FAO Regular Programme. He concluded by indicated that it was time for a shift to more innovation and technologies, with more sustainable and environmentally-friendly methods. He wished a fruitful workshop to all.

OFFICERS OF THE SESSION

10. The following officers were elected:

Chairperson:	Mr Nusratullo Bodom Nozaninzoda, Head, State Entity "Locust Control Expedition" (SE-LCE), Ministry of Agriculture, Tajikistan
Vice-Chairperson:	Mr Lasha Nutsubidze, Deputy Head, Plant Quarantine Department, National Food Agency (NFA), Ministry of Environment Protection and Agriculture (MEPA), Georgia
Drafting Committee:	Mr Andrey Zhivykh, Head, Department of Services in Plant Protection, Federal State Institution "Russian Agricultural Center", Ministry of Agriculture, Russian Federation
	Mr Alexandre Latchininsky, Agricultural Officer/Locust Management, NSPMD (FAO)
	Ms Marion Chiris, Locust Programme Officer, NSPMD (FAO)
	Ms Bahromiddin Husenov, Agricultural Officer (Plant Protection/Locusts), NSPMD (FAO)
	Ms Nadiya Muratova, International Consultant, Geographical Information System (GIS) Expert, NSPMD(FAO)
	Ms Greta Graviglia, International Consultant, Operations Expert, NSPMD (FAO)

AGENDA

11. The Agenda, as endorsed by Delegates, is provided in Annex II.

COMMEMORATION

12. The assembly observed a minute of silence in commemoration of a colleague and friend who had sadly passed away this year: Mr Norik Barseghyan, from Armenia.

SESSION 1: NATIONAL 2021 LOCUST CAMPAIGNS AND FORECASTS FOR 2022

National locust campaigns in 2022, forecasts for 2023 and preparation of the next campaigns (Item 4)

13. The Delegates from CCA countries reported on the locust situation and anti-locust campaign in 2022. The surveyed, infested and treated areas per country as well as the outstanding points from the presentations are below.

Table 1. Surveyed, infested and treated areas in 2022 in CCA

Country	Area (in hectares)		
	Surveyed	Infested	Treated
Afghanistan	<i>No data</i>	44 460	22 595
Armenia	60 000	24 500	2275
Azerbaijan	150 403	29 195	29 195
Georgia	215 000	105 000	99 960
Kazakhstan	37 900 000	1 877 974	975 300
Kyrgyzstan	69 935	51 480	51 480
Russian Federation	10 525 720	1 580 970	205 970
Tajikistan	562 618	131 919	117 070
Turkmenistan	148 654	38 701	38 701
Uzbekistan	601 300	415 900	406 015
Total	50 233 630	4 300 099	1 948 561

14. The Delegate from Turkmenistan reported that locust monitoring in 2021 covered an area of 148 654 hectares (ha) out of which 38 701 ha were infested and treated. Geographically, the treatments took place in Lebap (15 260 ha), Mary (9100 ha), Akhal (7251 ha) and Balkan (7090 ha) regions. The most economically important species were Moroccan Locust *Dociostaurus maroccanus* (DMA, 25 243 ha treated, together with *Dociostaurus kraussi*) and saxaul grasshopper *Dericorys albidula* (13 458 ha treated). Overall, the treated area in 2022 was lower than in 2021 (by 39 percent). As for the insecticides, alpha-cypermethrin and a binary mixture of imidacloprid and alpha-cypermethrin were used, both in Emulsifiable concentrate (EC) formulations. They were applied by vehicle-mounted Micron AU8115M, tractor-driven Wind 634 Flexigun and knapsack sprayers. Answering the question from the Russian Federation, the

Delegate explained that in Turkmenistan, water-based Emulsifiable Concentrate (EC) and Suspension Concentrate (SC) formulations are diluted with water when used in Micron AU8115M sprayers.

15. According to the Delegate from Uzbekistan, in 2022 locust survey covered an area of 601 300 ha out of which 416 100 ha were infested and 406 000 ha treated, which is 24 percent lower than in 2021. The largest areas were treated in Kashkadarya (99 900 ha, mostly DMA), followed by Karakalpakstan (91 200 ha, Italian Locust *Calliptamus italicus* - CIT, saxaul grasshopper and Asian Migratory Locust *Locusta migratoria migratoria* - LMI), Surkhandarya (83 500, mostly DMA), and Jizzak (47 000 ha, DMA and CIT) regions. As for the species, the largest area was treated against DMA (253 600 ha) followed by saxaul grasshopper (90 900 ha), CIT (39 400 ha) and non-swarming grasshoppers (22 200 ha). Overall, 41 446 litres (l) of insecticides were used including lambda-cyhalothrin (25 733 l), alpha-cypermethrin (9507 l), imidacloprid (4 846 l) and a binary mixture of imidacloprid and lambda-cyhalothrin (1360 l). All insecticides were in EC formulations. The largest area was treated by vehicle-mounted Ultra-Low Volume (ULV) sprayers (35 units, 209 700 ha) followed by tractor-driven sprayers (135 units, 140 600 ha), ultra-light aircraft (2 units, 28 900 ha), knapsack and handheld sprayers (170 units, 26 800 ha). During the campaign, Uzbek specialists actively used Automated System of Data Collection (ASDC) and made 336 records during survey and 664 records during control operations. During the discussion, it was indicated that the national GIS was under development and could be launched in Spring 2023.
16. The Delegate from Tajikistan reported that locust monitoring was conducted on an area 562 618 ha in 2021, which is 100 183 ha more than was initially planned. The infested area was 131 919 ha and the treated area amounted to 117 070 ha (11 percent lower than in 2021) including 101 103 ha against DMA, 12 641 ha against CIT and 3630 ha against non-swarming grasshoppers. The largest area was treated in Khatlon region (78 197 ha) followed by Sughd region (22 473 ha), Districts of Republican Subordination (16 000 ha) and Gorno-Badakhshan (400 ha). Roughly equal areas were treated by vehicle-mounted, tractor-driven, motorized knapsack and handheld sprayers. All treatments were done with EC formulations of insecticides such as alpha-cypermethrin (39 percent of the total area), lambda-cyhalothrin (27 percent) and chlorpyrifos+cypermethrin binary mix (34 percent); in total, 24 927 l of insecticides were used. In addition to these treatments done by the State Entity "Locust Control Expedition" (SE-LCE), local administrations in locust-affected areas provided 10 206 l of insecticides, which allowed to additionally treat 34 019 ha. In the campaign, a total of 863 staff were involved. In reply to a question, it was indicated that ULV sprayers were used with EC pesticides (which may create some issues with pumps) because of the prohibitive cost of ULV products.
17. According to the Delegate from Kyrgyzstan, DMA hatching in 2022 started from 11 April, which is 4 days earlier than in 2021. On the contrary, CIT hatching started on 10 June, which is 20 days later than in 2021. In general, cool and wet weather in the spring was unfavourable for locust development. Locust survey was conducted on 69 935 ha out of which 51 480 ha were infested by DMA (62 percent) and 19 680 ha by CIT (38 percent). All this infested area was treated. National budget allocated for locust control amounted to about United States Dollar (USD) 361 400 in 2022, which is significantly higher than in 2021 (USD 129 700). The total area treated in 2022 amounted to 51 480 ha including 17 100 ha in Naryn, 13 200 ha in Jalal-Abad, 9900 in Batken, 8700 in Osh, and 2580 in Tchiui regions. Most treatments were applied to populations of 3rd to 5th instar hoppers. In some cases, because of the proximity of infestations to crops, certain areas were double- or triple-treated. Treatments were done with vehicle-mounted Micron AU8115 sprayers (10 units, 48 900 ha) and by tractor-driven ventilator sprayers (six units, 2580 ha). Pesticides used (11 800 l) included alpha-cypermethrin and lambda-cyhalothrin (both in EC, 86 percent of the area) and deltamethrin and chlorpyrifos (both in ULV, 14 percent of the area). For the first time in Kyrgyzstan, small area was treated with hand-held sprayers. The biological efficacy of ULV insecticides was slightly higher than of EC formulations. Answering a question from the Russian Federation, the Delegate explained the proportion of deltamethrin and chlorpyrifos (half each) in the mixture used for ULV formulation. He emphasized that in order to maintain the quality of the ULV sprayers when EC formulations are used, they apply small amounts of kerosene in the pesticide tank to ensure lubrication.

Responding to a question from Tajikistan, the Delegate mentioned that out of 9900 ha treated in Batken region, about 4000 ha were treated in Batken and Leylek districts near the border with Tajikistan. It was also said that a protocol has been signed with Uzbekistan to facilitate exchange of information and mutual assistance in border areas in case of need.

18. The Delegate from Kazakhstan explained that almost 38 million ha were surveyed against locusts in 2022. Infested areas with densities above the Economic Threshold (ET) were recorded for DMA (16 620 ha), CIT (763 594 600 ha) and LMI (195 240 ha). DMA experienced a decline in 2022 while CIT and LMI infestations increased. The treated area amounted to 975 300 ha, which is 56 percent higher than in 2021. Insecticides used included active ingredients (a.i.) zeta-cypermethrin, fipronil and a binary mixture of imidacloprid and diflubenzuron, all in EC formulations. It was specified that a national monitoring system is being used, digitalization being a priority in Kazakhstan.
19. The Delegate from the Russian Federation started by explaining the geographic distribution area of the three main locust species in the country. Of these, CIT exhibits the largest distribution, from the European part till Altai and Novosibirsk region. Interestingly, for the first time, a small infestation of LMI in gregarious phase was reported from Altai territory. Overall, over 10.5 million ha were surveyed in the Russian Federation in 2021 out of which over 1.6 million ha were infested. Because of the continuing decline in locust infestations, anti-locust treatments were conducted only on 205 970 ha, which is 87 percent less than in 2021. The bulk (85 percent) of the treatments took place in North Caucasus Federal District (108 090 ha) and in the South Federal District (67 200 ha). Anti-locust treatments used 38 different insecticides with numerous a.i.; the largest area (over 80 percent) was treated with imidacloprid products. The Delegate recalled that the Russian national GIS ("Agro Expert") and CCALM are interconnected as far as locust related data are concerned and he mentioned the number of ASDC reports made throughout the campaign. All regions were supplied with smartphones to facilitate data collection. The excellent cooperation with Kazakhstan was also praised, a high number of joint surveys and bilateral meetings having taken place in 2022. As to the forecast, the Delegate noted that after several years of decline, an increase of infestations of all three locust species is forecasted for the next year. Answering a question from Georgia, the Delegate explained that anti-locust capacities significantly increased in South Caucasus, particularly in Dagestan, so there should not be locust problems near the border with Georgia. The Delegate also shared information regarding the biopesticides, which were tested experimentally but are not yet used operationally. Finally, the Delegate emphasized that timely completed TW report should be sent to the Ministry of Agriculture, to facilitate such activities as preparation of national bulletins and ASDC use.
20. The Delegate from Armenia stated that in 2022, mostly non-swarming grasshopper infestations were reported from the country while CIT was present in densities below ET. Cool and rainy weather in May hampered locust development. The total surveyed area was 60 000 ha out of which 24 500 ha were infested. Anti-locust treatments covered 2 275 ha and were implemented using a water-based formulation of cypermethrin. Main challenges include lack of trained staff and equipment (vehicles, sprayers and Personal Protective Clothing -PPE) as well as budget deficit.
21. The Delegate from Azerbaijan informed that 150 403 ha were surveyed in 2022 out of which 29 195 ha were infested with densities above ET and treated, including 53 percent against CIT, 47 percent against DMA and a small acreage against LMI. The treated area in 2022 is very close to 2021. Anti-locust campaign started on 29 April; in total, three insecticides were used, i.e. alpha-cypermethrin ULV (12 760 l), cypermethrin EC (3613 l) and deltamethrin EC (240 l). Most of the spraying was done in ULV from 12 vehicle-mounted Micron AU8115 sprayers; for EC formulations, ten Scout 28-s 300 and 51 tractor-driven ventilator sprayers were used. The Delegate illustrated his report by a video on campaign preparation and spraying equipment used. He also mentioned bilateral cooperation with Georgia with respect to locusts and also other pests. Overall, the main challenge is related to human resource, with the need to attract and train younger staff. Recommendations concerned regional cooperation, including exchange of

information, the wish to resume joint/cross-border survey, improvement of the bulletins based on ASDC and CCALM use and the strengthening of staff capacity on locust monitoring and control as well as on the use of biopesticides. Answering a question from Georgia on the use of drones and their effectiveness, the Delegate explained that the usefulness of drones for locust management is being in the testing stage, particularly as they spraying with drones, appears to be questionable. The Team Leader, NSPMD, explained that introduction of drones entails long-term process of development and testing of the suitable prototype for locust control. FAO is working on the development of drone prototype adapted for locust control.

22. The resource person from Afghanistan (by zoom) explained that despite the lack of budget, anti-locust treatments were done in 15 provinces. Out of 44 460 ha infested, 22 595 ha were treated with largest areas treated in Takhar (4980 ha), Kunduz (3062 ha), Balkh (2302 ha) and Badkhyz (2060 ha) provinces. No pesticides were purchased for 2023 as no budget is approved yet. The need for external support for control operations, medical checks and first aid kits, as well as regarding obsolete pesticides and empty containers, was mentioned.
23. The Delegate from Georgia informed that hatching of DMA started on 15 May and hatching of CIT, on 23 May. Cool and rainy weather slowed down locust development. Out of 215 000 ha surveyed, 97 000 ha were infested with CIT and 10 000 ha with DMA, with densities exceeding ET. Anti-locust treatments covered 99 960 ha, which is slightly lower than in 2021. The treatments took place in Kvemo-Kartli (56 600 ha), Kakheti (25 285 ha), Mtskheta-Mtianeti (4365 ha), Shida Kartli (9860 ha), and Tbilisi (3830 ha) regions. The following insecticides were applied: lambda-cyhalothrin ULV (78 100 l) and EC (7736 l), as well as smaller quantities of deltamethrin and teflubenzuron. Treatments were done by 12 ULV sprayers (Micron AU8115) and ten UL sprayers (Scout 34 s 400, TIFONE, MMT HUNTER). The proportion of areas treated with ULV formulations with respect to areas treated with water-based formulations was 81/19 percent. The Delegate noted that in his experience, efficacy of ULV formulations was slightly lower than that of EC formulations. ASDC forms were widely used in the country: 734 reports were sent during surveys and 1120 reports during treatments. In terms of difficulties, the Delegate noted primarily the lack of qualified staff as well as the absence of specific pesticide warehouse and limited availability of vehicles (for staff transportation) and of sprayers. Also, expansion of locust-infested areas due to climate change was mentioned. Recommendations included the necessity to continuously train personnel but also the need for sustainable long-term cooperation, beyond projects, the need to identify new suitable pesticides for locust control. Answering a question from the Russian Federation, the Delegate explained that ULV sprayers repairs and spare parts procurement are done with funds specifically allocated for such purposes in the campaign budget and that spare parts are thus being kept in stock for quick replacement when needed.
24. Delegates presented areas subject to treatments in 2023 (forecast) as follows:

Table 2. Forecasted treated areas for 2023 in CCA countries

Country	Area (in ha) - subject to control operations
Afghanistan	26 915
Armenia	4000
Azerbaijan	25 000 – 30 000 (to be confirmed in spring)
Georgia	70 000
Kazakhstan	1 584 900
Kyrgyzstan	60 000
Russian Federation	333 300

Tajikistan	123 145
Turkmenistan	100 000 (survey)
Uzbekistan	479 500
Total	2 811 760

SESSION 2: PROGRAMME IMPLEMENTATION AND CAPACITY STRENGTHENING IN 2022

Overview on Programme implementation in 2022 and funding situation (Item 5)

25. Ms Marion Chiris, FAO Locust Programme Officer, provided an overview of the implementation of the CCA locust Programme during Year 11, from 1 October 2021 to 30 September 2022, against the available funding sources. They included: the project funded by JICA for Central Asian countries (GCP/INT/384/JICA); the project funded by USAID for nine CCA countries except the Russian Federation (GCP/GLO/963/USA), operationally active from January 2022; three national projects funded by the FAO Technical Cooperation Programme -TCP (emergency component), to the benefit of Georgia (TCP/GEO/3801), Kyrgyzstan (TCP/KYR/3801) and Tajikistan (TCP/TAJ/3806); and a modest contribution from the FAO Regular Programme (RP). The main achievements for year 11, under the different Programme results, were summarized as described below (unless specified otherwise, they were funded by JICA project for Central Asia and by USAID project for Caucasus).
26. Under Result 1 of the Programme, “Regional cooperation developed”, 60 national bulletins were prepared by all ten countries as well as seven regional monthly bulletins by FAO, for the thirteenth consecutive year. The annual TW was held online for the second time in November 2021, allowing also to celebrate the 10-year anniversary of the Programme. The important field activities interrupted by the pandemic, has resumed in 2022. Two cross-border surveys were organized during spring between Tajikistan and Uzbekistan, which jointly surveyed 112 000 ha. With respect to long-term regional cooperation and the creation of an FAO Commission on locusts in CCA, following the meetings already held in the previous year, a high-level bilateral meeting was organized with the eighth country, Kazakhstan. As a result of those discussions, support letters were received from four countries – Russian Federation, Uzbekistan (although not through official channels), Kazakhstan and Georgia.
27. In terms of capacity strengthening, 635 persons benefited during Programme year 11 under all results. Under Result 2 specifically, “National capacities strengthened”, 355 persons benefited from: one online Refresher Course (Uzbekistan, November 2021) and a Training-of-Trainers (ToT) on locust management for Caucasus countries, in Georgia in September 2022 – a similar ToT was held for Central Asian countries and the Russian Federation in Uzbekistan in October 2022 (*the latter falling under Programme Year 12*). A total of 21 national/briefing/information sessions were also delivered by the national Master-Trainers in Armenia, Azerbaijan, Georgia, Kyrgyzstan and Tajikistan, to 311 locust experts/manpower/persons. Unlike the previous year, all sessions were held in-person. This was complemented by the delivery of background literature, including the Practical Guidelines on pesticide risk reduction for locust control in CCA (PG RR) and on the three locust pests in CCA (PG 3P) as well as two Posters on the Italian and Moroccan Locusts; and the publishing and delivery (to seven countries so far) of the Monograph on Italian Locust. All FAO publications are available on the website “Locust Watch in CCA”.
28. Concerning Result 3, “Locust issues better anticipated”, operational support was provided for survey during the 2021 autumn (egg-pod) to Kyrgyzstan and throughout the 2022 locust campaign to Georgia, under the national TCP projects. Survey equipment was also delivered or under delivery to eight countries, incl. Global Positioning System -GPS (Georgia, Uzbekistan), entomological kits and binoculars, office equipment (Georgia), Information Technology (IT)

equipment (Azerbaijan), water tank lorries (Tajikistan), motorbikes (Afghanistan, Azerbaijan), entomological kits and binoculars (Armenia, Azerbaijan, Georgia, Turkmenistan, Uzbekistan). Additional procurement was in progress. Under this Result, with a view to enhance preparedness for locust risk management, the drafting of a national contingency plan is in progress in Tajikistan, as a pilot activity.

