Food and Agriculture Organization of the United Nations

REPORT

Technical Workshop on Locusts

In Caucasus and Central Asia (CCA)

23-25 NOVEMBER 2021

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CONTENTS

Tables

ABBREVIATIONS AND ACRONYMS

AChe	Acetylcholinesterase
a.i.	Active ingredient
ASDC	Automated System of Data Collection
CCA	Caucasus and Central Asia
CCALM	Caucasus and Central Asia Locust Management System
CIT	*Calliptamus italicus* (Linnaeus 1758), Italian Locust
DCPPQ	Department of Chemicalization,Plant Protection and Quarantine (DCPPQ) (Kyrgyzstan)
DMA	*Dociostaurus maroccanus* (Thunberg 1815), Moroccan Locust
EC	Emulsifiable concentrate
ET	Economic Threshold
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectare
HH&EMT	Human Health and Environmental Monitoring Team
IGR	Insect Growth Regulator
ISTT	Institute of Space Techniques and Technology
IT	Information technology
JICA	Japan International Cooperation Agency
l	Liters
LMI	*Locusta migratoria migratoria* (Linnaeus 1758), Asian Migratory Locust
LPRG	Locust Pesticide Referee Group
MAEP	Ministry of Agriculture and Environmental Protection (Turkmenistan)
MAIL	Ministry of Agriculture, Irrigation and Livestock (Afghanistan)
MEPA	Ministry of Environment Protection and Agriculture (Georgia)
NDVI	Normalized Difference Vegetation Index
NDWI	Normalized difference water index
NDSI	Normalized Difference Snow Index
NFA	National Food Agency (NFA)
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
PPQD	Plant Protection and Quarantine Directorate (Afghanistan)

PRG	Pesticide Referee Group
RP	Regular Programme (FAO)
SE-LCE	State Entity “Locust Control Expedition” (Tajikistan)
TCP	Technical Cooperation Programme (FAO)
ToT	Training-of-Trainers
TW	Technical Workshop
ULV	Ultra-Low Volume
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 online on 23-25 November 2021. 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 ten countries participated in this Technical Workshop (TW): Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. Participants also included a representative from Japan International Cooperation Agency (JICA) as well as from FAO headquarters and decentralized offices. In addition, the workshop was attended by a number of observers from CCA countries and a Chinese Academy of Sciences. The list of participants is provided in Annex I.

3. The TW was opened by Mr Shoki Al Dobai, Team Leader of the FAO Locusts and Transboundary Plant Pests and Diseases Team (NSPMD). He welcomed all participants to this meeting, held online for the second consecutive year. He indicated that the objectives of the workshop were to discuss issues related to locust management in CCA, including: lessons learnt from the 2021 national anti-locust campaigns and forecast and preparation of the 2022 ones; implementation of the Programme in 2021 and workplan for 2022; the latest developments regarding testing and field use of the Geographic Information System (GIS) ; and risk reduction associated with locust control operations. On top of that, he mentioned a very important topic, which is the creation of an FAO Commission on Locusts in CCA, following bilateral meetings held in 2021 with a number of countries, reiterating that sustainable management of transboundary pests like locusts can be achieved only with a strong regional cooperation in addition to capacity strengthening. Mr Al Dobai also said that this workshop was a special one, with the celebration of the tenth anniversary of the Programme. A lot of achievements have been reached since Programme launch in October 2011, thanks to the active participation of all countries, which were able, with FAO support, to create a regional technical network and to strengthen capacities all together. This would not have been possible without 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. He concluded by informing that this specific workshop was organized thanks to the project funded by JICA as well as to a contribution from the FAO Regular Programme and wished a fruitful workshop to all.

OFFICERS OF THE SESSION

4. Considering the TW virtual format, Mr Alexandre Latchininsky, Agricultural Officer/Locust Management, NSPMD, acted as Moderator with a view to simplify the proceedings (i.e. no elected Chair and Vice-Chairperson) while FAO would take care of preparing the draft report (no Drafting Committee), which was agreed by participants.

AGENDA

5. The Agenda, as provided in Annex II, was endorsed by all countries after having been presented by the FAO Agricultural Officer/Locust Management.

COMMEMORATION

6. The assembly observed a minute of silence in commemoration of a colleague and friend who had sadly passed away this year: Mr Kambulin, from Kazakhstan.

SESSION 1: NATIONAL 2021 LOCUST CAMPAIGNS AND FORECASTS FOR 2022

National locust campaigns in 2021, forecasts for 2022 and preparation of the next campaigns (Item 3)

7. The Delegates from CCA countries reported on the locust situation and anti-locust campaign in 2021. The surveyed, infested and treated areas per country as well as the outstanding points from the presentations are presented below.