29. Active support continued for the development and use of the Automated System for Data Collection (ASDC) and the Caucasus and Central Asia Locust Management System (CCALM). At the national level, this included an in-depth CCALM introduction to Uzbekistan, in July 2022 (including training of 25 Experts), delivery of tablets for ASDC use for Armenia and Georgia, support for internet costs for Kyrgyzstan and Tajikistan, production of a video entitled “Get started with ASDC” and an update of the two manuals on ASDC and CCALM. As a result, the number of ASDC records increased from 5178 in 2021 to 5681 (by nine countries) in 2022. At the regional level, the third GIS Workshop on Locust Data Analysis, Forecast and Reporting in CCA was held online on 16-18 February 2022 as well as an E-Committee on CCALM on 14 July, both attended by the ten CCA countries (respectively 65 and 30 participants). Based on the recommendations formulated by CCA countries and FAO, functionalities of both ASDC and CCALM were further improved by the Institute of Space Techniques and Technology (ISTT), Kazakhstan.
30. Under Result 4, “Response mechanisms to locust outbreaks improved”, operational support was provided to Georgia for treatments during the 2022 campaign, thanks to the national TCP project. Control equipment was delivered to four countries, incl. tractors (Tajikistan), ULV sprayers (Turkmenistan, Uzbekistan), EC sprayers (Kyrgyzstan, Tajikistan), camping equipment (Tajikistan) and minibuses - under delivery in this latter case (Tajikistan). The E-Committee on pesticides and biopesticides was reactivated in 2022 to review the pesticides registered and frequently used against locusts in CCA; at this occasion the report of the 11th meeting of the Locust-Pesticide Referee Group (LPRG)¹ was made available in Russian. To promote the use of ULV technology, during regional ToT sessions, theoretical and practical classes were delivered on ULV spraying. A leaflet “Locust control: ultra-low volume vs full volume spraying” was also prepared in English and Russian, as advocacy/information material targeting both decision-makers and technicians. Last, a protocol on biopesticide use was developed for efficacy trials and environmental post-treatment monitoring in view of the demonstration planned in 2023.
31. Under Result 5, “Impact on human health and the environment mitigated and monitored”, the Locust Pesticide Management System (Locust-PMS), developed by FAO in 2020/2021 to assist countries in preparedness for early response to outbreaks and pesticide risk reduction, was implemented in Georgia as a pilot country for CCA. Support was also provided to Uzbekistan to develop the national system for health and environmental monitoring of locust control, during a mission of the FAO Environmental Expert in late June/July 2022, including on-the-job training on monitoring techniques for four experts. Technical and operational support continued to the already established Human Health and Environmental Monitoring Teams in Azerbaijan and Georgia, for the fifth consecutive year, as well as in Kyrgyzstan and Tajikistan, for the seventh year; in this context, Georgia conducted pesticide residue analysis of vegetation samples. Last, environmental monitoring equipment (Uzbekistan) and reagents for cholinesterase blood tests (Tajikistan) were delivered while PPE were under delivery (Georgia) or procurement (Armenia, Azerbaijan, Kyrgyzstan and Uzbekistan - nitrile gloves only for the two latter).
32. Under Result 6, “Public information and awareness increased”, the 2022 Calendars on safety measures associated with locust control (published the previous year) were dispatched to populations in locust-affected areas in Turkmenistan and Uzbekistan. Similar 2023 calendars, adapted to each national context and in the national languages, were published for Armenia, Azerbaijan and Georgia. Efforts continued to ensure visibility, with news regularly published on the FAO website “Locust Watch in CCA”. A brochure on the JICA project (published the previous

¹ The LPRG is an independent body of experts that advises FAO on the efficacy and environmental impact of different pesticides for locust.

- year) was dispatched to national counterpart, donor offices and other partners in project beneficiary countries. A brochure on the USAID project was also published, for dispatch to similar audiences. Press-releases were prepared for major field activities or trainings in Georgia, Tajikistan and Uzbekistan and a press-tour was organized in July 2022 in Kyrgyzstan. Equipment hand-over ceremonies were organized by the FAO Representations in Uzbekistan (December 2021) and Tajikistan (February 2022), with media coverage. Bilingual banners were prepared for major events as well as stickers for equipment, mentioning the relevant resource partner.
33. On top of the above, a national emergency project for Tajikistan entitled “Preventing the locust spread in Tajikistan and neighboring countries, particularly Afghanistan” (OSRO/TAJ/200/GER) was approved by the FAO Special Fund for Emergency and Rehabilitation (SFERA), funded by Germany, with a budget of USD 132,104. This five-month project was implemented by the FAO Representation in Tajikistan from 1 May to 31 October 2022 and covered the delivery of fuel and spare parts for vehicles, tractors and sprayers as well as the print-out, for Tajikistan, of the ULV brochure (prepared against other sources).
 34. In terms of constraints met during Programme year 11, two activities, the 2021 TW and the 2022 GIS Workshop, had to be held online to cope with the COVID-19 pandemic while the ToT, initially planned in February/March 2022, had to be postponed to September/October 2022. The in-depth CCALM introduction could not take place as planned in Turkmenistan due to travel restrictions. The joint or cross-border surveys in Central Asia and in Caucasus could not be carried out, except for the two surveys between Tajikistan and Uzbekistan, due to the epidemiological situation or travel restrictions during spring 2022 as well as insecurity in some border areas.
 35. Other constraints included the political situation in Afghanistan and related resolutions of the United Nations (UN) Security Council: UN agencies are not allowed to work directly with the de-facto authorities except for humanitarian purposes and neither activities could be carried out nor equipment delivered (while the equipment already purchased had to be kept on hold in FAO storage warehouse in Kabul). Nevertheless, Afghanistan technicians continued sharing national monthly bulletins and other information and were present in online events. The pending signature of the JICA project by Kazakhstan also impedes implementing activities on the Kazakh territory as well as delivering equipment or background literature; other activities were however implemented, including sharing of national monthly bulletins, other information and participation in online events. Last, procurement was impacted by COVID-19 and the conflict in Ukraine, which affected the logistics and supply chains, causing delays in production and/or transportation of some goods.
 36. Based on the results achieved during the year, a number of recommendations were made by FAO for the next year, including:
 - All stakeholders should continue making every effort to concur to the three main directions/priorities agreed upon – towards: sustainable regional cooperation, implementation of an effective locust preventive control strategy and further increase of knowledge and best practices;
 - A key aspect being sustainability, advocacy should continue for the establishment of a long-term institutional mechanism at a regional level, and practical steps taken to that end.
 - Signature of the JICA and USAID projects by remaining countries should be pursued, allowing the region to take a full advantage of the assistance provided by these key resource partners.
 - All countries having benefitted from the ToT regional sessions in 2022 should organize national sessions in 2023, ensuring transfer of knowledge by the Master-Trainers to other staff.
 - Major efforts should be pursued at the national level for the extensive use of ASDC, which is required to allow the operational use of CCALM and thus produce meaningful GIS products and contribute to improve data analysis and locust forecast.

- Efforts to use and familiarize with most efficient spraying technologies as well as less harmful pesticides and alternatives to conventional pesticides, such as biopesticides, should be high on the agenda.
 - Efforts to monitor the impact of locust control on human health and the environment should be pursued in countries which have created Human Health and Environmental Monitoring Teams as well as in Uzbekistan, which benefitted from related support in 2022; the work done so far under the Programme to set up teams should continue to expand.
37. Next, the FAO Locust Programme Officer briefly presented the funding situation of the Programme. She indicated that at the end of year 11, a grand total of USD 19 million had been made available since the Programme started, with a total of thirteen projects in addition to the FAO Regular Programme. She mentioned that, out of this amount, about USD 5 million are available for the 2023 campaign and the following ones, up to 2024/2025.
38. Regarding the tentative expenditures for Year 11 of the Programme, from 1 October 2021 to 30 September 2022, they amounted to USD 2.9 million against all funding sources. More specifically, expenditures amounted to USD 1.9 million for JICA project (GCP/INT/384/USA) during Programme Year 11 (i.e. project second year), for a total of USD 3.5 million since project start, representing 46 percent of the total budget of USD 7.5 million for five years. Concerning USAID project (GCP/GLO/917/USA), expenditures amounted almost to USD 0.8 million during Programme Year 11 (i.e. project first year), representing 44 percent of the total budget of USD 1.8 million for three years. The remaining planned activities were undertaken as far as the national TCP projects for Kyrgyzstan and Tajikistan (completed in December 2021) and Georgia (ending in November 2022) are concerned, bringing the total expenditures to above 99 percent of the budgets, of USD 250 000 for each TCP. Annex III provides, for each available funding source, an overview of expenditures by Programme Results and activities during Programme Year 11.

Regional cooperation: Cross-border surveys (Item 6)

39. The Delegate from Tajikistan presented the results and outcomes of the two Cross-border surveys (CBS) held between Tajikistan and Uzbekistan in 2022, with the support of the JICA-funded project. The first one was held from 28 March to 2 April 2022 covering southern borders, namely Districts of Republican Subordination (DRS) and Khatlon region of Tajikistan and Surkhandarya region of Uzbekistan. In total, fourteen participants attended the survey: each country was represented by six participants joined by FAO Locust Management Officer and FAO Agricultural Officer (Plant protection/Locusts). The survey was conducted on an area of 30 000 ha in Tajikistan, and 45 000 ha in Uzbekistan. As per the results of the survey, DMA hoppers were observed on both sides of the border in their first instar and with an average density up to 250-300 individuals per sq. m. The Delegate informed that control operations had started on both sides of the border. The second CBS between these two countries was held from 31 May to 3 June 2022, covering northern border areas, i.e. Sughd region of Tajikistan and Jizzakh region of Uzbekistan. Fourteen persons participated in the survey, including six locust experts from each country, the Programme Officer of JICA office in Tajikistan and the FAO Agricultural Officer (Plant Protection/Locusts), the latter only on the Tajik side of the border. The surveyed area covered 27 000 ha (12 000 on Tajik side and 15 000 ha on Uzbek side of the border), where both DMA and CIT are usually present. However no DMA or CIT were observed during the survey, only rare grasshoppers were recorded. Upon completion of each CBS, the countries prepared a joint act, which was signed by all participants.
40. The Delegate from Uzbekistan agreed with the report provided by the Tajik Delegate. He added that in the neutral zones at the border of the two countries, which cover about 35 000 ha, it is not possible to conduct control operations and therefore higher infestation of DMA may cause damages. In reply to a question of the FAO GIS Expert on ASDC use during the CBS, the Delegate from Uzbekistan replied positively and informed that the survey form in ASDC was filled for each site. The Delegates from both countries highlighted the importance of such activity and stressed the need for its continuation in the future.

National capacities development in 2022 (Item 7)

Training sessions (Item 7.1)

- **National sessions**

41. Each country presented the trainings organized during Programme Year 11, including national and briefing sessions on locust monitoring, spraying and pesticide risk reduction and ASDC/CCALM, online refresher courses on locust management and in-depth CCALM introduction, as summarized below.

- **Armenia: national sessions on 20 April and on 28-29 June 2022 (GCP/GLO/917/USA and national funds)**

42. The Delegate from Armenia reported about two training sessions on locust bio-ecology and monitoring as well as ASDC, which were held to the benefit of 38 experts, one for 19 regional agronomists on 20 April in Yerevan (with no financial support from the Programme) and the other for 19 experts on 28-29 June in Syunik. The Delegate informed that the field use of tablets is difficult due to the age of the experts/agronomists, who are not used to new technologies. A request for more training courses for the country's specialists was raised. The Delegate also mentioned the ToT organized in Georgia in September 2022, in which two specialists from Armenia took part. She mentioned that the field survey in Kakheti was very much appreciated by the specialists and that data on these activities are published on the website of the Ministry of Economics.

- **Azerbaijan: five briefing sessions in April 2022 (GCP/GLO/917/USA)**

43. Explaining that it is the responsibility of Agro Services Agency (ASA), Ministry of Agriculture (MoA), to organize trainings with specialists and farmers on locusts, the Delegate from Azerbaijan reported about five briefing sessions which were held to the benefit of 82 staff, on 12 April in Barda (17 persons), 13 April in Shamkir (15 persons), 14 April in Saatli (18 persons), 15 April in Fuzuli (18 persons) and 20 April in Shabran (14 persons). Trainings were conducted by three Master-Trainers who had participated in previous ToT and acquired experience. Main trainings' topics included biology, monitoring, pesticide risk reduction, ASDC and CCALM. The Delegate informed that the most useful topics for the training were locust bioecology, determination of phase and species, data collection, ULV spraying and calibration methods. Training material is available and widely used, including all materials provided by FAO, some of which was translated into Azeri Trainings news is usually published on the website of MoA/ASA or in the media.

44. The Delegate underlined that these trainings allow for the development of national capacities, especially the information provided on biology, locust developmental stage and the practical exercises in the field before every campaign, and that they are perceived very positively by the staff. He also thanked the trainers for the ToT delivered in September 2022. He recommended to increase the length of trainings, to at least two-three days each. Last, he informed that the number of staff and resources is currently not adequate, as entomologists and phytopathologists are missing, as well as young experts, ASA management being however very committed to attract young experts.

- **Georgia: seven training sessions in April-June 2022 (GCP/GLO/917/USA)**

45. The Delegate from Georgia reported about seven training sessions which were delivered to the benefit of 80 experts, first on 29-30 April 2022 (20 staff, mainly new one), then on 20-23 May in Kakheti (13 persons), 24-25 May in Kvemo Kartli (15 persons), 26-27 May in Mtsketa-Mtianeti (5 persons), 28-29 May in Shida Kartli (4 persons) and 30-31 May in Samtskhe Javakheti (3 persons) and last on 1-2 July (20 persons, mainly heads of plant protection department and regional divisions and coordinators of regional activities), both in Kakheti. The Delegate indicated that importance was paid to ASDC use on tablets and smartphones. He also highlighted the importance of conducting trainings before the campaign, to refresh knowledge or train new staff

(turnover being a problem). The Delegate asked for additional FAO support with CCALM training and on pesticide risk reduction measures. He mentioned that during the trainings, representatives from internal audit unit were invited, to be aware of locust activities carried out by NFA, and standard operation procedures (SoP) were developed, which facilitated the post-review/control check of the work of NFA.

- **Kyrgyzstan: five briefing sessions in April - June 2022 (GCP/INT/384/JCA)**

46. The Delegate from Kyrgyzstan reported about five two-day briefing sessions which were delivered by Master-Trainers to a total of 75 staff/local manpower from April to June 2022, as follows: 11-13 April in Aksy and Nooken districts, Jalal-Abad, 10-12 May in Nookat and Aravan districts, Osh; 16-18 May in Leilek and Batken districts, Batken; 23-25 May in Manas and Kara-Buura districts, Talas; and 6-8 June in At-Bash and Ak-Tala districts, Naryn (15 participants each). The Delegate explained that this activity is conducted by experienced staff and that it has become a tradition since JICA project Phase 1, when new practices were introduced. They are perceived as very efficient. A total of five specialists were involved in this activity, three participating in each session on rotation basis. Unfortunately, no gender balance could be ensured as two women were in maternity leave. The average age of trainees is 41 years old, with ten to 20 years of experience. The following topics were addressed during the briefings: locust bio-ecology and monitoring, spraying, including practical exercises on sprayer calibration; PPE use; monitoring; and ASDC and GPS use. The Delegate underlined the importance of this activity, as well as of the practical exercises, as a way to improve the capacity of staff, regional and new specialists, of the Department of Chemicalization, Plant Protection and Quarantine (DCPPQ), Ministry of Agriculture, as their turnover is a problem and staff has to be trained continuously. In conclusion, on behalf of DCPPQ, he stressed the importance to organize these briefings in the future. Regarding the use of ASDC, he indicated that young specialists work in the main office but not in the regions. He nevertheless emphasized the need of using ASDC during the briefing sessions, when MTs work together with staff. Specialists from regions contacted the main office by phone to update on the work done on a weekly basis.

- **Tajikistan: two information sessions on 26 May and 3 June 2022 (GCP/INT/384/JCA)**

47. The Delegate from Tajikistan reported about two information sessions which were organized by SE-LCE staff for 40 farmers on locust detection and reporting, on 26 May in Tursunzoda and on 3 June, in Mastchoh district, Sughd region (for 20 persons each), the latter in presence of the FAO Agricultural Expert (Plant Protection/Locusts). The Delegate also informed about the participation of four specialists from Tajikistan in the Training-of-Trainers organized in Uzbekistan (two participants/session) and about the national session organized in November 2022, on 14-18 November in Khudjand for 17 specialists, with more planned in other districts. He thanked the FAO GIS Expert for introducing and for the work done on ASDC and CCALM systems.

- **Uzbekistan: online refresher course on 1-5 November 2021 and in-depth introduction of CCALM on 25-29 July 2022, (GCP/INT/384/JCA)**

48. The Delegate from Uzbekistan reported about the in-depth introduction of CCALM in Uzbekistan, which took place in Tashkent on 25-29 July 2022, during a mission of the FAO GIS Expert, accompanied by the FAO Agricultural Officer (Plant Protection/Locusts). A training course was delivered to 25 managers and staff of Agency for Quarantine and Plant Protection (AQPP) on the use of both ASDC and CCALM, with both theoretical and field practice parts. Then, in-depth work was carried out with four staff designated to be responsible for managing the GIS at the national level, allowing practice on the use and issuance of GIS products. The average age of the participants was 35-45 year old. He indicated that the work carried out with FAO in this domain and the area for locust control will continue.