Table 1. Surveyed, infested and treated areas in 2021 in CCA

Country	Area (in hectares)		
	Surveyed	Infested	Treated
Afghanistan	*No data*	*No data*	78 983
Armenia	80 000	1398	1398
Azerbaijan	156 601	60 559	29 770
Georgia	315 000	123 000	114 900
Kazakhstan	38 319 200	626 121	626 100
Kyrgyzstan	65 065	49 315	49 025
Russian Federation	10 069 500	1 359 390	385 120
Tajikistan	484 934	115 300	131 864
Turkmenistan	225 498	53 987	53 987
Uzbekistan	752 100	529 200	503 900
Total	**50 467 898**	**2 918 270**	**1 975 047**

8. The Delegate from Afghanistan explained that, according to the emergency plan of the Plant Protection and Quarantine Directorate (PPQD), the locust control campaign was to be implemented in 21 provinces of the country, but due to security problems, it was implemented only in 16 provinces. The campaign started on 28 March in Balkh and ended in late July in Ghor provinces. Despite the tremendous difficulties, most of the campaign activities were successfully accomplished and damage to crops prevented. In total, 30 700 liters (l) of pesticides were used to control DMA and grasshoppers, including 18 700 l of deltamethrin Ultra-Low Volume (ULV), 5000 l of diflubenzuron ULV and 7000 l of diflubenzuron Emulsifiable Concentrate (EC). Centralized funding for the campaign amounted to United States Dollars (USD) 200 000. In total, treated areas in 16 provinces amounted to 78 983 hectares (ha) with the biggest areas treated in Samangan (19 184 ha), Takhar (14 350 ha), Kunduz (13 971 ha), Baghlan (7626 ha) and Ghor (6500 ha) provinces. While these inputs allowed to keep the locusts under control, in June immigration swarm flight from neighboring Tajikistan arrived in Kunduz and Takhar provinces and caused some damage on about 4000 ha.

9. The delegate from Armenia stated that the Italian Locust (CIT) was the main locust pest in the country. About 1400 ha were infested by CIT in two regions, Ararat and Tavush. Anti-locust treatments covered 1398 ha and were implemented using 210 l of water-based insecticide cypermethrin.

10. The delegate from Azerbaijan informed that hatching started for the Moroccan Locust (DMA) on 23 April in Djeyranchel and Eldar steppes, for the Asian Migratory Locust (LMI) on 22 May near the Caspian Sea shore and for CIT in early June in several areas. Anti-locust campaign started on

29 April; in total, three insecticides were used, i.e. cypermethrin EC (3034 l), alpha-cypermethrin ULV (17 353 l) and acetamiprid Soluble Liquid (SL, 433 l), in both ULV and EC formulations. Most of the spraying was done in ULV from vehicle-mounted Micron AU8115 sprayers; for EC formulations, Scout 28-s 300 and tractor-driven ventilator sprayers were used. In total 29 770 ha were treated (8 per cent lower than in 2020) including 16 976 ha against DMA, 12 531 ha against CIT and 263 ha against LMI. It is interesting to note that while in 2021, more treatments concerned CIT than DMA, this year the situation returned to a more typical one for Azerbaijan when treated against DMA areas exceeded those treated against CIT.

11. The Delegate from Georgia informed that hatching started on 5 May for DMA and on 12 May for CIT. Anti-locust treatments started in mid-May and lasted till early August. Overall, 114 900 ha were treated, which is 43 per cent higher than in 2020 and a record for the country. The treatments took place in Kvemo-Kartli (53 190 ha), Kakheti (41 410 ha), Mtskheta-Mtianeti (11 240 ha), Shida Kartli (6980 ha), Samtse-Djavakhetia (1 130 ha) and Tbilisi (950 ha) regions. The following insecticides were applied: deltamethrin ULV (49 765 l), chlorpyrifos ULV (40 200 l), lambda-cyhalothrin EC (5000 l) and teflubenzuron ULV (1000 l), in total 95 965 l. Treatments were done using ULV sprayers (Micron AU8115, AU 8000) and UL sprayers (Scout 34-s 400, WIND 640 FLX , TIFONE, MMT HUNTER). In terms of difficulties, the Delegate noted that locust infestations often happened inside or close to crop fields, therefore lower-toxicity insecticides were needed for such situations. Also, it is necessary to find an efficacious alternative to organophosphate insecticides when treatments are applied to late-instar nymphs.

12. The Delegate from Kazakhstan explained that over 38 million ha were surveyed against locusts in 2021. Infested areas with densities above the economic threshold (ET) were recorded for DMA (89 700 ha), CIT (404 600 ha), LMI (131 900 ha) and non-swarming grasshoppers (194 000 ha). All this area (over 820 thousand ha) was treated with gamma-cyhalothrin, fipronil, mixture of imidacloprid and diflubenzuron, all in water-based formulations. Also, some treatments were done using a botanical insecticide azadirachtin in oil-based formulation. In terms of spraying platforms, the following were used: An-2 aircraft (12 units), ultra-light aircraft, or motor-deltaplanes (13 units), aerosol generators (8 units) and boom-and-nozzle sprayers (150 units). As a result of timely-applied treatments, damage to crops was prevented.

13. According to the Delegate from Kyrgyzstan, spring was cool and wet in 2021. As a result, DMA hatching in 2021 started from 15 April, which is eight days later than in 2020. CIT hatching started on 21 May, which is 5 days later than in 2020. Locust survey was conducted on 65 065 ha, out of which 49 315 ha were infested by DMA (59 percent) and CIT (41 percent). National budget allocated for locust control amounted to about USD 130 000 in 2021, which is significantly lower than during the pre-Covid-19 times. The total area treated in 2021 amounted to 49 025 ha, including 14 150 ha in Jalal-Abad, 13 645 ha in Naryn, 9500 in Batken, 5550 in Osh, 4950 in Talas and 1230 in Chui 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, 47 795 ha) and difficult-to-access areas were treated with tractor-driven ventilator sprayers (4 units, 1230 ha). Pesticides used (10 163 l) included alpha-cypermethrin and lambda-cyhalothrin (both in EC) as well as deltamethrin and chlorpyrifos (both in ULV). The largest area was treated by alpha-cypermethrin (66 percent) followed by lambda-cyhalothrin (26 percent), deltamethrin and chlorpyrifos (4 percent each). The biological efficacy of ULV insecticides was slightly higher than of EC formulations.

14. 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. Overall, over 10 million ha were surveyed in the Russian Federation in 2021, out of which over 1.3 million ha were infested. Anti-locust treatments were conducted on 385 120 ha, which is 25 percent less than in 2020. The bulk (93 percent) of the treatments took place in North Caucasus Federal District (225 370 ha) and in the South Federal District (131 210 ha). Anti-locust treatments used 30 different insecticides with

the following active ingredients: imidacloprid, alpha-cypermethrin, cypermethrin, lambda-cyhalothrin, gamma-cyhalothrin, fipronil, diflubenzuron and a number of binary mixes; the largest area (about 80 percent) was treated with imidacloprid products. Overall, biological efficacy of the pesticides used was high, mostly exceeding 90 percent. In some cases it decreased when air temperature was high, therefore it was recommended to conduct treatments early in the morning when it was still cool.

15. The Delegate from Tajikistan reported that locust monitoring was conducted on an area close to 500 000 ha in 2021. The infested area was 115 300 ha; however, because of multiple treatments in the same areas, the total treated area amounted to 131 864 ha, including 105 820 ha against DMA, 15 841 ha against CIT and 10 203 ha against non-swarming grasshoppers. The largest area was treated in Khatlon region (72 297 ha) followed by Sughd region (44 061 ha), Districts of Republican Subordination (14 993 ha) and Gorno-Badakhshan (513 ha). Roughly equal areas were treated using vehicle-mounted, tractor-driven, motorized knapsack and handheld sprayers. All treatments were done with EC formulations of insecticides such as alpha-cypermethrin, lambda-cyhalothrin and chlorpyrifos+cypermethrin binary mix; in total, 39 504 l of insecticides were used.

16. The Delegate from Turkmenistan reported that locust monitoring in 2021 covered the area of 225 498 ha out of which 53 987 ha were infested and treated. Geographically, the treatments took place in Akhal (22 770 ha), Mary (14 467 ha), Lebap (10 250 ha), Balkan (4 330 ha) and Dashoguz (2170 ha). The most economically important species were DMA (32 440 ha treated, together with *Dociostaurus kraussi*) and saxaul grasshopper *Dericorys albidula* (21 547 ha treated). Overall, the treated area in 2021 was significantly lower than in 2020 (by 28 percent). As for the insecticides, two pyrethroids – alpha-cypermethrin and deltamethrin – were used, both in EC formulations. They were applied by vehicle-mounted Micron AU8115, tractor-driven Wind 634 Flexigun and knapsack sprayers.