49. The FAO GIS Expert also reported about an online five-day refresher course on locust management delivered to 20 Uzbek experts on 1-5 November 2021, included on locust bioecology and survey methodology, practical sessions on ASDC and CCALM and also pesticide risk reduction aspects.

- **Regional sessions**

50. The Delegate from Georgia as well as the FAO GIS Expert, both reported about the two regional sessions of the Training-of-Trainers held in Kakheti, Georgia on 12-16 and 18-23 September to the benefit of 24 specialists from the three Caucasus countries, with the support of the USAID-funded project. The age of participants (three women and 21 men) varied from 30 to 50 years old.
51. The first session on Locust Monitoring and Information Management, including ASDC and CCALM, was delivered by Mr A. Latchininsky, FAO Locust Management Officer, and Ms N. Muratova, FAO International Consultant, GIS Expert. It benefitted to 12 locust specialists from the three Caucasus countries, i.e. two from the Division of Phytosanitary of Ministry of Economy (MoE) of Armenia and the Agricultural Services Center, three from ASA, Azerbaijan, and seven from NFA, Georgia. The training was delivered in Russian and focused on the two main locust pests present in Caucasus countries, CIT and DMA, as well as ASDC use during survey operations. During the field trip in the municipality of Telavi, the participants practiced to fill out correctly FAO survey form using tablets or smartphones, tested the new ASDC beta-version and measured the index which shows the relation between tegmen and hind femur lengths and characterizes locust phase (solitary, gregarious or transitional). The trainings ended with CCALM practice and analysis of the forms sent during field practice and locust season 2021-2022 from different regions.
52. The second session on Locust Spraying and Risk Reduction was delivered by FAO Experts, Mr Harold van der Valk, Environmental Expert, Mr Asif Taghiyev, Spraying Expert, Ms N. Muratova, GIS Expert, and Mr A. Latchininsky, FAO Agricultural Officer/Locust Management, to the benefit of 12 specialists, two from Armenia, four from Azerbaijan and six from Georgia. The trainings were delivered in Russian and in English with simultaneous translation in the other language and focused on locust spraying and the use of the ULV technology. Specific attention was also directed to: environmental and human health effects of locust control; insecticide risk reduction measures; the use of Personal Protective Equipment (PPE); recognition and treatment of insecticide poisoning; and monitoring of the quality, human health effects and environmental impact of locust control. During field practice in Gurjaani region, the participants practiced ULV sprayers calibration, calculation of flow rate and track spacing, and used ASDC Spray Monitoring Form.
53. The Delegate from Georgia thanked FAO for the organization of the ToT sessions, transfer of training materials to the Master-Trainers and recommended to increase field practice on locust survey in such trainings in the future. He also underlined the helpfulness and high evaluation of the trainings by the participants. Last, he mentioned the very sad passing away of Armenian Colleague and friend, Mr Norik Barseghyan, during the meeting.
54. The Delegate from Uzbekistan and the FAO GIS Expert, both reported about the two regional sessions of the Training-of-Trainers held in Samarkand, Uzbekistan on 17-21 and 23-28 October with the support of the JICA-funded project, to the benefit of 30 specialists from the five Central Asia countries and the Russian Federation. The age of participants (three women and 27 men) varied from 35 to 55 years old.
55. The first session on Locust Monitoring and Information Management, including ASDC and CCALM, was delivered to the benefit of 15 locust specialists from six countries, one from the State Institution «Republican Methodological Center for Phytosanitary Diagnostics and Forecasts» of the State Inspection Committee in the Agro-Industrial Complex, Kazakhstan, two from the DCPPO, Kyrgyzstan, two from SE-LCE, Tajikistan, two from the Plant Protection Service of the Ministry of Agriculture and Environmental Protection (MAEP) of Turkmenistan, five from AQPP, Uzbekistan, as well as three persons from the Russian Agricultural Center, Russian Federation (self-funded participants). The trainings were delivered in Russian and focused on the three main locust pests present in Central Asian countries, CIT, DMA, LMI and ASDC use during survey operations. During the field trip in Samarkand district, the participants practiced to fill out correctly FAO survey form using tablets/smartphones and new ASDC beta-version, identified the locust species, sex and phase. The trainings ended with CCALM practice, including an analysis of the forms sent during the field practice and locust season 2021-2022 from different Central Asian countries and the Russian Federation.

56. The second session on Locust Spraying and Risk Reduction was delivered to the benefit of 15 specialists, i.e. two Kazakh, two Kyrgyz, two Tajik, two Turkmen, five Uzbek and two Russian ones. The training was delivered in Russian and in English with simultaneous translation in the other language and focused on the same topics that in the corresponding session in Caucasus. During the two days field practice in Nurabad district of Samarkand region, the participants practiced the calibration of ULV spraying equipment, as well as insecticide spray exercises and use of ASDC Spray Monitoring Form. All training materials (presentations, exercises, forms, background guidelines and manuals) were made available in electronic format (both in English and Russian) to the Master-Trainers.
57. The Delegate from Uzbekistan thanked FAO for the organization of the ToT sessions and for having provided some equipment for sprayer calibration and environmental monitoring to the Master-Trainers. He underlined that this will facilitate training of local staff in their respective countries.
58. The FAO Locust Management Officer noted that the results of the pre- and post-evaluations showed an increase of participants' knowledge on locust bio-ecology as they averaged 82 percent in Caucasus countries and 61 percent in Central Asia countries before the training and were up to 88 percent and 86 percent respectively after the training. He also underlined that in the future the training programme in both sessions will be revised because the locust survey and control operations are interconnected and the specialists must be informed in both areas.
59. The FAO International Consultant, GIS Expert, also informed that during the trainings 38 test Locust Survey Forms from Caucasus and 102 test forms from Central Asian countries were completed and sent to CCALM database. The participants' knowledge of ASDC use improved through analysis/discussion of errors in both test and real Forms filled out during the training and the locust season 2021-2022 from different countries. She also listed some constraints met during the regional sessions such as: (1) the equipment for the Master-Trainers (insect collecting and mounting kits and items for sprayers calibration) were delivered with delay to Georgia and the participants could not use them during the training; and (2) some younger participants could not take full advantage of the trainings because of insufficient Russian language knowledge.
60. During the discussions, the Delegate from Armenia underlined the importance of in-person trainings. She informed that there is a problem with ASDC use installed on the tablets and asked FAO to organize a training on Locust Biology, Monitoring and Information Management in Armenia. The Delegate from Azerbaijan recommended to increase the number of days for national sessions, to adjust the dates of the sessions according to the locust biology and current weather conditions and to pay more attention to field practice, which is important especially for young specialists. The Delegate from Kyrgyzstan expressed the readiness to use ASDC as widely as possible, with the support of Master-Trainers. The Delegate from the Russian Federation, who expressed interest in the published books and Practical Guidelines, was informed that all of them were available on the FAO website "Locust Watch in CCA".
61. In conclusion, the Delegates agreed on the usefulness of the information received during the ToT regional sessions and expressed the readiness of Master-Trainers to transfer the knowledge gained to the staff during the national and briefing sessions to be organized in 2023; to that end, the material received will be translated into national languages to increase the effectiveness. They also requested FAO to continue providing technical assistance on locust monitoring, spraying, pesticide risk reduction and ASDC /CCALM use and also in view of the organization of national and briefing sessions in 2023.

Update on Background literature on the locust pests in CCA (Item 7.2)

62. Mr Latchininsky, FAO Locust Management Officer, presented an update on CCA locust publications. During the Programme year 11, the Practical Guidelines on pesticide risk reduction of locust control in CCA (PG RR), published in 2019, were printed and dispatched in Russian and/or in other national languages to four countries: Azerbaijan, Georgia, Turkmenistan and Uzbekistan. The Practical Guidelines on the three locust pests in CCA (PG 3P), published in 2020, were delivered to six countries: Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan and

Uzbekistan. They were also translated into Turkmen (editing ongoing at the end of year 11), thanks to different funding sources (TCP projects and GCP/INT/384/JCA). Mr Latchininsky highlighted the special attention paid to translation into national languages, as a way to disseminate knowledge widely. He indicated that a third Practical Guidelines will be prepared on monitoring.

63. Regarding posters, he reminded that the Italian Locust (CIT) and Moroccan Locust (DMA) posters were developed in 2021 by FAO, in liaison with the national services in charge of locust management, to provide comprehensive information on morphology, biology, behavior and monitoring of these locust species, to the benefit of national staff. They were adapted to local context to reflect the situation with CIT and DMA and produced in national languages. During Programme Year 11, such posters were printed and dispatched to Tajikistan, Turkmenistan and Uzbekistan, thanks to different funding sources. He also indicated that, upon request by the Delegate from the Russian Federation, it is possible to make some changes on both CIT and DMA posters to adapt them to the Russian context. A third poster on LMI will be developed next year for the concerned countries.
64. As to the monographs, a comprehensive book on the “Italian Locust *Calliptamus italicus* (Linnaeus, 1758): morphology, distribution, ecology, population management” (330-pp), in Russian, was published in January 2022 by FAO. It is authored by 12 acridologists from Kazakhstan, Russian Federation, Turkmenistan, Uzbekistan and FAO. The book contains information on taxonomy, evolution and ecology of the Italian Locust, as well as descriptions of historic and contemporary approaches to its population management. It is destined for entomologists, plant protection specialists, ecologists and students of agricultural or biological specialties. A total of 25 copies per country was printed, shipped and delivered to all countries in July/August 2022 (except Afghanistan, Kazakhstan and the Russian Federation), thanks to the JICA-funded project for Central Asia and to the USAID-funded one for Caucasus. The text of Moroccan locust (DMA) monograph was technically finalized in Russian. The layout of the book is currently being finalized because its volume appeared to be much larger than planned.
65. Mr Latchininsky informed that the 2023 Calendars on safety measures associated to locust control (provided to Turkmenistan and Uzbekistan last year), recently published for each of the three Caucasus countries, were being printed in order to be handed-over to the national services in charge of locust management for further dispatch to populations in locust-affected areas, in late 2022/early 2023, with the support of the USAID-funded project.
66. Regarding the monthly bulletins on locust situation, he indicated that all countries submitted six national locust bulletins during Year 11. Seven regional bulletins, including the one for winter 2021/2022 (published in March 2022), were issued by FAO. Publication of bulletins will be resumed in March 2023, including maps. The FAO Locust Management Officer requested to fix a date by which the national bulletins should be submitted to FAO. The proposal by the Delegate of Georgia to send information by the 5th day of the next month was approved.

Equipment delivered in 2022 to strengthen operational capacities (Item 7.3)

67. Ms Graviglia, FAO’s Operations Expert, presented an update on the locust equipment procured during the year 11th of the Programme, from 1 October 2021 to 30 September 2022, with the aim to strengthen national operational capacities. Over this period, eight countries, namely Afghanistan, Azerbaijan, Armenia, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan were concerned, thanks to the regional projects funded by JICA and USAID. The JICA-funded project particularly covered the delivery of equipment for Central Asia countries while the USAID-funded supported the Caucasus ones. Additional equipment were provided to Georgia, Kyrgyzstan and Tajikistan from the FAO national TCP projects.
68. Under Programme Result 3 - Activities 3.1.2. Strengthen operational capacities for locust monitoring (survey equipment), the following equipment was delivered:

- Motorbikes and accessories: 30 units were delivered to Afghanistan in January 2022 (in transit to the country since August 2021). Motorbikes are currently stored in the FAO warehouse in Kabul, as the transfer of equipment to the project Government counterpart is not possible; 10 units were delivered to Uzbekistan and handed-over in December 2021 with an official ceremony; and 10 units were purchased for Azerbaijan and delivered in October 2022 (currently under customs clearance).
 - Water-tank lorries: five units were delivered to Tajikistan in August 2022, one unit was requested by Turkmenistan after the first Project Steering Committee however, it is preferable to finalize this activity (not envisaged initially) after the procurement of vehicles for a better cost overview..
 - Double-cabin 4x4 pick-up and other vehicles: one pick-up vehicle is planned for Armenia, two for Azerbaijan, four for Georgia, one for Kyrgyzstan, four for Turkmenistan, eight pick-ups and two SUV for Uzbekistan. During the reporting period, the procurement of vehicles for Central Asia through direct procurement via long term agreement with a pre-defined supplier or the UN global platform was not possible, as the agreement does not cover this geographic area or requested models were not available. Hence, technical specifications were developed in liaison with the countries and cleared by the World Food Programme (WFP), as per FAO rules. A tender was issued and the evaluation of offers is under finalization. This process should be complemented by the procurement of eight double-cabin pick-up for Uzbekistan. For Caucasus, the models that could be provided via the long-term agreement had no local warranty or were not available (due to a devastating flood that destroyed the manufacturer factory in South Africa, impeding to place any order for a long time). At the end of the reporting period, new quotations have been received and are being reviewed.
 - GPS: 10 units were delivered to Georgia in July 2022 and 20 units to Uzbekistan in June 2022. Similar equipment will be provided to Armenia and Azerbaijan.
 - Entomological/survey kits and binoculars: equipment for Georgia (10 kits and 5 binoculars) and for Uzbekistan (10 kits and 10 binoculars) were delivered in October 2022 (yet to be handed-over) while orders were under delivery for Armenia (5 kits and 1 binocular), Azerbaijan (20 kits and 4 binoculars), Kyrgyzstan (2 kits) and Turkmenistan (6 kits and 3 binoculars). The orders included also demonstration material for the Master-Trainers participating in the ToT in Georgia (September 2022) and Uzbekistan (October 2022), i.e. insect collecting and mounting kits as well as items for sprayers calibration. The equipment arrived timely for the ToT in Uzbekistan but unfortunately too late for the ToT in Georgia (delays from the suppliers and customs issue); it will thus be shipped soon to the Master-Trainers from Caucasus countries.
 - Office furniture was delivered to Georgia in May 2022.
69. Under Activity 3.2. "Develop monitoring and analyzing systems, with a view to support a wider use of the ASDC and CCALM":
- Tablets: 10 units to Armenia and 20 to Georgia were delivered in August and handed-over in October 2022.
 - IT equipment: four printers were delivered to Azerbaijan in July 2022, as well as six laptops and two desktops, in early October 2022; five printers were delivered to Georgia in August 2022 as well as a QR Printer for the Locust-PMS in April 2022 (under Result 5); five printers, one projector and other material was provided to Kyrgyzstan in December 2021 (TCP). The order for IT equipment for Armenia and Azerbaijan was under finalization while it had yet to start for Kyrgyzstan, Uzbekistan and Turkmenistan at the end of the reporting period.
 - Digital cameras: an order for five units was issued for Georgia in October 2022.

70. Under Activity 4.1.2. "Strengthen operational capacities (control equipment)":

- Tractors: eight units were delivered to Tajikistan in October 2021 (reduced quantity from nine units, based on actual market costs).
- ULV vehicle-mounted sprayers: four units were delivered to Turkmenistan in April 2022 and five units to Uzbekistan (initially planned in June but kept on hold due to internal restructuring of the counterpart) with hand-over in December 2021.
- EC sprayers for Kyrgyzstan: a total of 16 units of four different types were provided (instead of the planned 17 due to higher market costs). Eight were delivered between December 2021 and February 2022. The remaining eight sprayers were delivered only in July 2022 due to the impact of the conflict in Ukraine on transportation.
- EC sprayers for Tajikistan (JICA and national TCP): also in this case, the actual market costs of some EC sprayers resulted higher than estimated and it was agreed with the country to procure 26 sprayers of three types (out of the 33 planned). A total of 26 units were delivered in February 2022 (2 units on JICA and 24 units on TCP).
- Minibuses: a first order was issued for five units for Tajikistan in February 2022 (instead of nine, reduced quantities based on actual market costs). However, due to the consequences of the conflict in Ukraine, the manufacturer could neither guarantee same price nor delivery and the order was cancelled. A new order was placed with delivery scheduled in September 2022. Due to new COVID-19 restriction measures entered in force at the beginning of September 2022 in China, the delivery was postponed twice (final delivery date to be confirmed).
- Vehicles - single-cabin 4x4 pick-up (two units requested by Azerbaijan): as indicated above, quotations are being reviewed.
- Camping equipment: portable camping beds and shower cabins were delivered to Tajikistan in June/July 2022; the initial quantities were revised based on actual market costs and a total of 343 beds (instead of 538) and 12 shower cabins (instead of 37) were supplied. For Armenia and Azerbaijan, tenders were issued, with evaluations in progress.

71. Under Programme Result 5 - Activities 5.1.2 Strengthen operational capacities:

- 50 PPE kits were delivered to Kyrgyzstan in November 2021 (in addition to the 60 kits delivered the previous year) and 100 kits to Uzbekistan, handed-over in December 2021; 100 kits were also under delivery to Georgia at the end of the reporting period. Procurement is still to be initiated for six kits for Armenia and 73 kits for Azerbaijan.
- Nitrile gloves: difficulties were met as suppliers were not able to provide the requested quantities (too little for big productions) or items were not in line with the provided specifications and certifications. Based on the new tender issued in August 2022, a new supplier was selected and orders will be issued for Armenia, Azerbaijan, Georgia (TCP and USAID), Kyrgyzstan and Uzbekistan.

72. Under Activity 5.2.1 "National systems for health and environmental monitoring of locust control" and 5.2.2 "Strengthen operational capacities – test-mate, environmental material":

- Environmental monitoring equipment was delivered to Uzbekistan in June 2022 (in view of the mission of the FAO Environmental Expert for the development of a monitoring system), including anemometer, tachometer, laboratory material, chronometer, etc. Some additional items were delivered in October 2022 for use during the 2023 locust campaign.
- Cholinesterase Assay kits: ten Assay kits (purchased in Year 10 upon request of the country) were delivered to Tajikistan in November 2021. One Cholinesterase test-mate kit and three Assay reagents kits were also delivered in March 2022 to Georgia, including to be used for demonstration during the ToT regional session on locust spraying and pesticide reduction, and to Uzbekistan, also for the ToT. Such items should be shipped to countries using organophosphates during Programme Year 12.