17. According to the Delegate from Uzbekistan, in 2021 locust survey covered an area of 752 100 ha, out of which 529 200 ha were infested and 503 900 ha treated, which is 5 percent lower than in 2020. The largest areas were treated in Kashkadarya (116 600 ha, mostly DMA), followed by Surkhandarya (113 700 ha, mostly DMA), Karakalpakstan (110 000 ha, CIT and LMI) and Jizzak (53 900 ha, DMA and CIT) regions. As for the species, the largest area was treated against DMA (304 900 ha) followed by CIT (78 200 ha), saxaul grasshopper (69 500 ha), non-swarming grasshoppers (46 000 ha) and LMI (5300 ha). Overall, 37 532 l of insecticides were used including lambda-cyhalothrin (26 886 l), alpha-cypermethrin (16 016 l), imidacloprid (4222 l), fipronil (214 l) and acetamiprid (43 l). All insecticides were in EC formulations. The largest area was treated with vehicle-mounted ULV sprayers (35 units, 251 700 ha) followed by tractor-driven sprayers (165 units, 179 800 ha), ultra-light aircraft (4 units, 38 900 ha), knapsack and handheld sprayers (350 units, 29 300 ha) and large aircraft (1 unit, 4200 ha).

Table 2. Forecasted treated areas for 2022 in CCA countries

Country	Area (in ha) - subject to control operations
Afghanistan	90 000 – 95 000 ha
Armenia	5 000 ha
Azerbaijan	No data
Georgia	Up to 80 000 ha
Kazakhstan	997 270 ha
Kyrgyzstan	69 500 ha
Russian Federation	584 860 ha
Tajikistan	123 240 ha

Turkmenistan	No data
Uzbekistan	531 000 ha
Total	2 390 870 ha

SESSION 2: PROGRAMME IMPLEMENTATION AND CAPACITY STRENGTHENING IN 2021

Overview on Programme implementation in 2021 and funding situation (Item 4)

18. Ms Marion Chiris, FAO Locust Programme Officer, NSPMD, provided an overview of the implementation of the CCA locust Programme during Year 10, from 1st October 2020 to 30 September 2021, against the available funding sources. Such funding sources included: the project funded by USAID to the benefit of all CCA countries (GCP/GLO/963/USA); the project funded by JICA for six Central Asian (CA) countries (GCP/INT/384/JCA); 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)[1] as well as a contribution from the FAO Regular Programme (RP). The main achievements for Year 10, under the different Programme results, were summarized as described below.

19. Under Result 1 of the Programme, "Regional cooperation developed", national and regional monthly bulletins were prepared respectively by all ten countries and FAO, for the twelfth consecutive year. The annual TW was held in November 2020, online for the first time: although this did not replace in-presence regional workshops, it offered a good alternative in the pandemic context. An extremely important topic for long-term regional cooperation, the creation of an FAO Commission on locusts in CCA, was also relaunched in 2021: high-level meetings between FAO and national authorities were organized for advocacy purpose, with seven out of ten CCA countries.

20. Under Result 2, "National capacities strengthened", a high number of people, i.e. 584 persons from nine CCA countries[2], were trained. This was done during ten online Refresher Courses on locust management (to the benefit of 219 Master-Trainers or Locust/Plant Protection Experts) as well as 12 national sessions and 14 briefing sessions (for 180 experts and 185 experts/local manpower respectively). The Refresher Courses were delivered online by FAO experts. The national and briefing sessions were delivered by national Master-Trainers (MTs), in four countries having already benefitted from Training-of-Trainers (ToT) in the previous years, namely Azerbaijan. Georgia, Kyrgyzstan and Tajikistan.

21. This was completed by 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), dispatched to five more countries and translated into additional six languages; two Posters on the Italian and Moroccan Locusts, adjusted to the specific context of each country, published to the benefit of six countries and so far made available on website "Locust Watch in CCA; and the two monographs on Italian (CIT) and Moroccan (DMA) Locusts, which were under approval/finalization.

22. Concerning Result 3, "Locust issues better anticipated", support was provided for survey operations conducted during the 2022 locust campaign to Georgia, Kyrgyzstan and Tajikistan, under the national TCP projects. Survey equipment was also procured, including motorbikes to

[1] Projects GCP/INT/384/JCA, TCP/GEO/3801 and TCP/TAJ/3806 operationally started in November 2020.

[2] All but Uzbekistan during Year 10, as of September 2021.

Afghanistan (30 units under delivery, JICA) and Information Technology (IT) equipment for Georgia (national TCP) while procurement was in progress for other items under the JICA project.

23. 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), under various funding sources. An important achievement was the further increase of ASDC use, with a number of records reaching 5 178 reports from ten countries in 2021. In this respect, a total of 113 tablets for ASDC use were procured for seven countries during Programme Year 10. Also, the second GIS Workshop on Locust Data Analysis, Forecast and Reporting in CCA was held online on 16-18 March 2021 with nine countries (all except Tajikistan) and up to 66 participants. As an output, an E-Committee on CCALM was organized and met on 28 July 2021 to discuss forecasting algorithms, gathering up to 30 experts from ten countries (JICA, USAID). Last, based on the recommendations formulated by CCA countries and FAO, functionalities of both ASDC and CCALM, which are maintained by the Institute of Space Techniques and Technology (ISTT), Kazakhstan, were improved (ASDC App for smartphone and new CCALM modules), under JICA project. CCALM interface is now also available in Tajik and Uzbek, for a total of ten languages (all except Kazakh).

24. Under Result 4, "Response mechanisms to locust outbreaks improved", support was provided through national TCP projects to Georgia, Kyrgyzstan and Tajikistan for control operations conducted during the 2022 locust campaigns. Control equipment was also delivered: Ultra Low Volume (ULV) sprayers to Afghanistan (200 hand-held and 70 knapsack sprayers, JICA), Kyrgyzstan (two vehicle-mounted sprayers, JICA) and Georgia (two vehicle-mounted sprayers, TCP); tractors to Kyrgyzstan (six units, JICA); conventional pesticide (5 000 l in EC formulation) and Insect Growth Regulator (1 000 l in ULV formulation) to Georgia (TCP); and tires to Tajikistan (148 units for motorbikes, vehicles and tractors, TCP). Additional equipment was under delivery, including ULV sprayers for Turkmenistan and Uzbekistan and EC sprayers for Kyrgyzstan (JICA) as well as tractors and EC sprayers for Tajikistan (JICA and national TCP) while procurement was in process for other items. In addition, during 2021, the Locust-Pesticide Referee Group (Locust-PRG) met and a Locust-Pesticide Management System (Locust-PMS) was developed in view of its introduction in interested countries in the coming years.

25. As far as Result 5 is concerned, "Impact on human health and the environment mitigated and monitored", the Programme continued to promote risk reduction for locust control by delivering Personal Protective Equipment (PPE), including 110 kits for Kyrgyzstan (JICA and TCP), 100 kits for Uzbekistan (JICA) and 60 kits for Georgia (TCP). Support was also provided to the Human Health and Environmental Monitoring Teams in Azerbaijan and Georgia (for the third year, USAID) and in Kyrgyzstan (for the sixth year, JICA). Cholinesterase kits reagents were under delivery for Tajikistan (JICA). In addition, pesticide residue analyses of vegetation samples treated against locusts were carried out by Georgia (USAID) for the third consecutive year, with the objective to compare the results with the maximum residue limits established by the European Union (EU) and/or the Codex Alimentarius.

26. Under Result 6, "Public information and awareness increased", Calendars on safety measures associated with locust control were prepared and published in Turkmen and Uzbek, to be dispatched in year 2022 with the objective to develop awareness on measures to be taken before, during and after treatments by local populations living in locust-affected areas (JICA). Efforts were also made in terms of visibility of locust issues in CCA: news were regularly published on the FAO Website "Locust Watch in CCA"; a media tour was organized in Kyrgyzstan in late June 2021; and a number of press releases were issued at countries' level. Last, a brochure on the JICA project was published in English and in Russian and uploaded on the FAO website "Locust Watch in CCA".

27. The Locust Programme Officer then indicated that the following developments took place during Year 10 with respect to Programme management and Resource mobilization:

    - The five-year project funded by JICA to the benefit of Central Asia, of USD 7,5 million (which had been approved in July 2020) operationally started in November 2020 and could start to be implemented (GCP/INT/384/JCA);

- A new three-year project funded by USAID to the benefit of CCA countries, of USD 1.8 million, was approved in July 2021, yet to operationally start as of late September 2021 (GCP/GLO/917/USA);

- Considering the unprecedented levels of locust infestations, the national emergency project funded by FAO to the benefit of Georgia, of USD 250 000, which had been approved in November 2020 for one year (TCP/GEO/3801), was being extended up to November 2022 to support monitoring and control operations also during the next campaign;

- In addition, a proposal was submitted in August 2021 to the FAO-Yanbao Fund for Agriculture Talents (China), for additional support to locust management in Central Asia - feedback yet to be received.

28. Regarding the constraints met during Year 10, due to the COVID-19 pandemic, a number of events had to be organized online, including: the annual 2020 TW; the discussions on long-term regional cooperation; all Refresher courses; one national session in Georgia; and the 2021 GIS Workshop. Two activities could not be implemented at all: the cross-border or joint surveys during spring, i.e. five in Central Asia (JICA) and one in Caucasus (USAID) (summer and autumn surveys also turned out unfeasible); and the envisaged national sessions in Herat and Balkh, Afghanistan (initially planned in June 2021, they were first postponed and then, with the political turmoil in August, cancelled - JICA project). The pandemic also impacted procurement, with increased global market costs leading to a revision of the procurement plans for some items in two countries as well as longer than envisaged transportation in some other cases. Other constraints included the still pending signature of the JICA project by Kazakhstan, which did not allow carrying out some activities[3] while online ones were nevertheless implemented, including sharing of national monthly bulletins, participation in annual TW, GIS Workshop and E-Committee on CCALM as well as national training course (the latter on FAO RP). Last, some difficulties were met in organizing activities in Tajikistan (TCP and JICA projects), including delayed online Refresher, lack of participation in the 2021 GIS Workshop and absence of missions of the Human Health and Environmental Monitoring Team, for the first time since its creation in 2015.