73. Hand-over ceremonies of equipment were organized by the relevant FAO Representations in two countries for official transfer of delivered equipment, in Uzbekistan on 1 December 2021 and Tajikistan on 4 February 2022, as well as a press tour in Kyrgyzstan for equipment demonstration

on 6 July 2022. These events were attended by the project counterparts in addition to the high-level officials from the Ministries of Agriculture, the Japan Embassies and JICA offices.

74. The FAO Operations Expert also informed about some challenges related to the impact of COVID-19 and of the conflict in Ukraine on procurement, which had consequences on logistics and supply chain, on the production time/costs and/or transportation of some goods (such as the EC sprayers for Kyrgyzstan or the minibuses for Tajikistan), thus reducing the quantity of some equipment (tractors, minibuses, water-tank lorries, EC sprayers). The procurement of vehicles is also challenging in order to tailor the specifications to each country specific needs and identify the best procurement strategies according to the various situations.

Development of a national locust contingency plan – pilot activity in Tajikistan (Item 8)

75. Ms Chiris, FAO Locust Programme Officer, introduced the topic contingency planning reminding that locust contingency plans are tools intending to help countries to prevent locust emergency or major crises and, in case they occur, to respond timely and adequately. As such, the plans should contribute to early warning and anticipatory action allow reducing the impact of locusts on food security as well as the financial, environmental and social costs of responding to locust crises. The Contingency Plans are also important advocacy and convincing tools for decision-makers and mobilizing funds at national and international level. The plan should have two components, a Prevention Contingency Plan, which is activated on a permanent basis and a Locust Emergency Contingency Plan to cope with a locust crisis. A key aspect is to determine when to move from the prevention to the emergency plan. It was said that the degree of emergency of a locust situation depends on two aspects: the extent of the infestations and the capacities of the national service to manage them.
76. Ms Chiris reminded that a Regional Contingency Planning Workshop has been held in 2015 in Pushkin, Russian Federation under the CCA FAO Programme. At the workshop, a template was developed, including both, Locust Prevention Contingency Plan and Locust Emergency Contingency Plan, to serve as a basis for the development of such plans by CCA countries. During the 2021 TW, Tajikistan had agreed to act as a pilot country in this regard, with support from the JICA-funded project, and to share the lessons learnt with other countries.
77. The Delegate from Tajikistan indicated that the plan was 90 percent finalized and that it should be ready by the end of 2022. The Delegate of Kyrgyzstan acknowledged the efforts made by Tajikistan team to undertake this very important exercise. FAO team offered technical support to finalize the document, noting that endorsement at the national level was usually the next step taken by the locust-affected countries having already developed such plans in other geographical areas, in order to officialise it. It was also emphasized that the Contingency Plan is a live document that can be reviewed and updated when needed.

SESSION 3: DEVELOPING MONITORING AND ANALYSING SYSTEMS

Developments of ASDC in 2022 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2023 (Item 9)

78. The FAO International Consultant, GIS Expert, reported on the ASDC system that was developed since 2013 to facilitate collection and sharing of standardized locust data in CCA. It is based on the FAO standard “Locust Survey Form” and “Spray Monitoring Form” and serves as the main data source for the locust GIS in CCA named CCALM. Presently ASDC is available in 11 languages (Armenian, Azerbaijani, Dari, English, Georgian, Kazakh, Kyrgyz, Russian, Tajik, Turkmen and Uzbek) for the use on tablets and smartphones. During the previous TW on Locusts in CCA and GIS- Workshop on Locust Data Analysis, Forecast and Reporting in CCA, respectively held online in November 2021 and February 20212, CCA Delegates reiterated their interest as well as the need for further technical or operational support for full covering of the national territory with

ASDC data.

79. During Programme year 11, various trainings included ASDC and CCALM components were delivered. These trainings were conducted with the support of the JICA and USAID-funded projects. They included: an online Refresher course (Uzbekistan, November 2021), one training on ASDC/CCALM (Uzbekistan, July 2022) and two regional sessions of the Training-of-Trainers (Caucasus countries, September 2022), delivered by FAO experts; and 19 national or briefing sessions (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, April-July 2022), delivered by Master-Trainers on locust biology and monitoring as well as on pesticide risk reduction (see Item 7.1). To support ASDC use, FAO also procured 30 tablets to the benefit of Armenia and Georgia (for a total of 354 tablets delivered to CCA countries since 2014).
80. Concerning the system's improvement, the FAO GIS Expert reported that in 2022, the ASDC beta-version was made available to all CCA countries. This 2.3 version of ASDC allowed to display cartographic information with the current location of the locust expert in the field and to calculate the surveyed area based on minimum three and maximum six coordinates along the perimeter of the surveyed area. Many corrections were made in the translations of ASDC fields into national languages (Armenian, Azerbaijani, Georgian, Uzbek) as well. In addition, a module for authorization / registration of tablets using QR codes was developed with a warning about the absence of authorization on the tablet. This module will be tested/used from January 2023.
81. To facilitate ASDC use by CCA countries, a video tutorial entitled "Get started with ASDC" was produced. It is an explanation how to download, install and run the application, with details on the use of Locust Survey and Spray Monitoring Forms. The video is available in English on "Locust Watch in CCA" (<https://www.fao.org/locusts-cca/activities/locust-gis/en/>) and on YouTube (<https://youtu.be/5kdXRocsOkQ>). The Russian version, which was showed to Delegates, is under finalization. The manuals of ASDC_for_Android_ENG and ASDC_for_Android_RUS were updated as well.
82. During Programme year 11, a total of 5681 reports were recorded by 188 ASDC users from nine CCA countries (all except Turkmenistan). This represented an increase with respect to previous years: from 165 records (from 18 users) from five countries in 2016 to 904 records (from 58 users) from seven countries in 2017, 911 records (from 68 ASDC users) from seven countries in 2018, 1481 records (from 89 users) from seven countries in 2019, 4285 reports (from 100 users) from eight countries in 2020 and 5178 reports (from 133 users) in 2021.
83. In 2022, the number of reports per country was as follows: 86 reports from six Afghan experts; 251 forms from three Armenian experts; 1459 reports from 30 Azerbaijani experts; 1758 reports from 45 Georgian experts; 13 reports from five Kazakh experts; 198 reports from 23 Kyrgyz experts; 312 reports from 19 Russian experts; 335 reports from 15 Tajik experts; and 1513 reports from 42 Uzbek experts. The GIS Expert highlighted that Armenia, Georgia and Uzbekistan again increased the number of reports this year, covering a significant part of both survey and control operations.
84. The GIS Expert underlined the overall objective that all CCA countries operationally use ASDC in the coming years, together with CCALM. For this, a number of recommendations were formulated by FAO and national locust Experts for the 2023 national locust campaign, as follows:
 - Regarding ASDC functionality improvement:
 - a) Change the way of getting ASDC geographic coordinates during locust survey/treatment: it will be mandatory to take the coordinate of one point while the possibility to take the coordinates along the perimeter of the observed area, with an unlimited number of points, will be optional. On the basis of these coordinates, the surveyed/treated area will be calculated in ASDC;
 - b) Provide the possibility to use the geographic coordinates of the Locust Survey Form of the previous locust season to find the plot on which egg-pod laying occurred.

- To all CCA countries:
 - c) Use ASDC as widely as possible for locust surveys and control operations during the 2023 locust campaign;
 - d) Include the filling of Locust Survey and Spray Monitoring Forms as an integral part of the Locust Experts' duties - plant protection managers should encourage this process;
 - e) For the Master-Trainers and advanced ASDC users, continue to support national staff on ASDC use (during trainings and/or on on-the-job basis);
 - f) Ensure that tablets delivered by FAO for ASDC use and where possible smartphones used for data collection, are registered in CCALM.
 - g) Specifically to the Russian Federation: continue ASDC use by national Experts in Saratov, Orenburg, Volgograd oblasts and Stavropol Territory. Pursue cooperation on importing/exporting ASDC data, as well as importing the locust survey data from the Russian Federation system into CCALM.
 - h) Specifically to Kazakhstan: support the use of ASDC forms by national Experts, especially in the oblasts neighboring with other countries. Explore ways to ensure an automated import of the locust survey data from the Kazakhstan GIS into CCALM and vice-versa.
- To FAO:
 - i) Organize a CCALM in-depth introduction, including ASDC, for Turkmenistan;
 - j) Provide remote technical assistance on a continuous basis to the countries for any challenge or difficulty met;
 - k) Update English and Russian versions of ASDC and CCALM manuals and translate them into national languages.

85. During the discussions, the Delegate from the Russian Federation requested that taking several geographic coordinates along the perimeter of the observed/treated area be optional. The Delegate from Georgia said that several years ago, Georgia's Delegates came up with the initiative to obtain more coordinates in ASDC along the perimeter of infested areas for conducting precise anti-locust treatments from the airplane. He underlined the importance of ASDC developing with new instruments.

86. The FAO Locust Management Officer, informed CCA Delegates that the Desert Locust Commissions use eLocust-3 program for collecting field data. For this purpose they use tablets, smartphones and even GPS devices. For example, during nine months of 2022, they collected about 8000 records from 35 African and Middle East countries. The specialists in CCA region collected almost 6000 records in 2022. Based on experience, it is estimated that 10-15 percent of these data are not valid or contains mistakes. The FAO Locust Management Officer asked about the verification of ASDC data in CCA GIS. The GIS Expert clarified that it is a responsibility of two or three authorized specialists in each CCA countries. Secondly, during ASDC training, attention is paid to typical errors made in ASDC records collected in the different CCA countries.

87. The Delegate from Armenia noted the need for ASDC training for local specialists. The Delegate from Tajikistan underlined difficulties in ASDC use in case the staff are aged and when there is no electricity or mobile phone coverage; he expressed the hope to work with new, younger specialists who are more familiar with tablet/smartphone use. Many Delegates reported about the positive perception of the system during on-site trainings. On the question of drone use by field locust observers, the GIS Expert underlined that it is an expensive and still not well automated instrument for locust survey.

Developments of CCALM in 2022 (progress made, issues encountered, lessons learnt and recommendations) and next steps for 2023 (Item 10)

88. The FAO International Consultant, GIS Expert, reminded that both basic (data import, query, display, output) and advanced (summary, analysis, forecast) functions of CCALM are accessible since 2017 to all countries on ccalm.org. The system was developed in line with FAO technical standards by ISTT, Almaty, Kazakhstan. The GIS Expert presented the progresses made during

Programme Year 11, underlining that the effective functioning of CCALM depends on the effective ASDC use by all CCA countries.

89. The GIS Expert reported that the third regional Workshop on Locust Data Analysis, Forecast and Reporting in CCA (GIS Workshop) took place on 16-18 February 2022, with the participation of all CCA countries and up to 65 participants including two invited speakers from FAO and the Chinese Academy of Sciences. It allowed discussing the use ASDC data (also ASDC beta-version) and newly-inserted satellite products to improve locust data analysis, reporting and forecast. In line with a recommendation of this Workshop, a second meeting of the E-Committee on CCALM was convened on 14 July 2022, with 30 Locusts/Forecasting Experts from all ten CCA countries, FAO and ISTT, to discuss the algorithms for locust situation analysis and forecasting.
90. Trainings on CCALM were delivered by FAO GIS Expert during: an online Refresher course (Uzbekistan, November 2021), in-depth CCALM introduction to Uzbekistan (July 2022) and two regional sessions of the Training-of-Trainers (Caucasus countries, September 2022). To facilitate direct communication, a Telegram group which includes the staff responsible for CCALM management and the users from CCA countries and FAO was created and functions.
91. In accordance with the recommendations formulated by CCA countries and FAO, both during the Technical Workshop on Locusts in CCA held online in November 2021 and the above-mentioned GIS Workshop, the following improvements were introduced in CCALM in 2022:
 - 1) Locust historical data (areas infested by locusts, areas infested by locusts exceeding ET and treated areas) for 2021 was inserted into CCALM for the first administrative level for all ten CCA countries and for the second administrative level for Georgia, Kyrgyzstan, the Russian Federation and Tajikistan.
 - 2) A module for the calculation and display of the Selyaninov hydrothermal coefficient $HTC=r/(\sum t/10)$ on the base of historical daily air temperature and total precipitation data was developed.
 - 3) A module for the calculation of Integral Vegetation Index (IVI) based on Normalized Difference Vegetation Index (NDVI), saved for every 16 days, and IVI display was developed for the following time periods: February-April, March-May, April-June and May-July.
 - 4) A module was developed for calculating and displaying changes with respect to water coverage, based on historical Normalized Difference Water Index (NDWI), and with display of three classes “no changes”, “less water” and “more water”.
 - 5) A module for displaying polygons of surveyed/treated areas on CCALM map, on the basis of ASDC data, was developed.
 - 6) Solutions are being sought to display in a user-friendly way ASDC and CCALM outputs on the FAO website “Locust Watch in CCA”, accessible to any visitor in Russian and English, with the help of the FAO Hand-in-Hand initiative (for data sharing).
92. The GIS Expert also indicated that the cooperation on importing/exporting data from the Russian Federation system into CCALM was pursued in accordance with the agreement received from the Russian Ministry of Agriculture. In 2022, over 57 000 reports of locust surveys were imported from the Russian Federation’s locust monitoring system into CCALM and ASDC data for nearby countries were also transferred from CCALM to the central server in Rosselhozcenter. The possibility to ensure an automated data import from Kazakhstan into CCALM was further explored. An FAO letter is being prepared to the attention of the Minister for Agriculture requesting the permission for automatic downloading (receiving and transmitting) locust data between CCALM and the national GIS/pest database operated by the Republican State Institution «Republican Methodological Center for Phytosanitary Diagnostics and Forecasts» of the State Inspection Committee in the Agro-Industrial Complex.
93. Then, the GIS Expert suggested that the following activities be carried out in 2023 to further improve CCALM:
 - Concerning the use and improvements of ASDC and CCALM: (1) Ensure advocacy for high-level support of introduction and/or wide use of ASDC and CCALM at the national levels; and (2) Nominate at least two Information Officers with relevant education and professional skills

- to be responsible for CCALM management at the national level - Terms of Reference should be prepared by FAO Expert and include a clear definition and description of all related tasks and responsibilities; (3) Facilitate Skype and Telegram exchange whenever needed.
- Concerning the strengthening of human capacities: (1) Ensure in-depth introduction of CCALM in Turkmenistan during a mission of the GIS expert; (2) Organize a specific refresher course on CCALM and HiH, if it is needed, for CCA MoA decision-makers and limited number of staff responsible for CCALM from all countries; (3) Organize regular meetings gathering Master-Trainers and staff designated to be responsible for CCALM at the national level, every year after the locust season for experience exchange and problem solving (GIS Workshop, E-Committee on CCALM).
 - Concerning the display of ASDC and CCALM data: allow the user-friendly display of ASDC and CCALM outputs on the FAO website “Locust Watch in CCA”, with the help of the FAO Hand-in-Hand initiative.
 - Concerning the availability of guidelines: (1) Update English and Russian versions of ASDC and CCALM manuals and translate them into national languages; (2) Issue a video tutorial on CCALM use in English and Russian.
 - Concerning long-term management: link the management and use of ASDC/CCALM systems to the discussion on long-term regional cooperation: GIS management at regional level should be part of the tasks of the FAO Commission on Locusts in CCA.
94. During the discussions, the Delegates of Georgia, Uzbekistan and the Russian Federation praised the big progresses made in CCALM development. The Delegate of the Russian Federation requested whether it was possible to simplify CCALM and to automatically analyse locust situation. This request is related to the high number of ground data and the difficulty to analyse it all for a given moment for a region. The GIS Expert explained that the simplification of CCALM is currently being in progress thanks to different new satellite products, available in CCALM upon user request. These includes the parameters such as Selyaninov coefficient, integrated vegetation index and water index changes, which allow to define, for a given period of time, the hydrothermal condition, the vegetation green biomass or the changes of water objects’ boundaries. It was then explained that the use of HiH initiative offers the important advantage to simplify the analysis of different parameters collected by ASDC or entered into the Web-interface of CCALM on the base of FAO Locust Survey or Spray Monitoring Forms. This is very convenient as it allows an user-friendly access to information by decision-makers or by other users who are not familiar with QGIS or other GIS programs.
95. The Delegate of the Russian Federation asked whether any difficulty had been encountered concerning the exchange of a high quantity of data between CCALM and the Rosselchozcenter database. The GIS Expert explained that this is done automatically, without creating any problem and that the servers selected by FAO for CCALM allow to easily manage a big volume of data. The only requirement for this process is a high speed internet connection. In addition, during the trainings, the specialists of Rosselchozcenter were trained on how to use CCALM at different levels, including the oblast level.
96. In conclusion, the FAO Locust Management Officer noted that the final result for any information system depends on the inputs entered into the database. At present time, the coverage of surveyed/treated areas by ASDC data is not complete, even if countries like Azerbaijan, Georgia or Uzbekistan have significantly increased the number of ASDC records in recent years. It is difficult to make forecast on locust distribution or to draw conclusions if only 25-30 percent of the necessary information is captured. That is why FAO always recommends to use ASDC as much as possible during locust survey and control. It is important to make a more accurate forecast of locust situation to ensure food security.

Potential of drones for use in locust management (Item 11)

97. The FAO Locust Management Officer made a presentation on the application of Unmanned Aerial Vehicles (UAV, or drones) in locust management. The innovative drone technology has potential

in two areas, locust surveillance and locust spraying. He explained that the prototype of drones for Desert Locust survey was developed by FAO regional Commissions in cooperation with leading drone manufacturing companies during several years. Technical specifications for the prototype included requirements for battery capacity and charger, flight speed and range, camera sensors, on-board processor and software compatible with eLocust3. After a series field tests, a fixed-wing drone of the Spanish company Hemav was recommended for use. Sixteen such drones are currently available in the Desert Locust Western region (i.e. Western and North-western Africa) for survey operations and eight more are being procured for Saudi Arabia and Sudan. Beside the fixed-winged drones, multi-rotor ones were also considered; however, their flight range was limited and overall, they were not sufficiently robust for operations in harsh Desert Locust conditions. The FAO Locust Management Officer informed that in CCA, drones were tested in South Kazakhstan for identification of vegetation type suitable for the Moroccan Locust and for assessing the hopper bands extent and distribution. Despite apparently positive results of this research, drones are not used operationally for locust monitoring in the region.