29. Based on the above, a number of recommendations were made for the following year, including:

- Signature of the JICA project by Kazakhstan should be pursued, allowing the country and the region to fully take advantage of the assistance provided by the resource partner;

- Efforts to be pursued to reach expected outputs, should COVID-19 pandemic continue, either by adapting activities or finding alternative solutions or by adjusting the timeframe;

- At institutional and technical level, all stakeholders should continue making every effort to concur to the three main directions/priorities agreed upon during the 2016 TW: towards sustainable regional cooperation (in particular advocacy by CCA experts at the national level for establishing an FAO Commission on Locusts in CCA); towards implementation of an effective locust preventive control strategy; and towards further increase of knowledge and best practices;

- 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; and

- 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 others to expand their capacities.

[3] In-depth introduction of CCALM, tablets delivery, dispatch of Practical guidelines and posters and preparation of calendars on safety measures.

30. Afterwards, the FAO Locust Programme Officer briefly presented the funding situation of the Programme. She indicated that at the end of Year 10, a grand total of USD 19 million had been made available, with a total of thirteen projects (six regional ones and seven national ones) having been or being implemented since the beginning of the Programme, in addition to the FAO Regular Programme contribution (see Annex III). She mentioned that, out of this amount, about USD 7.7 million were available for the 2022 campaign and the following ones, up to 2024/2025.

31. Regarding the tentative expenditures for Year 10 of the Programme, from 1 October 2020 to 30 September 2021, they amounted to USD 2 159 319. Annex IV presents them by Programme Result and activity as well as by project: GCP/GLO/963/USA (USD 101 040), GCP/INT/384/JCA (USD 1 566 287), TCP/TAJ/3806 (USD 178 019), TCP/GEO/3801 (USD 203 834), TCP/KYR/3801 (USD 77 673) and the FAO Regular Programme (USD 45 500).

National capacities development in 2021 (Item 5)

Training sessions (Item 5.1)

32. The Agricultural Officer/Locust Management, NSPMD, introduced this item indicating that during Programme Year 10, i.e. from 1 October 2020 to 30 September 2021, a total of 584 Locust Experts from nine countries benefitted from 36 training sessions on locust biology and monitoring as well as on pesticide spraying and risk reduction, including ASDC and CCALM. This included: (i) 219 Plant Protection/Locust experts from nine countries benefitting from ten online Refresher courses/training sessions (twice for Armenia) delivered by FAO Experts (it was specified that Uzbekistan also benefitted from it but later, in November 2021, thus falling under Programme year 11); and (ii) 285 Plant Protection/Locust experts and local manpower from four countries benefitted from 12 national sessions and 14 briefing sessions delivered by Master-Trainers. Such trainings were organized thanks to various funding sources.

33. The content of the online Refresher courses/training sessions was briefly presented by the GIS Expert, since it was similar for all countries. She indicated that they were devoted to: the bio-ecology of DMA, CIT and LMI (with adjustments according to the countries); to the methods of field data collection; impact of climate changes; locust control techniques and preventive strategies as well as reducing the risks of insecticide use before, during and after locust control operations; as well as on ASDC and CCALM use in locust monitoring and data collection, transmission and analysis. They included both theoretical and practical parts – for the latter, it consisted of filling FAO Locust Survey and Spray Monitoring Forms by ASDC (simulated data) as well as entering data in CCALM and reviewing/correcting them. Such Refresher courses/training sessions, which were delivered by Mr A. Latchininsky, FAO Agricultural Officer/Locust Management and Ms N. Muratova, FAO International Consultant, GIS Expert, were conducted in Russian for most countries (with translation into national language in the case of Azerbaijan, Georgia and Turkmenistan) and in English for Afghanistan, with translation into Dari. At completion, training material (Powerpoint, videos, background literature) was sent to all participants, as well as attendance certificates.

34. Each country then presented the trainings organized as part of the Programme during Year 10, including: (i) the online Refresher Courses/Training sessions on locust monitoring and information management, including ASDC and CCALM, and Pesticide Risk Reduction and (ii) the trainings organized by Master-Trainers (if applicable), as summarized below.