98. Regarding the drones for locust spraying, FAO has recently announced a call for expression of interest in order to select drones for field testing. Technical specifications included requirements for flight range (up to 4 kilometres), pesticide tank capacity (at least 15 l), flight time (at least 15-30 minutes) and ULV-type spraying equipment, which produces droplets in a 50 – 100 micron range. It is planned that after extensive testing, a prototype could be recommended for operational use.
99. During the lively discussion, Delegates considered advantages and drawbacks of this innovative technology. The Delegate from Georgia noted that while for the survey, drones appear suitable, they are not appropriate for spraying, particularly because of high wind, which often changes direction. The Team Leader, NSPMD, emphasized that the spray drones could complement existing aerial and ground spraying platforms (e.g. in areas difficult to access), but cannot replace them. He expressed readiness to support CCA in introducing such new technologies, highlighting that common work was however needed. Indeed, he stressed the importance to comply with national regulations, which may limit drones' operational capacities. The Delegate from the Russian Federation informed that drones for spraying are manufactured in the Rosselhozcenter branch in Kaluga however, spray nozzles produced large-size droplets. The Delegates from Tajikistan and Georgia expressed interest in receiving more information from the Russian Federation on this issue, including during the next annual Technical Workshop. Overall, Delegates agreed that the drone technology has potential for locust management, which should be further explored.

SESSION 4: RISK REDUCTION FOR HUMAN HEALTH AND THE ENVIRONMENT

Monitoring impact of locust control operations (Item 12)

Monitoring impact of locust control operations - Human Health and Environment Monitoring Teams' work in Azerbaijan, Georgia (incl. pesticide residue analysis), Kyrgyzstan and Tajikistan, March-August 2021 (Item 12.1)

100. The Delegate from Azerbaijan presented activities of the Human Health and Environment Monitoring (HH&E) Team in 2022. He highlighted that the Team was established thanks to the FAO Programme in 2019, after the successful mission of the FAO Environmental Expert to Azerbaijan. The Team consists of a plant protection expert, a locust spraying expert and a doctor, hygienist-toxicologist. The Delegate stressed that the Team's activities are carried out following the FAO Practical Guidelines on pesticide risk reduction for locust control in Caucasus and Central Asia, translated into Azerbaijani language and the recommendations of FAO Environmental

Expert. With the support of the USAID-funded project, the Team conducted five missions in 2022 to five areas covering in total 20 districts. The main activities carried out included information of authorities and local population on measures for reducing risks to human health and the environment, demonstration of filling the pesticide use passports, monitoring of the environment, monitoring of the impact of locust control operation to non-target organisms and monitoring of empty containers. The doctor monitored the health of personnel and staff involved in the control operations. Since no organophosphate are used in Azerbaijan against locusts, no blood test for Ache inhibition were carried out. The Team members also organized briefing sessions on locust biology, survey and the use of ASDC, as well as calibration of spraying equipment and risk reduction to human health and the environment. The Delegate indicated that unfortunately there are cases when non-target organisms, including locust natural enemies such as Meloid beetles, are affected during the locust control operations. To minimize such risks in the future, a recommendation was sent to pesticide registration authority to consider the use of biopesticides and Insect Growth Regulators (IGRs) against locusts. The Delegate indicated that management of empty containers from pesticides are also carried out using FAO recommendations.

101. The Delegate from Georgia indicated that the HH&E Team has been conducting monitoring activities during the locust campaign over the past three years, with the help of FAO Programme and support from the USAID-funded projects. The Team now includes three experts, plant protection and locust control experts and a doctor. In 2022, the Team made three missions to main locust infested areas, Kakheti (9-5 June), Mtskheta-Mtianeti (15-20 June) and Kvemo Kartli (20-25 June). Local populations were duly informed through face-to-face meetings and media. The Delegate noted that the Team found both dead and alive non-target organisms. The main recommendations provided by the Team to the staff involved in control operations concerned the proper use of PPE and also sprayer calibration. The blood tests of the operators working with chlorpyrifos didn't show any serious cholinesterase inhibition, which is mainly because the operators are well trained and experienced. Human Health and Environmental Monitoring forms were filled out. He indicated that although Pesticide use passports were provided to 20 operators in 2021, not a single filled one had been received. In 2022, the Team provided the passports to 10 experienced operators and most of them entered the required information regularly. The country is now aiming to introduce the use of pesticide use passports widely. The Delegate informed on the work carried out on empty container management and monitoring of honey bees. He thanked the FAO Environmental Expert for the protocols provided for conducting vegetation sampling in view of pesticide residue analysis. The results of the tests, conducted after the treatment with two insecticides, deltamethrin and lambda-cyhalothrin, were shown. Sampling was carried out on the day of the treatment (30-60 min after the treatment) and in days 2, 3, 4, 5 and 6 after the operations on grasses, pulses and maize. Based on the lab tests, the livestock withholding period recommended for deltamethrin is 10-12 days while for lambda-cyhalothrin it is 20 days. The Delegate highlighted that to get more precise results, there is a need for conducting such tests for three consecutive years and by taking into account other environmental factors.

102. During the discussions, the Delegate informed that there is no plan to use organophosphates in the future. However, he asked FAO to support participation of the doctor in the Team's work in the coming years. In response to the question of FAO Locust Management Officer on the reaction of beekeepers, while being informed about locust control activities, the Delegate explained that the coordination with beekeepers was made on an individual basis: some moved their beehives to safer areas and others just covered the beehives. The Delegate from Russian Federation thanked Georgia for the work conducted on pesticide residue analysis and emphasized the

importance of the activity. The observer from Fungipack raised a question on pesticide residue analyses on the soil however it was clarified that for locust treatments, such analysis should be conducted on vegetation as the main risk related to locust control is for livestock, and currently the most frequently used insecticides are pyrethroids, which have low impact on the soil. The FAO Locust Management Officer referred to the PG RR, recommending that rapid monitoring, and not multiyear analyses, are done by HH&E Teams. Such longer work, related to pesticides, is managed by another team in FAO. The FAO GIS Expert informed that during the recently held regional ToT sessions, discussions were undertaken to develop a third form to ASDC, on monitoring of human health and environment and for the specific use by the monitoring teams.

103. The Delegate from Kyrgyzstan presented activities and results carried out by the HH&E Team in 2022. He indicated that the Team was established a while ago thanks to the FAO Programme in CCA and with support from JICA projects. There is now a solid experience, but the Team continues to learn. During the 2022 locust campaign, the Team conducted four missions of five days each. Along with the Team members, the students of Kyrgyz National Agricultural University were also involved in monitoring work. The Delegate informed that thanks to the networks established by associations of honey bee producers, information on exact dates and areas of locust control activities was timely provided. In conclusion, the Delegate once again reiterated the importance of the work conducted by the HH&E Team and highlighted that the best way to maintain experience is to continue doing the work.

104. The Delegate from Tajikistan reported on the three sets of missions conducted in four areas, with a total of 12 field missions each from 3 to 6 days long in 2022, with support of the JICA-funded project. The Team provided information to local populations and demonstrated sprayer calibration, due preparation of pesticides and proper use of PPE kits to local staff. No inhibition Ache cholinesterase was recorded in 2022. The pesticide use passports were given to 92 staff and personnel involved in spraying activities. At the end of his presentation, the Delegate thanked FAO and especially the FAO Environmental Expert for providing two online sessions for the Team before and during the campaign in 2022.

105. The FAO Environmental expert (online) thanked the countries for comprehensive presentations and confirmed the receipt of detailed reports from each of the four Teams. He explained that the work in each country is carried out taking into account local context. He expressed readiness to continue providing technical support to each Team individually, including a discussion of the detailed reports. He summarized that in 2022, in total 16 field missions in more than 34 regions were conducted and that no adverse effects of pesticide use to the health of control staff were observed. He mentioned the preparation of the third specialised form in ASDC, which will be looked at. The FAO Environmental Expert also thanked the Delegate from Georgia for the presentation of results of pesticide residue analyses and highlighted the importance of such data for establishing withholding periods. The Delegates from Georgia, Kyrgyzstan and Tajikistan thanked the FAO Environmental Expert for the support provided, including online sessions at the start of 2022 campaign.

Monitoring impact of locust control operations - Development of a national monitoring system of the impact of locust control on human health and the environment in Uzbekistan (Item 12.2)

106. The Delegate from Uzbekistan reported on the mission of Mr H. Van der Valk, FAO International Consultant, Environmental Expert, held on 27 June-6 July 2022, to develop an integral system for monitoring locust control operations with respect to quality, human health and environmental

effects of treatments (JICA-funded project). The Delegate indicated that the FAO Expert visited the AQPP Department for Locust and Mulberry Pyralid Control, the Locust Control Laboratory of the Research Institute of Plant Quarantine and Protection and other institutions. On these occasions, discussions were held about pesticides procurement for locust control, management of empty containers, ecological standards applied to chemicals, legislation on protected zones, legal requirements and locust treatments monitoring. During his mission, the Environmental Expert also delivered on-the-job training on monitoring techniques during locust control operations to a team of four experts of the AQPP, in Bo'stonliq District, from 30 June-4 July 2022. Various monitoring activities were conducted including calibration of sprayers, environmental monitoring, use of the Human Health and Environmental Monitoring Form and sampling in view of insecticide residue analysis as well as visits to beekeepers. The Delegate from Uzbekistan indicated that work was in progress on the preparation of the national monitoring system.

107. The Environmental Expert indicated that monitoring systems are developed based on the specific context of each country, depending on the locust control organization structure. Unlike other countries, locust control in Uzbekistan is very decentralized so a particular monitoring system is required, hopefully to be implemented from the 2023 locust campaign. Proposals were made to that end (in the mission report sent to AQPP) and may be discussed as needed.

Progress made on control operations, pesticides and biopesticides, and on safety and environmental precautions (Item 13)

108. Delegates reported on the progress in control operations, use of pesticides and biopesticides, and on safety and environmental precautions. The Delegate from Georgia noted that the currently available ASDC Spray Monitoring Form has insufficient information on environmental consequences of locust control operations. There is a need to develop a new form, under the guidance of the FAO Environmental Expert, for specific use by the HH&E Teams when they monitor quality and environmental impact of locust control operations.
109. The Delegate from the Russian Federation informed that 38 different pesticide products were used for locust control in 2022, a.i. imidacloprid being the most commonly used one. He regretted that although biopesticides (e.g., Green Barrier with a.i. *Beauveria bassiana*) are registered, they are still not used operationally. The Delegate stressed the importance of using pesticide in strict compliance with national legislation and regulations. For example, if a pesticide is registered in EC formulation, it should be applied accordingly, and not by ULV equipment. Regarding pesticide residues, he informed that over 5.8 million tons of agricultural produce have been tested in 2022 and no pesticide residues exceeding the admissible limits were revealed. Replying the question from an observer, he explained that testing for pesticide residues is commonly done for produce but very rarely for soils. With regard to empty container management, this is a licensed activity coordinated by the Russian AgroCenter regional office in Orenburg. During three quarter of 2022, 680 tons of empty container were recycled.
110. The Observer from Fungipack company expressed a regret that unlike Kazakhstan, there is no centralized tender for biopesticides in the Russian Federation. He shared information that the Green Barrier biopesticide was applied on about 50 000 ha with 86 to 94 percent efficacy although mortality was not immediate. The Delegate from the Russian Federation explained that the Russian AgroCenter is involved in locust control only when an emergency situation is declared and for such situations, fast-acting chemical pesticides have obvious advantages over slow-acting biopesticides.
111. The Delegate from Georgia informed that thanks to FAO, the country made important changes in the assortment of pesticides used against locusts. In particular, organophosphates were removed and replaced by pyrethroids and IGRs. The Delegate emphasized that it is necessary to continuously improve the pesticide assortment. For example, deltamethrin, which has been used against locusts for many years, appears efficacious against early-instar nymphs but not against late-instar nymphs or adults. Therefore, Georgia intends to replace it with lambda-cyhalothrin.

The Delegate confirmed interest to biopesticides but stressed that before using such products, they should be tested in the field in Georgia.

112. The Delegate from Tajikistan agreed with the necessity to regularly revise the list of pesticides commonly used against locusts. In particular, some pyrethroids products based on a.i. alpha-cypermethrin are used for excessively long time and need to be replaced with more efficient ones.
113. The Delegate from Kyrgyzstan inquired if the pesticide management system “Saturn,” used in the Russian Federation, covers the entire country, particularly Far East. The Delegate from the Russian Federation replied that it is indeed so and any pesticide can be traced from import to the end-user by the system.
114. The Team Leader, NSPMD, stressed the importance of shifting from chemical to biopesticides in locust control. He recognized that some old, highly toxic pesticides banned in many regions are still used against locusts, which is a critical situation. Biopesticides are tailor made for preventive strategy, particularly for hopper control. They can also be used against adults. He informed that biopesticides and IGRs were successfully widely used to control locusts in Somalia. Last, the Team Leader called the countries to facilitate the biopesticide registration in order to promote their operational use.

E-Committee on Pesticides and Biopesticides (Item 14)

115. The FAO Locust Management Officer presented the work of the E-Committee on pesticides and biopesticides done in 2022, with support of both JICA and USAID-funded projects. He recalled that such E-Committee was first created in 2012 with an objective to develop the minimal list of pesticides for registration in CCA countries. It was reconvened in 2022 to update the analysis carried out in 2012. The E-Committee included three CCA locust experts, Ms Nana Gagiladze (Georgia), Mr Vladimir Pak (Kyrgyzstan), Mr Furkat Gapparov (Uzbekistan) and Mr Alexandre Latchininsky (FAO). The E-Committee reviewed the a.i./pesticides registered and frequently used against locusts as well as the minimum list of pesticides (a.i.) that could be registered at the national level. To that end, recent data sets were requested and collected from all ten CCA countries. The Russian version of the report of the 11th meeting of the Locust Pesticide Referee group (LPRG), an independent body of experts that advises FAO on the efficacy and environmental impact of different pesticides for locust, was also taken into account.
116. Regarding registered pesticides, the following can be noted. Compared to the situation ten years ago, the number of insecticide formulations registered in CCA countries went up from 351 to 639. The largest number of registered products is in Kyrgyzstan (236) followed by Uzbekistan (108), Kazakhstan (104), Georgia (64) and the Russian Federation (61). Chemical class of pyrethroids is represented by the largest number of a.i. (14) and formulated products (215) followed by neonicotinoids (88 products) and organophosphates (50 products). The number of biological insecticides increased compared to 2012 from two products from two a.i. to nine products from four a.i. Bioinsecticides are currently registered in four CCA countries: Kazakhstan, Kyrgyzstan, Russian Federation and Uzbekistan. Emulsifiable Concentrate (EC) remains by far the most frequently registered insecticide formulation. The number of ULV registered formulations increased from seven in 2012 to forty-one in 2022. ULV formulations are registered in seven out of ten CCA countries, all except Armenia, Russian Federation and Turkmenistan. In part, this reflects the FAO efforts to promote the ULV technology.
117. Regarding insecticides most frequently used in CCA in 2012-2022, pyrethroids remain by far the most frequently used chemical class with six a.i. and 41 products. The most frequently used products are from a.i. alpha-cypermethrin, lambda-cyhalothrin and imidacloprid. Emulsifiable Concentrate (EC) remains by far the most frequently used insecticide formulation. As for the ULV formulations, three of them were reported as frequently used. They belong to a.i. chlorpyrifos, alpha-cypermethrin and deltamethrin.

118. The E-Committee updated the minimal list of insecticides proposed for registration in CCA countries as follows (Annex IV). Compared to the list proposed in 2012, a.i. zeta-cypermethrin and esfenvalerate are replaced by a.i. cypermethrin based on the frequency of use in CCA; a.i. imidacloprid is removed because of its side-effects on pollinators and, possibly, risks to human health; and two more biological insecticides are added, fungi *Metarhizium anisopliae* and *Beauveria bassiana*. The FAO Locust Management Officer explained that the list included insecticides from various chemical classes applicable to different locust situations. For example, while most insecticides are applied in blanket coverage, fipronil and IGRs were included in the list for their compatibility with barrier treatment strategy.

119. In addition to a recommendation to FAO to review the minimal list at least once in three years, the E-Committee made the following recommendations to the countries:

- Each country should review the proposed minimal list of pesticides and takes the necessary actions to promote their inclusion in the national list of registered pesticides for locust control, in accordance with their national registration procedures;
- Each country should take the necessary actions to promote the use of below-listed pesticides when already registered at national level.

120. During the discussions, the Delegate from the Russian Federation noted some errors in the insecticide tables and inquired what the legal basis is to exclude imidacloprid from the list. The FAO Locust Management Officer apologized for the typos and clarified that the proposed list has a recommendation status only. The main reason why neonicotinoid insecticides were not included in the list is their negative impact on non-target fauna, particularly pollinators, which is reflected in the LPRG recent report. In reply to a question from the Delegate of the Russian Federation about the registration status of organophosphates in Europe, it was explained that they are banned from agricultural uses. It was stressed that despite the frequent use of organophosphates in locust control in CCA and beyond, they were not included in the recommended minimum list neither in 2012 nor 2022. The Delegate from Kyrgyzstan reminded colleagues that management of particularly hazardous pesticides is regulated by Rotterdam Convention, and the countries, which are parties to the Convention must comply with its regulations. Last, the Observer from the Fungipack Company noted that although Green Gold product, which is registered in Kazakhstan and Kyrgyzstan, is considered a biopesticide, it is a.i. azadirachtin and apparently a synthetic analog.

Development of a Locust Pesticide Management System (Locust-PMS) - pilot activity in Georgia (Item 15)

121. The Delegate of Georgia presented the Locust- PMS as Georgia acted as a pilot country in 2022 to test this global system (USAID-funded project), developed by FAO with a view to promote early response to locust outbreaks and pesticide risk reduction. It is designed as a digital tool, covers activities from field data collection to data analysis and reporting, and it is a web-based Application (<https://locust-pms.fao.org>), hosted in a cloud server accessible from tablets, smartphones and computer browsers. The Delegate described the activities undertaken to introduce and test the system. This included two missions of Mr M. Ammati, FAO International Consultant, Pesticides Expert, and Mr E. Machado, FAO Information Technology (IT) Expert to work in close cooperation with NFA, on 2-7 May 2022 and on 16-23 July 2022. Discussions took place at the central level and field missions to the NFA-rented warehouse of Kvemo Kartli, Kakheti and Mtskheta - Mtianeti, Shida Kartli and Samtskhe-Javakheti regions were organized. An NFA team, of eight persons, was requested to test the system, which significantly increased amount of work. The missions were completed by several online meetings. The Delegate then showed the

interface, which has to be downloaded and can be used after registration, and explained how the captured information can easily be retrieved and visualized on pesticides, transportation, storage, quality control, inventory of other equipment, risk assessment, etc. QR codes can be generated during the inventory of pesticides and glued on drums, for traceability.

122. The FAO Pesticides Expert thanked the Georgian team, which made a lot of efforts to pilot this new system. He said that a lot was learnt from this experience, to the benefit of all potential beneficiaries of this global system, in CCA or elsewhere, in particular Desert Locust affected countries. He indicated that the Georgian team is now well trained. He concluded indicating that based on the experience shared by Georgia, it would be good to identify the next steps as well as other potential countries for deployment of the system. In reply to the question from the Georgian Delegate, the FAO Locust Programme Officer confirmed that similar support for data collection could be provided in 2023. The Team Leader, NSPMD, after having thanked the Pesticides and the Environmental Experts for their online presence, stressed that the system had been developed to the benefit of the countries, to help them inventorying, monitoring and tracking pesticides and other equipment and material used for locust control. The Delegate of Armenia indicated interest in the deployment of the system; she would provide a final answer after the discussion with her management.

Biopesticides in CCA: present and future (Item 16)

123. The TW segment on biopesticides started with a presentation made by Mr Lionel Legros, Observer from the Elephant Vert Company on the biopesticide Novacrid based on *Metarhizium acridum* fungus. The biopesticide is a product of a long selection of most virulent and productive strains. It is produced in a factory in Morocco through fermentation processes. The Observer explained the mode of action of the biopesticide on locusts and highlighted its advantages including selectivity, efficacy, safety for human health, non-target fauna and the environment and compatibility with ULV spraying equipment. During the recent Desert Locust upsurge, the biopesticide was successfully applied to hundreds of hectares in Somalia. After a series of field trials, it is currently registered in two CCA countries, Kazakhstan and Uzbekistan. During the discussions, the Delegate from Georgia asked about the possibility to use the biopesticide mixed not with oil but with water. The Observer replied that although the typical formulation is a ULV one, the biopesticide can be applied in an aqueous suspension at a dose rate from 50 to 300 l/ha. Lower water volumes, e.g. 20 l/ha, can also be used but require adding a surfactant.

124. Mr Khurramjon Khayrov, Observer from the Pavlovsky Scientific Research Institute of Zoology and Parasitology, Tajik National Academy of Sciences, made a presentation on a biopesticide Aktarofit, which is a product of the bacterium *Streptomyces avermitilis*. Two formulations of the biopesticide, liquid suspension and granulated baits, were tested against DMA in Tajikistan and showed high efficacy under small-plot field conditions. However, the biopesticide is not registered yet in the country. During the discussions, Delegates questioned the selectivity of the biopesticide because it is registered on a wide number of agricultural pests. The Observer explained that he has not studied non-target effects of the biopesticide but after the application, he did not find any dead arthropods including ant, which were very common.

125. To wrap up the segment on biopesticides, the FAO Locust Management Officer made a presentation "Biopesticides in CCA: present and future." He started by reminding that chemical pesticides remain our first line of defense during mass locust outbreaks. However, chemical

pesticides are under increasing pressure from environmentalists and general public because of their risks to human health and the environment. Biopesticide represent a viable alternative to chemical pesticides. The biopesticides against locusts currently available in CCA and beyond were then presented. In particular, pros and cons of the three fungal biopesticides registered in several CCA countries, i.e. *Beauveria bassiana*, *Metarhizium anisopliae* and *Metarhizium acridum*, were highlighted. FAO's commitment to promote biopesticides was reiterated, stressing that advocacy should be done at all levels, from farmers to top decision-makers. Education is key to biopesticide adoption, and great attention is allocated to this issue during all trainings on locust management. The FAO Locust Management Officer concluded by informing the Delegates about the plans for 2023 to conduct biopesticide demonstration trials to the benefit of all CCA country Delegates.

126. During the discussions, Delegates confirmed their high interest to biopesticides for locust control, which are rarely used so far operationally in CCA, the envisaged demonstration in Uzbekistan in 2023 being welcome in that context. The Delegates from Georgia thanked the FAO Officer for the comprehensive presentation and explained that in order to have a convincing basis for the biopesticide introduction in the practice of locust control, it is necessary to test them in the country first.

SESSION 5: LOCUST PROGRAMME IN CCA: WHAT IS NEXT?

Towards the establishment of a FAO Commission on locusts in CCA - Update (Item 17)

127. The FAO Locust Programme Officer briefly reminded that after a first attempt to formalize regional cooperation in the early 2000's in Central Asia, discussions on the creation of an FAO Commission occurred again in 2009, when the Locust Programme in CCA was developed. At that time, it was decided to establish a functioning technical network while studying the various possible options for long-term cooperation. Based on the subsequently developed "Study on possible mechanisms for long-term regional cooperation on locusts in CCA" (FAO, 2014), discussions took place during the annual Technical Workshops. It was agreed that an FAO Commission, under Article XIV of its Constitution, would offer the highest guarantees in terms of sustainability. The main scope of the creation of such Commission is indeed to ensure the sustainability of the now existing regional cooperation, independent from the availability of projects and external funding. Considering the related legal and financial commitments, countries requested that this option be presented to the decision-makers of each country. High-level bilateral meetings were thus organized in late 2020/2021 with seven of the ten CCA countries and more recently, in September 2022, with the eight countries, Kazakhstan. Attempts were made to discuss with high-level representatives from Kyrgyzstan, however, the scheduled meetings had to be cancelled (no meeting is currently planned with the 10th country, Afghanistan).

128. As a result of the above-mentioned discussions, four countries have addressed support letters to FAO for the establishment of a Locust Commission in CCA: the Russian Federation (December 2021), Uzbekistan (June 2022 – however, this letter has not been received through official channels yet), Kazakhstan (September 2022) and Georgia (November 2022). While reply letters are currently being prepared by FAO, the FAO locust team for CCA consulted the FAO Legal Office and the next steps were clarified: a detailed note will be submitted for in-principle approval by the Deputy-Director General and the FAO Director General to assess the feasibility of the proposal to establish the Commission, in compliance with the FAO Basic Texts, taking into account the support expressed by countries in the region. Afterwards, subject to the in-principle approval

from the management, a regional technical meeting with CCA countries can be convened to launch the negotiations on the content of the agreement creating an FAO Commission, including financial aspects. It was noted that the establishment of the Commission is then subject to the review and endorsement by FAO Governing Bodies, including approval by the FAO Council. In conclusion, the FAO Locust Programme Officer requested updates from the countries which had not expressed their views yet.

129. During the discussions, the Delegates of Tajikistan and of Kyrgyzstan requested an official letter from FAO. The Delegate of Azerbaijan indicated that based on the documents forwarded by FAO, discussion were taking place internally, with a positive feedback from the management. In reply to the above, it was clarified that the initiative to support the creation of an FAO Commission should come from the countries, should they deem it appropriate. However, the background documents could be resent through the FAO Representations in the countries if this can serve as a basis for internal discussions or making decisions at country level.

Programme of work during 2023 (Item 18)

130. The FAO Locust Programme Officer, introduced the annual Workplan for Programme Year 12, from 1 October 2022 to 30 September 2023, indicating that two main funding sources are available for the concerned period: the JICA-funded project for Central Asia and the USAID-funded project including one component for Caucasus and another for nine CCA countries, on the use of up-to-date control methods and operational research on biopesticides in CCA.

131. The endorsed Workplan, as a result of the discussions, is presented in the below table, by funding source, with tentative periods or dates indicated where available. A number of dates still need to be defined for activities - it is expected that countries will provide their workplans (especially for trainings and monitoring sessions of the Human Health and Environmental Teams) sufficiently in advance, for organizational purposes. Regarding Central Asian countries specifically, it was agreed that countries would liaise together in order to specify the period of joint activities during the third JICA Project Steering Committee (PSC 3) scheduled on 14 December 2022 (during which the Workplan for the JICA project will be finalized and endorsed). It was also agreed that for the activities including the Russian Federation (which participates actively in the Programme but is currently not financially covered by any project), participation of its experts will be funded by the Russian Agricultural Center. Tentative budgets accompanying the workplan are provided in Annex V.

Table 3 - Workplan for Year 12 of Programme implementation (2023): activities

OUTPUTS/ACTIVITIES	GCP/INT/384/JICA	GCP/GLO/917/USA	TCP GEO	RP
OUTPUT 1- Regional cooperation further developed				
<u>Activity 1.1.</u> Facilitate regional exchanges to manage locust situations 1.1.1 Regular information sharing of standardized data: nat. and reg. monthly bulletins yearly from March to October 1.1.2 Direct experience exchange: annual Technical Workshops (TW) in CCA	Bulletins TW 2022	Bulletins		
<u>Activity 1.2.</u> Support joint or cross-border surveys (CBS)	KYR-UZB TAJ-UZB x 2 TUK-UZB <i>(periods TBD)</i>	Joint survey in GEO with ARM, AZE, RUS		
<u>Activity 1.3.</u> Organize country-to-country visits within the region	*Uzbek Experts to visit TAJ during work of HH&Env Team in May 2023 *Tajik Experts to visit the Locust Research Lab in UZB in August 2023	<i>Not applicable</i>		
<u>Activity 1.4.</u> Identify the best long-term solution for sustainable regional cooperation	Countries to express their opinion by official letters and next steps to be taken by FAO			
<u>Activity 1.5.</u> Allow technical, programmatic, operational and financial projects management/coordination within the whole Programme	Yes	Yes		Yes
OUTPUT 2- National capacities further strengthened				
<u>Activity 2.1.</u> Extend Training-of-Trainers (ToT) on locust management to all CCA countries 2.1.1. Regional sessions/Refresher courses (for Master-Trainers) 2.1.2. National sessions (for staff) 2.1.3. Briefing sessions (for staff/ local manpower)	Regional sessions (Oct. 2022, Uzbekistan) Two national sessions/country for locust staff (based on model of regional sessions) Briefing sessions at the start of control operations for staff/manpower <i>National Action Plans expected by 31 Dec. 2022</i>	Two national sessions/country for locust staff (based on model of regional sessions) Briefing sessions at the start of control operations for staff/manpower <i>National Action Plans expected by 31 Dec. 2022</i>		
<u>Activity 2.2.</u> Make available background documentation (Practical guidelines, monographs, etc.)	PG 3P available in Turkmen Preparation of one new PG, on locust monitoring LMI poster	LMI poster		Monographs for remaining
<u>Activity 2.3.</u> Organize exposure visits on locust management outside CCA	For 2 experts/country for TAJ, TUK, UZB in national anti-locust center in Morocco (February 2023)	<i>Not applicable</i>		

OUTPUTS/ACTIVITIES	GCP/INT/384/JCA	GCP/GLO/917/USA	TCP/ GEO	RP
<u>Activity 2.4.</u> Support post-graduate education/fellowships	<i>Not applicable</i>	<i>Not applicable</i>		
<u>Activity 2.5.</u> Support applied research	<i>Not applicable</i>	<i>Not applicable</i>		
OUTPUT 3- Locust issues and disasters better anticipated and mitigated				
<u>Activity 3.1.</u> Strengthen human and operational capacities for locust monitoring 3.1.1 Human capacities on survey 3.1.2 Operational capacities (survey equipment)	Remaining survey equipment to be procured or delivered	Remaining survey equipment to be procured or delivered		
<u>Activity 3.2.</u> Support introduction and operational use of monitoring and analyzing systems: Automated System for Data Collection (ASDC) and Caucasus and Central Asia Locust Management System (CCALM) 3.2.1. ASDC: tablets delivered 3.2.2. CCALM: support for use at the national level (GIS introduction and trainings) 3.2.3. CCALM: support for use at the regional level (GIS management and improvement)	Support to ASDC and CCALM use by countries CCALM in-depth introduction: *To Turkmenistan (JICA): May 2023 *To Armenia (USAID): <i>period TBD</i> ASDC and CCALM videos available GIS Workshop, online, late February 2023 Systems maintenance and improvements Office equipment to be delivered for CCALM use			
<u>Activity 3.3.</u> Enhance preparedness for risk reduction through harmonized national contingency plans (at least one pilot country)	Contingency plan to be finalized for Tajikistan, pilot country	<i>Not applicable</i>		
OUTPUT 4- Improved response mechanisms to locust outbreaks				
<u>Activity 4.1.</u> Strengthen human and operational capacities for locust control 4.1.1 Human capacities on control 4.1.2 Operational capacities (control equipment)	Remaining control equipment to be procured or delivered	Remaining control equipment to be procured or delivered		
<u>Activity 4.2.</u> Promote less harmful pesticides and alternatives to conventional pesticides 4.2.1 E-Committee on pesticides 4.2.2 Promotion of the ULV technology 4.2.3 Alternatives to conventional chemical pesticides: video tutorial on Insect Growth Regulators (IGRs) 4.2.4 Alternatives to conventional chemical pesticides: field trial/ demonstration on biopesticides use	Advocacy material on ULV technology (to be printed and dispatched) Advocacy material on biopesticides (to be prepared, printed and dispatched) Field trial/demo on biopesticides use (DMA and CIT): For Central Asia (JICA): Uzbekistan, Jizzakh, April 2023 For Caucasus and RUS: Georgia, June 2023 Post-application environmental monitoring and taxonomic identification of collected material after field trial/demo (USAID)			

OUTPUTS/ACTIVITIES	GCP/INT/384/JCA	GCP/GLO/917/USA	TCP/ GEO	RP
OUTPUT 5- Impact on human health and the environment mitigated and monitored				
<u>Activity 5.1.</u> Mitigate impact of locust control operations on human health and the environment 5.1.1 Personal protective equipment (PPE) delivery 5.1.2 Pesticides and empty containers management: pilot activity on empty containers 5.1.3 Extension material for staff	Nitrile gloves (to be delivered - part of the PPE) Pesticides and empty containers management: Locust-Pesticide Management System (Locust-PMS) - <i>Countries to indicate whether they want to test the system during the PSC 3</i> Extension material for staff on pesticide risk reduction to be prepared	Remaining PPE to be procured or delivered Locust-PMS: *Support to be provided to Georgia; *To be introduced to Armenia (<i>to be confirmed</i>) Extension material for staff on pesticide risk reduction to be prepared	Nitrile gloves (to be delivered)	
<u>Activity 5.2.</u> Monitor impact of locust control operations on human health and the environment 5.2.1 Human capacities and national systems for health and environmental monitoring of locust control 5.2.2 Human Health and Environmental Monitoring Teams 5.2.3 Health and environment monitoring equipment 5.2.4. Pesticide residue analysis and impact assessment	Development of national monitoring system for Turkmenistan- <i>period TBD</i> Next steps to be identified for Uzbekistan Human Health and Environmental Monitoring Teams in Kyrgyzstan and Tajikistan (<i>Action Plans expected by 20 Jan.2023</i>) Related equipment- incl. shipment of Cholinesterase kits to Kyrgyzstan and Tajikistan	Human Health and Environmental Monitoring Teams in Azerbaijan and Georgia (<i>Action Plans expected by 20 Jan. 2023</i>) Pesticide residue analysis Related equipment		
OUTPUT 6- Public information and awareness increased				
<u>Activity 6.1.</u> Develop awareness among local populations	-	2023 Calendars on safety measures associated with locust control (to be printed and dispatched)		
<u>Activity 6.2.</u> Enhance visibility of locust issues to promote regional cooperation and improved management	Yes	Yes		

CLOSING

Any Other Business (Item 19)

Short updates on Migratory Locust in Madagascar, Indonesia

132. Following a severe outbreak of the Malagasy Migratory Locust *Locusta migratoria capito*, an emergency locust situation was declared in Madagascar in April 2021. To respond to this emergency, an anti-locust campaign has been implemented during 2021-2022 to control the locust outbreak with the support of the Action Plan developed by the FAO and MoA in Madagascar, with an estimated budget of USD 6.8 million to be supported by donors. By end of the campaign, USD 8.8 were mobilized. The action plan aimed to contribute to safeguarding food security for the most vulnerable rural populations of Madagascar, based on four components: Improve locust monitoring capacity; Strengthen locust control capacity; Preserve human health and protect the environment; and Implement and coordinate the campaign. As a result, approximately 43 million hectares were surveyed and 150 058 ha treated and protected, through aerial and ground operations. The campaign prevented the deterioration of the locust situation and infestations on wider areas as well as further impact on the food security in the south of the island. It prevented the development of the locust outbreak into a plague, however, the situation did not return to locust recession, due to different factors including the unpredictable Batsirai and Emnati cyclones that interrupted the interventions for ten days and compromised survey and control operations.

133. The FAO Locust Management Officer presented the situation with an outbreak of the indigenous Migratory Locust (*Locusta migratoria manilensis*) on a small Indonesian island of Sumba. The current outbreak started back in 2019 and in 2022, the locust population has increased all over the island. Damage to the main staple crop, maize, locally reached 97 percent and the area of damage exceeded 3 000 ha, threatening food security and livelihoods of the affected rural populations. The government faced budget constraints and difficulties in delivering pesticides and equipment to affected areas due to poor road access. Indonesian MoA requested FAO technical support and in response, an emergency TCP project was developed with a budget of USD 500 000. In the framework of this project, the FAO Locust Management Officer, took a 10-day long mission to Sumba to meet with the MoA counterparts and conduct field visits to assess the extent of the locust infestations and crop damage, provide technical support as well as evaluate the currently applied control methods. Based on the mission findings, recommendations on locust management, with respect of human health and the environment were provided and a plan for further actions has been developed and shared with the stakeholders. During the discussions, the Delegate from Georgia noted that the presentation was useful as it can serve as an illustration of the great progress in locust control in CCA thanks to the FAO Programme.