- **Kyrgyzstan: Refresher Course on 5 and 26-30 October 2020, two national sessions in November 2020 and five briefing sessions in April-June 2021 (TCP/KYR/3801)**

35. The Delegate from Kyrgyzstan reported about the five-day Refresher Course, delivered online on 5 and 26-30 October 2020 (TCP/KYR/3801) to seven national Locust Experts of the Department of Chemicalization, Plant Protection and Quarantine (DCPPQ), Ministry of Agriculture. Participants included five men and two women from 25 to 43 years old, four of them being already Master-

Trainers. The part on locust bio-ecology focused on the two main pests present in the country, DMA and CIT. The Agricultural Officer/Locust management indicated that the results of the pre- and post-evaluations showed that participants' knowledge had improved from 63 percent to 90 percent. With respect to ASDC, 25 test Locust Survey Forms and 27 test Spray Monitoring Forms were completed and sent to CCALM during the training. Work on CCALM included analysis of the locust situation based on historical data for two administrative levels - oblasts and districts.

36. The Delegate from Kyrgyzstan also reported about national sessions on locust monitoring and information management, including ASDC and CCALM, delivered by the Master-Trainers in Osh on 17-19 November 2020 and in Cholpon-Ata on 24-26 November 2020, respectively for specialists from southern and northern regions. The trainings were attended by 30 specialists (15 persons/training) from regional departments and their active participation was underlined. The main method of transmitting information consisted in the presentations received during the Refresher Course, which were handed over to all participants (on flash drives).

37. It was indicated that five briefing sessions were also delivered by the Master-Trainers during the locust control campaign, from April to June 2021, to the benefit of 75 staff/local manpower (15 persons/briefings) involved in survey and control operations, as follows: on 5-7 April, in Aksy and Nooken districts of Jalal-Abad oblast; on 21-23 April, in Nookat and Aravan districts of Osh oblast; on 11-13 May, in Leilek and Batken districts of Batken oblast ; on 24-26 May, in Manas and Kara-Buura districts of Talas oblast; and on 8-10 July in At-Bashi and Ak-Tala districts of Naryn oblast. The following topics were addressed during the briefings: locust bio-ecology and monitoring; spraying, including practical exercises on ULV sprayer calibration of the Micronair AU-8115M sprayer; PPE use; monitoring the quality and efficiency of locust treatments, etc.; measures to protect the environment and human health; and use of ASDC. In conclusion, the Delegate noted that the annual briefings helped strengthening DCPPQ capacities and recommended to continue such trainings the next year.

- **Georgia: Refresher Course on 15-18 December 2020 and two national sessions and five briefing sessions in April-June 2021 (TCP/GEO/3801)**

38. The Delegate from Georgia reported about the four-day Refresher Course, delivered online on 15-18 December 2020 to ten national Locust Experts of the National Food Agency (NFA) of the Ministry of Environment Protection and Agriculture (MEPA). Five persons had attended similar training before (Master-Trainers) and their age ranged from 27 to 61 years old (all men). The training focused on the two main locust pests present in Georgia, CIT and DMA. The part on CCALM included analysis of locust situation on the basis of historical data for two administrative levels - regions and municipalities. The Agricultural Officer/Locust management indicated that the results of the pre- and post-evaluations showed that participants' knowledge on locust bio-ecology had improved from 77 percent to 80 percent while the GIS Expert said that during the training, 14 test Locust Survey Forms and 18 test Spray Monitoring Forms had been completed and sent to CCALM database.

39. The Delegate reported also about the two national sessions on locust monitoring and information management, including ASDC and CCALM, delivered to 30 Experts. The first one, for 14 experts, was organized online on 22-23 April, as the COVID-19 situation was still complicated; the second one, for 16 experts, was held on 22-25 June in Kakheti. Additionally, five briefing sessions, of two day each, were delivered to 40 experts in the last decade of May 2021, as follows: in Kakheti (14 experts, 19-20 May), Kvemo Kartli (14 experts, 21-22 May), Mtskheta-Mtianeti (four experts, 23-24 May), Shida Kartli (four experts, 25-26 May) and Samtskhe-Javakheti (four experts, 27-28 May). During the national and briefing sessions, training materials (translated into Georgian) and equipment provided by FAO were used. Due to the COVID-19 pandemic, it was difficult to conduct training for many people, because the number of specialists in enclosed space was limited. The participants noted the usefulness of the information received. As a result of these sessions it was recommended to conduct refresher courses every year, before the locust campaign, and also that Master-Trainers liaise with the locust groups to facilitate effective survey, locust control, safer pesticide management, more effective treatments, especially in those regions

where people with less experience work.