Adoption of the report (Item 20)

134. The Report was adopted unanimously, with amendments made.

Closing address (Item 21)

135. The Team Leader, NSPMD, thanked all participants for the active participation and productive discussion, as well as the representatives of Tajikistan for the hospitality and for the support given to make the Technical Workshop successful and smooth. Thankfulness was also expressed to all FAO Colleagues working hard for the implementation of the CCA Locust Programme as well as for this Technical Workshop specifically. The support of the FAO Agricultural Officer (Plant Protection/Locusts), the Colleagues from the FAO Representation in Tajikistan and the interpreters to make this event successfully happen was appreciated too. Last, the Team Leader wished a safe trip back to all and presented his best wishes for 2023, and in particular health, happiness, prosperity and energy for the implementation of the 2023 locust campaign.

136. The Chairman expressed thankfulness and presented his best wishes, especially health, to all participants. He declared the Technical Workshop closed.

ANNEXES

Annex I - List of participants

NAME	TITLE & AFFILIATION
COUNTRIES	
ARMENIA	
Ms Rima KARAPETYAN	Chief Specialist, Phytosanitary Department, Department of Food Safety, Ministry of Economy (MoE)
Mr Garnik HOVHANNISYAN	Director, State Non-Commercial Organization (SNCO) "Centre for Agricultural Services", MoE
AZERBAIJAN	
Mr Jeyhun IBRAHIMOV	Head of the Plant Protection and Fumigation Center of Agrarian Services Agency under the Ministry of Agriculture (MoA)
Mr Ilham BAYRAMOV	Head, Plant Production Sector, Unit for State Seed Control and Organization of Plant Production, ASA, MoA
GEORGIA	
Mr Lasha NUTSUBIDZE	Deputy Head, Plant Protection Department, National Food Agency (NFA), Ministry of Environment Protection and Agriculture (MEPA)
Mr Bejan REKHVIASHVILI	Head, Plant Quarantine Division, NFA, MEPA
KAZAKHSTAN	
Mr Aray ORAZOV	Deputy Head, Republican State Institution «Republican Methodological Centre for Phytosanitary Diagnostics and Forecasts» of the Committee in the Agro-industrial Complex, Ministry of Agriculture
Mr Bakitkali SHAYKHIYEV	Deputy Head of the territorial inspection of the Committee in Aktobe region

NAME	TITLE & AFFILIATION
KYRGYZSTAN	
Mr Almaz ALAKUNOV	Head, Plant Protection and Control Unit, Department of Chemicalization, Plant Protection and Quarantine, Ministry of Agriculture
THE RUSSIAN FEDERATION	
Mr Alexander MALKO	Director, Federal State Institution "Russian Agricultural Center", Ministry of Agriculture (MoA)
Mr Andrey ZHIVYKH	Head, Plant Protection Department, Federal State Institution "Russian Agricultural Center", MoA
TAJKISTAN	
Mr Jabbor NOSIRZODA	Deputy Minister of Agriculture (MoA)
Mr Nusratullo Bodom NOZANINZODA	Head, State Entity "Locust Control Expedition" (SE-LCE), MoA
Mr Firdavs KADYROV	Deputy Head, SE-LCE, MoA
TURKMENISTAN	
Mr Guychgeldi YAGSHYGELDIYEV	Leading Specialist, Plant Protection Service, Ministry of Agriculture and Environment Protection (MoAEP)
Mr Nurberdi SADYKOV	Head, Plant Protection Service at Dashoghuz welayat, MAEP
UZBEKISTAN	
Mr Bakhodir KHUDAYKULOV	Head, Department for Locust and Mulberry Pyralid Control, Agency on Quarantine and Plant Protection (AQPP)
Mr Utkir MIRZAEV	Chief Specialist, Department for Locust and Mulberry Pyralid Control, AQPP

NAME	TITLE & AFFILIATION
FAO	
Mr Oleg GUCHGELDIYEV	FAO Representative in Tajikistan (online)
Mr Shoki AL-DOBAI	Team Leader, Locusts and Transboundary Plant Pests and Diseases (NSPMD)
Mr Alexandre LATCHININSKY	Agricultural Officer/Locust Management, NSPMD
Ms Marion CHIRIS	Locust Programme Officer, NSPMD
Mr Bahromiddin HUSENOV	Agricultural Officer (Plant Protection/Locusts), NSPMD
Ms Nadiya MURATOVA	FAO Consultant, Geographical Information System (GIS) Expert, NSPMD
Ms Greta GRAVIGLIA	FAO Consultant, Operations Expert, NSPMD
Mr Harold VAN DER VALK	FAO Consultant, Environmental Expert, NSPMD (online)
Mr Mohammed AMMATI	Locust Senior Pesticide Management Expert, NSPMD (online)
Mr Ibrohim AHMADOV	National Technical Officer, FAOR Representation in Tajikistan
OBSERVERS	
OBSERVERS FROM EMBASSY OF JAPAN AND JAPANESE INTERNATIONAL COOPERATION AGENCY (JICA)	
Ms Kozue ARAKI	Second Secretary, Embassy of Japan in Tajikistan
Mr Akihira SANO	Project Formulation Advisor, JICA Tajikistan Office
Mr Shohrukh ATOEV	Program Officer, JICA Tajikistan Office

NAME	TITLE & AFFILIATION
OBSERVERS FROM TAJIKISTAN	
Mr Fayzimuhammad AMONOV	Head, Department of International Relations, MoA
Mr Dilshodbeg AHMADOV	Deputy Head, SE “Locust Control Expedition”, MoA
Mr Akmaljon HAITOV	Head, Survey and Monitoring Unit, SE “Locust Control Expedition”, MoA
Mr Khurramjon KHAYROV	Senior Researcher, Pavlovsky Scientific Research Institute of Zoology and Parasitology, Tajik National Academy of Sciences
OTHER OBSERVERS	
Mr Lionel LEGROS	International Business Director, Elephant Vert
Mr Elie SAMSON	Biosolution Development Manager, Elephant Vert
Mr Oleg FOKIN	CEO, Fungipack
INTERPRETERS	
Ms Veronika GRUSHEVSKAYA	
Mr Nizomiddin SHAMSUDDINOV	

Annex II - Agenda

TECHNICAL WORKSHOP ON LOCUSTS IN CAUCASUS AND CENTRAL ASIA (CCA)

21-24 NOVEMBER 2022, DUSHANBE, TAJIKISTAN

PROVISIONAL AGENDA & TIMETABLE

ITEMS	DOCUMENTS	PRESENTERS	TIMING
Opening session			
1. Opening	-	Jabbor Nosirzoda, Deputy Minister for Agriculture, Tajikistan Kozue Araki, Second Secretary, Embassy of Japan in Tajikistan Oleg Guchgeldiyev, FAO Representative in Tajikistan Akihira Sano, Representative of the Japan International Cooperation Agency (JICA) Tajikistan Office Shoki Al Dobai, Team Leader, Locusts and Transboundary Plant Pests and Diseases (NSPMD)	Monday 21 November 9.00-9.30
2. Election of Chairman, Vice-Chairman & Drafting Committee	-	Alexandre Latchininsky, Agricultural Officer/Locust Management, NSPMD	
3. Adoption of the Agenda	Provisional agenda	Alexandre Latchininsky, NSPMD	

Session 1: National 2022 locust campaigns and forecasts for 2023			
4. National locust campaigns in 2022, forecasts for 2023 and preparation of the next campaigns	Working Paper (WP) 4 (template)	Countries' presentations: Afghanistan, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan	10.00-12.30
		Countries' presentations: Russian Federation, Armenia, Azerbaijan, Georgia	& 14.00-17.00
Session 2: Programme implementation and capacity strengthening in 2022			
5. Overview on Programme implementation in 2022	WP 5	Marion Chiris, Locust Programme Officer, NSPMD	Tuesday 22 November 9.00-12.30 (with 30-min. tea/coffee-breaks)
6. Regional cooperation: Cross-border surveys (Tajikistan and Uzbekistan, April/May and May/June 2022)	WP 6 (template)	Countries' presentations: Tajikistan & Uzbekistan	
7. National capacities' development in 2022			
7.1 Training sessions a) National sessions and briefing sessions on locust management: Armenia, Azerbaijan, Georgia, Kyrgyzstan and Tajikistan as well as Uzbekistan (in-depth CCALM introduction) b) Regional sessions of the Training-of-Trainers: for Caucasus (September) and Central Asia (October)	WP 7.1 (template and FAO Report)	a) Countries' presentations b) Trainers' presentation	
7.2 Update on Background literature on the locust pests in CCA (Monthly Bulletins, Practical Guidelines, posters, monographs, calendars...)	WP 7.2	Alexandre Latchinsky, NSPMD	
7.3 Equipment delivered in 2022 to strengthen operational capacities	WP 7.3	Greta Graviglia, International Consultant, Operations Expert, NSPMD	
8. Development of a national locust contingency plan – pilot activity in Tajikistan	WP 8 (template)	Country presentation: Tajikistan	

Session 3: Developing monitoring and analyzing systems			
9. Developments of ASDC in 2022 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2023	WP 9	Nadiya Muratova, International Consultant, Geographic Information System (GIS) Expert, & countries' feedback	14.00-16.00
10. Developments of CCALM in 2022 (progress made, issues encountered, lessons learnt and recommendations) and next steps for 2023	WP 10	Nadiya Muratova, GIS Expert & countries' feedback Country presentation: Uzbekistan - CCALM in-depth presentation, July 2022	
11. Potential of drones for use in locust management	-	Alexandre Latchininsky, NSPMD	
Session 4: Risk reduction for human health and the environment			
12. Monitoring impact of locust control operations 12.1. Human Health and Environment Monitoring Teams' work in Azerbaijan, Georgia (incl. pesticide residue analysis), Kyrgyzstan and Tajikistan 12.2. Development of a national monitoring system of the impact of locust control on human health and the environment in Uzbekistan	WP 12.1 (template) & 12.2	Countries' presentations: Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan	Tuesday 22 November 16.00-17.00 & Wednesday 23 November
13. Progress made on control operations, use of pesticides and biopesticides, and on safety and environmental precautions	WP 12 (template)	Countries' feedback: all	9.00-12.30
14. E-Committee on Pesticides and Biopesticides	WP 13	Alexandre Latchininsky, NSPMD	(with 30-min. tea/coffee-breaks)
15. Deployment of the Locust Pesticide Management System (Locust-PMS) – pilot activity in Georgia	WP 14	Country presentation: Georgia	
16. Biopesticides in CCA: present and future	-	Alexandre Latchininsky, NSPMD	

Session 5: Locust Programme in CCA: what is next?			
17. Towards the establishment of a FAO Commission on locusts in CCA - Update	WP 16	Alexandre Latchininsky/Marion Chiris, NSPMD & countries' feedback	14.00-17.00
18. Programme of work during 2023	WP 17	Marion Chiris, NSPMD	
Closing			
19. Any other business 1. Incl. short updates on Migratory Locust in Madagascar, Indonesia	-	Shoki Al Dobai, NSPMD, Alexandre Latchininsky, NSPMD & any other presenters	14.00-17.00
Drafting Committee (preparation of the bilingual report)	-	FAO Locust Team and Drafting Committee	Thursday 24 November morning
20. Adoption of the draft report	-	Alexandre Latchininsky, NSPMD	Afternoon
21. Closure	-	Shoki Al Dobai, NSPMD	16.00- 18.30

Annex III – Implementation of the Programme during Year 11 (1 October 2021-30 September 2022): budget and tentative expenditures

Res. & Act.	TOTAL EXPENDITURES (USD)		GCP/INT/384/JICA		GCP/GLO/963/USA		TCP/KYR/3801		TCP/TAJ/3806		TCP/GEO/3801		FAO Regular Programme (RP)	
	YEAR 11 (1 Oct. 2021-30 Sept. 2022)		JICA project		USAID project		TCPe project		TCPe project		TCPe project		Regular Programme (RP)	
	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11
Tentative expenditures for Programme Year 11 (1 Oct. 2021 - 30 Sept. 2022)														
R1 - Regional cooperation further developed	307,730	216,649	283,000	210,395	19,000	6,552	3,902	1,312	1,828	-4474	0	1,560	0	1,304
1.1. Facilitate regional exchanges to manage locust situations	32,000	35,215	26,000	28,663	6,000	6,552	0	0	0	0	0	0	0	0
1.1.1. Regular information sharing of standardized data: national and regional monthly bulletins issued yearly from March to October	24,000	21,760	18,000	15,208	6,000	6,552								
1.1.2. Direct experience exchange: annual Technical Workshops in CCA	8,000	13,455	8,000	13,455										
1.2. Support joint or cross-border surveys (CBS)	68,000	15,040	55,000	15,040	13,000	0								
1.3. Organize country-to-country visits within the region	5,000	0	5,000	0										
1.4. Identify the best long-term solution for sustainable regional cooperation	5,000	3,773	5,000	3,773										
1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme	197,730	162,621	192,000	162,919			3,902	1,312	1,828	-4,474		1,560		1,304
R2 - National capacities further strengthened	455,932	256,292	309,000	130,329	128,567	116,063	3,194	2,480	5,171	3,059	0	3,164	10,000	1,197
2.1. Extend Training-of-Trainers (ToT) on locust management to all CCA countries	387,567	204,020	269,000	94,885	118,567	109,383	0	0	0	-248	0	0	0	0
2.1.1. Regional sessions/Refresher course (for Master Trainers)	248,000	167,906	158,000	85,230	90,000	82,924				-248				
2.1.2. National sessions (for staff)	115,567	26,458	87,000	0	28,567	26,458								
2.1.3. Briefing sessions (for staff/ local manpower)	24,000	9,655	24,000	9,655										
2.2. Make available background documentation (Guidelines, monographs, etc.)	68,365	52,272	40,000	35,444	10,000	6,680	3,194	2,480	5,171	3,307	0	3,164	10,000	1,197
a Biblio & Material to be made available (e-committee)	0	0												
b Monographs	0	0												
c Guidelines	0	0												
2.3 Organize exposure visits on locust management outside CCA	0	0												
2.4. Support post-graduate education/fellowships	0	0												
2.4. Support applied research	0	0												
R3 - Locust issues and disasters better anticipated and mitigated	895,655	1,374,299	734,000	937,134	147,335	422,290	4,320	5,671	0	0	10,000	9,204	0	0
3.1. Strengthen human and operational capacities for locust monitoring	676,655	1,149,959	530,000	738,845	132,335	396,239	4,320	5,671	0	0	10,000	9,204	0	0
3.1.1. Human capacities on survey	14,320	11,279					4,320				10,000	9,204		
3.1.2. Operational capacities (survey equipment)	662,335	1,138,680	530,000	738,845	132,335	396,239		3,596						
3.2. Develop monitoring and analyzing systems	213,000	219,694	198,000	193,643	15,000	26,051	0	0	0	0	0	0	0	0
3.2.1. ASDC: tablets delivered	49,000	55,052	39,000	36,033	10,000	19,019								
3.2.2. CCALM: support for use at the national level (GIS introduction and trainings)	105,000	105,259	100,000	98,226	5,000	7,033								
3.2.3. CCALM: support for use at the regional level (GIS management and improvement)	59,000	59,384	59,000	59,384										
3.4. Enhance preparedness for risk reduction through national contingency plans (at lea	6,000	4,646	6,000	4,646										

Res. & Act.	Tentative expenditures for Programme Year 11 (1 Oct. 2021 - 30 Sept. 2022)	TOTAL EXPENDITURES (USD) YEAR 11 (1 Oct. 2021- 30 Sept. 2022)		GCP/INT/384/JICA JICA project		GCP/GLO/963/USA USAID project		TCP/KYR/3801 TCPe project		TCP/TAJ/3806 TCPe project		TCP/GEO/3801 TCPe project		FAO Regular Programme (RP)	
		Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11	Budget Year 11	Expend. Year 11
		R4- Improved response mechanisms to locust outbreaks	791,770	642,066	486,000	451,314	242,120	125,838	0	0	53,650	55,710	10,000	9,204	0
4.1. Strengthen human and operational capacities for locust control	751,650	617,833	460,000	439,522	228,000	113,397	0	0	53,650	55,710	10,000	9,204			
4.1.1. Human capacities on control	10,000	9,204									10,000	9,204			
4.1.2. Operational capacities (control equipment)	741,650	608,629	460,000	439,522	228,000	113,397			53,650	55,710					
4.2. Promote less harmful pesticides and alternatives to conventional pesticides	40,120	24,233	26,000	11,792	14,120	12,441	0	0							
4.2.1 E-Committee on pesticides	16,120	5,122	9,000	3,033	7,120	2,089									
4.2.2. Promotion of the ULV technology	24,000	8,976	17,000	4,454	7,000	4,522									
4.2.3. Alternatives to conventional chemical pesticides: video tutorial on Insect Growth	0	0													
4.2.4. Alternatives to conventional chemical pesticides: field trial/ demonstration on biopesticides use	0	10,134	0	4,304	0	5,830									
R5 - Impact on human health and the environment mitigated and monitored	191,500	201,505	160,000	92,728	30,000	105,438	0	0			1,500	2,639	0	700	
5.1. Mitigate impact of locust control operations on human health and the environment	4,500	95,202	3,000	18,368	0	74,600	0	0			1,500	1,534		700	
5.1.1. Personal protective equipment (PPE) delivery	4,500	57,935	3,000	18,368	0	38,033					1,500	1,534			
5.1.2. Pesticides and empty containers management 11/11/2020 : pilot activity on empty containers	0	37,267			0	36,567								700	
5.1.3. Extension material for staff	0	0													
5.2. Monitor impact of locust control operations on human health and the environment	187,000	106,304	157,000	74,361	30,000	30,838	0	0			0	1,105			
5.2.1. Human capacities and national systems for health and environmental	60,000	30,052	60,000	30,052											
5.2.2. Human Health and Environmental Monitoring Teams	57,000	30,787	57,000	30,787											
5.2.3. Health and environment monitoring equipment	70,000	42,819	40,000	13,522	30,000	29,297									
5.2.4. Pesticide residue analysis and impact assessment	0	2,646				1,541					0	1,105			
R6 - Public information and awareness increased	11,411	20,052	11,411	15,800	0	4,252	0	0	0	0	0	0	0	0	
6.1. Develop awareness among local populations	8,000	9,721	8,000	5,469	0	4,252									
6.2. Enhance visibility of locust issues to promote regional cooperation	3,411	10,331	3,411	10,331											
Other	70,002	43,752	0	0	32,184	0	2,700	2,750	17,778	25,396	17,340	15,606	0	0	
Reporting and Evaluation	5,450	5,500					2,700	2,750	2,750	2,750					
TSS	64,552	38,252			32,184	0			15,028	22,646	17,340	15,606			
Sub-total	2,724,000	2,754,615	1,983,411	1,837,700	599,206	780,433	14,116	12,213	78,427	79,691	38,840	41,377	10,000	3,201	
Support cost	188,986	116,557	138,839	91,857	41,944	11,101	1,266	937	6,937	9,698		2,964			
Total	2,912,987	2,871,172	2,122,250	1,929,557	641,150	791,534	15,383	13,150	85,364	89,390	38,840	44,340	10,000	3,201	

Annex IV – Minimal list of insecticides proposed for registration against locusts in CCA countries (E-Committee on pesticides and biopesticides, 2022)

Pesticides			a.i. concentration	Recommended dose rate, l/ha	WHO Class (1)	Mode of action		Speed of action (2)	Persistence (3)	Impact on non-target organisms (4)	Possibility to apply in barriers
Active ingredient (a.i.)	Trade name	Formulation				Contact	Ingestion				
Alpha-cypermethrin	Fastac 10% /or analog/	OWSC	100 g/l	0,07-0,1	(II)	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No
Deltamethrin	Decis 2,5% /or analog/	EC	25 g/l	0,3-0,4	U	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No
Deltamethrin	Decis 12,5	OS (ULV)	12,5 g/l	1,0	U	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No
Cypermethrin	Arrivo, 25% /or analog/	EC	250 g/l	0,1-0,15	(II)	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No
Lambda-cyhalothrin	Karate /or analog/	EC	50 g/l	0,1-0,15	II	Yes	No	H	Short	Hazardous for pollinators and aquatic arthropods	No
Diflubenzuron	Dimilin 48% /or analog/	SC	480 g/l	0.02 blanket 0.03-0.06 in barrier 1:1	U	No	Yes	L	Long	Hazardous for aquatic arthropods	Yes
Diflubenzuron	Dimilin OF6	OS (ULV)	60 g/l	0.15 blanket 0.3 in barrier 1:1	U	No	Yes	L	Long	Hazardous for aquatic arthropods	Yes
Teflubenzuron	Nomolt 5% (ULV)	OS (ULV)	50 g/l	0.175 blanket 0.3 in barrier 1:1	U	No	Yes	L	Long	Hazardous for aquatic arthropods	Yes
Fipronil	Adonis 4% /or analog/	EC	40 g/l	0,1 in barrier 1:2	U	Yes	Yes	M	Long	Hazardous for pollinators	Yes
Fipronil	Adonis 7,5	OE (ULV)	75 g/l	0,53 in barrier 1:2	U	Yes	Yes	M	Long	Hazardous for pollinators	Yes
Azadirachtin	Green Gold 0,3%	OE	3 g/l	0,15-0,25	(U)	Yes?	Yes?	L	?	?	?
Fungus <i>Metarhizium acridum</i>	Novacrid or analog	OS (mixed with an oil)	titer not less than 50 billion viable conidia/g, dry powder	0,05	(U)	Yes	No	L	Medium	Low risk	?
Fungus <i>Beauveria bassiana</i>	Green Barrier or analog	WP	10 ⁸ conidia forming units/g, dry powder	0,05	(U)	Yes	No	L	Medium	?	?
Fungus <i>Metarhizium anisopliae</i>	Metarizin or analog	WP	10 ⁸ conidia forming units/g, dry powder	2 - 5	(U)	Yes	No	L	Medium	?	?

(1) Class of risk to human health of the World Health Organization (WHO) is indicated for the formulated pesticides on the basis of on the Report of the 11th meeting of the Locust Pesticide Referee Group (LPRG), 2021

II – moderately hazardous;

III – slightly hazardous;

U – non-hazardous under normal use

For pesticides not covered by FAO LPRG, 2021, the WHO class is indicated in parentheses, analogous to similar pesticides

(2) Speed of action is indicated on the basis of on the Report of the 11th meeting of LPRG (2021)

H – high (1-2 hours)

M – medium (3-48 hours)

L – low (>48 hours)

For pesticides not covered by FAO LPRG, 2021, the speed of action is indicated in parentheses, analogous to similar pesticides

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

S – short (1-3 days)

M – medium (3-10 days)

L – long (>10 days)

(4) Impact on non-target organisms is indicated on the basis of the Report of the 11th meeting of the LPRG (2021) and scientific publications

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

Abbreviations:

WSC	water soluble concentrate
WHO	World Health Organization
WS	water solution
WE	water emulsion
g/l	gram per liter
A.I.	active ingredient
CS	concentrate of suspension
EC	emulsion concentrate
l/ha	liter per hectare
OWSC	oil water suspension concentrate
OS	oil suspension
OE	oil emulsion
SC	suspension concentrates
ULV	ultra low volume

Annex V – Tentative budget for Programme Year 12 (1 October 2022–30 September 2023)

Res. & Act.	Description - Activities envisaged for Year 11 and tentative budget (1 Oct. 2022 - 30 Sept. 2023)	TOTAL BUDGET (USD) YEAR 12 (1 Oct. 2022-30 Sept. 2023)	GCP/INT/384/JICA JICA project	GCP/GLO/963/USA USAID project	FAO Regular Programme (RP)
		Budget Year 12	Budget Year 12	Budget Year 12	Budget Year 12
	R1 - Regional cooperation further developed	467,000	427,000	35,000	5,000
	1.1. Facilitate regional exchanges to manage locust situations	116,000	110,000	6,000	0
	1.1.1. Regular information sharing of standardized data: national and regional monthly bulletins issued yearly from March to October	24,000	18,000	6,000	
	1.1.2. Direct experience exchange: annual Technical Workshops in CCA	92,000	92,000		
	1.2. Support joint or cross-border surveys (CBS)	57,000	44,000	13,000	
	1.3. Organize country-to-country visits within the region	11,000	11,000		
	1.4. Identify the best long-term solution for sustainable regional cooperation	86,000	70,000	16,000	
	1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme	197,000	192,000		5,000
	R2 - National capacities further strengthened	287,000	259,000	28,000	0
	2.1. <i>Extend Training-of-Trainers (ToT) on locust management to all CCA countries</i>	242,000	214,000	28,000	0
	2.1.1. Regional sessions/Refresher course (for Master Trainers)	90,000	90,000	0	
	2.1.2. National sessions (for staff)	128,000	100,000	28,000	
	2.1.3. Briefing sessions (for staff/ local manpower)	24,000	24,000		
	2.2. Make available background documentation (Guidelines, monographs, etc.)	15,000	15,000		0
	a Biblio & Material to be made available (e-committee)	0			
	b Monographs	0			
	c Guidelines	15,000	15,000		
	2.3 Organize exposure visits on locust management outside CCA	30,000	30,000		
	2.4. Support post-graduate education/fellowships	0			
	2.4. Support applied research	0			
	R3 - Locust issues and disasters better anticipated and mitigated	376,000	320,000	56,000	0
	3.1. Strengthen human and operational capacities for locust monitoring	131,000	110,000	21,000	0
	3.1.1. Human capacities on survey	0			
	3.1.2. Operational capacities (survey equipment)	131,000	110,000	21,000	
	3.2 Develop monitoring and analyzing systems	235,000	200,000	35,000	0
	3.2.1. ASDC: tablets delivered	30,000	20,000	10,000	
	3.2.2. CCALM: support for use at the national level (GIS introduction and trainings)	120,000	100,000	20,000	
	3.2.3. CCALM: support for use at the regional level (GIS management and improvement)	85,000	80,000	5,000	
	3.4. Enhance preparedness for risk reduction through national contingency plans (at lea	10,000	10,000		

Res. & Act.	Description - Activities envisaged for Year 11 and tentative budget (1 Oct. 2022 - 30 Sept. 2023)	TOTAL BUDGET (USD) YEAR 12 (1 Oct. 2022-30 Sept. 2023)	GCP/INT/384/JICA JICA project	GCP/GLO/963/USA USAID project	FAO Regular Programme (RP)
		Budget Year 12	Budget Year 12	Budget Year 12	Budget Year 12
	R4- Improved response mechanisms to locust outbreaks	181,000	78,000	103,000	0
	4.1. Strengthen human and operational capacities for locust control	0	0	0	
	4.1.1. Human capacities on control	0			
	4.1.2. Operational capacities (control equipment)	0			
	4.2. Promote less harmful pesticides and alternatives to conventional pesticides	181,000	78,000	103,000	
	4.2.1 E-Committee on pesticides.	0			
	4.2.2. Promotion of the ULV technology	11,000	8,000	3,000	
	4.2.3. Alternatives to conventional chemical pesticides: video tutorial on Insect Growth	0			
	4.2.4. Alternatives to conventional chemical pesticides:	0	70,000	100,000	0
	<i>a</i> Field trial/ demonstration on biopesticides use		70,000	40,000	
	<i>b</i> Post-application environmental monitoring & taxonomic identification			60,000	
	R5 - Impact on human health and the environment mitigated and monitored	194,262	107,262	87,000	0
	5.1. Mitigate impact of locust control operations on human health and the environment	67,000	10,000	57,000	
	5.1.1. Personal protective equipment (PPE) delivery	23,000		23,000	
	5.1.2. Pesticides and empty containers management: pilot activity/ Locust-Pesticide Management System	30,000		30,000	
	5.1.3. Extension material for staff	14,000	10,000	4,000	
	5.2. Monitor impact of locust control operations on human health and the environment	127,262	97,262	30,000	
	5.2.1. Human capacities and national systems for health and environmental monitoring of locust control	30,000	30,000		
	5.2.2. Human Health and Environmental Monitoring Teams	77,762	55,262	22,500	
	5.2.3. Health and environment monitoring equipment	18,000	12,000	6,000	
	5.2.4. Pesticide residue analysis and impact assessment	1,500		1,500	
	R6 - Public information and awareness increased	11,100	5,000	6,100	0
	6.1. Develop awareness among local populations	5,000		5,000	
	6.2. Enhance visibility of locust issues to promote regional cooperation	6,100	5,000	1,100	
	Other	0	0	0	0
	Reporting and Evaluation	0			
	TSS	0			
	Sub-total	1,516,362	1,196,262	315,100	5,000
	Support cost	136,639	83,738	52,900	
	Total	1,653,000	1,280,000	368,000	5,000

Annex VI – Bilingual List of National Technical Focal Points

ENGLISH	RUSSIAN
<p>AFGHANISTAN</p> <p>Mr Mirjan HEMAT Head, Department of Emergency Pest Control (Locust), Plant Protection and Quarantine Directorate, Ministry of Agriculture, Irrigation and Livestock, Kabul, Afghanistan Address: 17 Dist., Badam Bagh, Kabul</p>	<p>АФГАНИСТАН</p> <p>Г-н Миржан ХЕМАТ Начальник, Отдел борьбы с вредителями в чрезвычайных ситуациях (Саранча), Отдел Защиты и Карантина Растений, Министерство Сельского Хозяйства, Ирригации и Животноводства, Кабул, Афганистан Адрес: г. Кабул., Бадам Баг, район 17</p>
<p>ARMENIA</p> <p>Mr Artur PETROSYAN Head, Phytosanitary Division, Food safety Department, Ministry of Economy Armenia Address: 39a, Mamikoyants str. Yerevan</p>	<p>АРМЕНИЯ</p> <p>г-н Артур ПЕТРОСЯН Начальник отдела фитосанитарии, Департамент Продовольственной безопасности Министерства экономики РА</p>
<p>AZERBAIJAN</p> <p>Mr Jafar MAHARRAMMOV Deputy Chairman, Agrarian Services Agency under the Ministry of Agriculture</p>	<p>АЗЕРБАЙДЖАН</p> <p>Г-н Джафар МАХАРРАМОВ Заместитель председателя, Агентство Аграрных Услуг при Министерстве сельского хозяйства</p>
<p>GEORGIA</p> <p>Mr Lasha NUTSUBIDZE Deputy Head of the Plant Protection Department, National Food Agency (NFA), Ministry of Agriculture, Tbilisi, Georgia</p> <p>Mr Bejan REKHVIASHVILI Deputy Head, Plant Quarantine Division, National Food Agency (NFA), Ministry of Agriculture Address: 6. Marshal Gelovani Avenue 0159, Tbilisi</p>	<p>ГРУЗИЯ</p> <p>Г-н Лаша НУЦУБИДЗЕ Зам. Начальника Департамента Защиты растений, Национальное Агентство Продовольствия (НАП), Министерство Сельского Хозяйства, Тбилиси, Грузия</p> <p>Г-н Бежан РЕХВИАШВИЛИ Начальник, Отдел Карантина Растений, Национальное Агентство Продовольствия (НАП), Министерство Сельского Хозяйства Адрес: Тбилиси. Пр. Маршала Геловани 6</p>

<p>KAZAKHSTAN</p> <p>Mr Mukhtar ZHANABAEV Chief Expert, State Phytosanitary Department, State Inspection Committee in the Agricultural Sector, Ministry of Agriculture Address: 36 Kenessary str, Office 704, Astana, 010000</p>	<p>КАЗАХСТАН</p> <p>Г-н Мухтар ЖАНАБАЕВ Главный эксперт, Государственная Фитосанитарная Инспекция, Комитет Государственной Инспекции в Агропромышленном комплексе, Министерство Сельского Хозяйства Адрес: ул. Кенесары, 36, Каб. 704, 010000, Астана</p>
<p>KYRGYZSTAN</p> <p>Mr Dyikanbai Bakashevich KENJEBAEV Director, Department of Chemicalization, Plant Protection and Quarantine, Ministry of Agriculture. Address; 241, Bokonbaeva street, 720017 Bishkek, Kyrgyzstan:</p>	<p>КЫРГЫЗСТАН</p> <p>Г-н Дыйканбай Бакашевич КЕНЖЕБАЕВ Директор, Департамент химизации, защиты и карантина растений, Министерство сельского хозяйства Кыргызской Республики Адрес: 720017, г. Бишкек, ул. Боконбаева 241, Кыргызстан</p>
<p>RUSSIAN FEDERATION</p> <p>Mr Alexander MALKO Director, Federal State Institution "Russian Agricultural Center", Ministry of Agriculture Address: Orlikov str., 1/11, building 1, 107139, Moscow</p> <p>Mr Dmitrii Govorov Deputy Director, Federal State Institution "Russian Agricultural Center", Ministry of Agriculture</p> <p>Mr Andrei ZHIVYKH Head of Department, Federal State Institution "Russian Agricultural Center", Ministry of Agriculture</p>	<p>РОССИЙСКАЯ ФЕДЕРАЦИЯ</p> <p>Г-н Александр МАЛЬКО Директор, Федеральное государственное учреждение «Российский сельскохозяйственный центр», Министерство Сельского Хозяйства Адрес: 107139, г.Моква. Орликов пер. 1/11, стр.1</p> <p>Г-н Дмитрий Говоров Заместитель Директора, Федеральное государственное бюджетное учреждение «Российский сельскохозяйственный центр», Министерство Сельского Хозяйства</p> <p>Г-н Андрей ЖИВЫХ Начальник отдела, Федеральное государственное бюджетное учреждение «Российский сельскохозяйственный центр», Министерство Сельского Хозяйства, Российская Федерация</p>

<p>TAJIKISTAN</p> <p>Mr Nusratullo Bodom NOZANINZODA Head, State Entity "Locust Control Expedition", Ministry of Agriculture, Dushanbe, Tajikistan Address: Ministry of Agriculture, 27 Rudaki Avenue, Dushanbe</p>	<p>ТАДЖИКИСТАН</p> <p>Г-н Нусратулло Бодом НОЗАНИНЗОДА Начальник, Государственное Учреждение "Экспедиция по Борьбе с Саранчой", Министерство сельского хозяйства Адрес: г. Душанбе, проспект Рудаки 27</p>
<p>TURKMENISTAN</p> <p>Mr Malikmuhammet CHARYYEV Head of the Production Department, Plant Protection Service, Ministry of Agriculture and Environment Protection (MAEP) Address: 92 Archabil main str., Ashgabat</p> <p>Ms Ejebay KOKANOVA Leading researcher at the National Institute of Deserts, Flora and Wildlife, MAEP Address: 15, Neutral Turkmenistan st., Ashgabat</p>	<p>ТУРКМЕНИСТАН</p> <p>Г-н Мяликмухаммет ЧАРЫЕВ Заведующий производственного отдела Службы защиты растений Министерства Сельского хозяйство и охраны окружающей среды- (МСХиООС) Адрес: ул. Арчабил основной 92, Ашхабад</p> <p>Г-жа Эджебай КОКАНОВА Ведущий научный сотрудник Национального Института пустынь, растительного и животного мира, МСХиООС Адрес: г. Ашхабад, ул. Нейтральный Туркменистан, 15</p>
<p>UZBEKISTAN</p> <p>Mr Bahodir Abdikarimovich KHUDAYKULOV Head of the Locust and Mulberry Pylalid Control Department Agency on Quarantine and Plant Protection Mob: +998 99 098-83-70 E-mail: info@karantin.uz</p> <p>Mr Furkat GAPPAROV Head, Laboratory for Locust Research, Uzbek Research Institute for Plant Protection Address: 4, Babur street, Kibrai district, Tashkent region</p>	<p>УЗБЕКИСТАН</p> <p>Г-н Баходир Абдикаримович ХУДАЙКУЛОВ Начальник Управления по борьбе с саранчой и тутовой огневкой Агентство по карантину и защите растений Моб: +998 99 098-83-70 Эл.почта: info@karantin.uz</p> <p>Г-н Фуркат ГАППАРОВ Заведующий, Лаборатория изучения саранчовых Узбекского НИИ защиты растений Адрес: г. Ташкент, Кибрайский район, ул. Бабур 4</p>