- **Afghanistan: Refresher course, 18-22 January 2021 (GCP/INT/384/JICA)**

40. The Delegate from Afghanistan reported about the five-day training received online by eight locust specialists from the Ministry of Agriculture, Irrigation and Livestock (MAIL), whose age varied from 22 to 54 years old. Two of the participants were Master-Trainers. While addressing the same topics than for all online Refresher Course, the training focused on DMA. The Agricultural Officer/Locust management noted that the results of the pre- and post-evaluations showed that participants' knowledge increased from 73 percent to 81 percent. During the training, 14 test Locust Survey Forms and 13 test Spray Monitoring Forms were completed and sent to CCALM database. At the end of the training, it had been recommended to use ASDC as widely as possible during the 2021 locust campaign and next ones and to test CCALM interface in Dari.

- **Turkmenistan: Training Course, 1-5 February 2021 (GCP/INT/384/JICA)**

41. The Delegate from Turkmenistan reported about the five-day Training Course organized online on 1- 5 February 2021 for five Locust Experts. Participants included four young specialists of less than 30 years old (four specialist (men) from the Plant Protection Service of the Ministry of Agriculture and Environmental Protection (MAEP) and one specialist (a woman) of the National Institute of Desert Flora and Fauna. The participants had not attended similar trainings before. The Delegate noted that the content of the training was very informative and useful, both theoretically and practically, mentioning the lectures received on the introduction to entomology, a description of the differences in the stages of development of locusts, climate change and locusts, the basics of a preventive approach, the basics of monitoring, etc. The participants of the training also got acquainted for the first time with ASDC and CCALM. It was noted that currently, the Government of Turkmenistan supports the introduction of innovative technologies and digital systems in science, education and various other sectors; therefore, the use of these systems is actual and welcome. It was said that during the training, ASDC and CCALM interfaces had been analised and translated into the Turkmen language. The Delegate concluded by indicating the need to organize national sessions and train the employees of Plant Protection Services of velayats and etraps of Turkmenistan. The Agricultural Officer/Locust management noted that the results of the pre- and post-evaluations showed that participants' knowledge improved from 66 percent to 87 percent. During the training, seven test Locust Survey Forms and six test Spray Monitoring Forms were completed and sent to CCALM database.

- **Tajikistan: Refresher Course, 26-28 February 2021, four national sessions and four briefing sessions, March-May 2021 (TCP/TAJ/3806)**

42. The Delegate from Tajikistan reported about the three-day Refresher Course, organized remotely on 26 - 28 February 2021, for five locust experts from the State Entity "Locust Control Expedition" (SE-LCE) of the Ministry of Agriculture of Tajikistan, whose age ranged from 32 to 36 years old. All participants (men) were Master-Trainers who had attended a similar training before. Initially planned with Tajik translation, the training was eventually delivered in Russian due to last-minute postponement and reschedule by SE-LCE management. The training was devoted to the bio-ecology of DMA and CIT. The Agricultural Officer/Locust management noted that the results of the pre- and post-evaluations showed that participants' knowledge on locust bio-ecology still needed improvements as the percentage of correct answers increased only from 66 percent to 68 percent. Regarding ASDC, it was recommended to use it as widely as possible during the 2021 locust campaign and to test CCALM interface in Tajik.

43. The Delegate from Tajikistan also reported about four national sessions held to the benefit of 50 staff, from March to April 2021, as follows: on 16-18 March, in Pyanj district (17 persons) and on 17-19 March in Dangara district (eight persons), Khatlon oblast; on 29-31 March in Tursunzade, Districts of Republican Subordination (seven persons); and on 13-15 April in B. Gafurov district, Sughd oblast (18 persons). In addition, four briefing sessions on locust control and pesticide risk

reduction were delivered to the benefit of 75 staff/local manpower in April-May 2021, as follows: 27-28 April in Vakhsh district, Khatlon (25 persons), 45 May in Dangara district, Kulob, Khatlon (10 persons) and 18-19 May, both in Rudaki, RRS (9 persons) and Jabor Rasulov district, Sughd (26 persons).

- **Russian Federation: Training Course, 1-5 March 2021 (FAO Regular Programme)**

44. The Delegate from the Russian Federation reported about the five-day training delivered online on 1 - 5 March 2021 to 25 locust specialists from the Russian Agricultural Center (Rosselhozcenter) and from Astrakhan, Orenburg, Saratov and Volgograd oblasts, Stavropol Territory and the Republic of Kalmykia. Participants included eight men and 17 women, whose age varied from 25 to 65 years old. Most of them had not attended similar trainings before. In addition, 78 observers from 25 regions of the Russian Federation followed the online course. The Delegate noted that participants' assessment of the training, which covered DMA, CIT and LMI bio-ecology, was positive. The usefulness of the information received was underlined, each stage of training being thought out comprehensively, and the extensive practical experience of the lecturers was appreciated. The Agricultural Officer/Locust management noted that the results of the pre- and post-evaluations showed that an increase of knowledge from 71 percent to 84 percent. The GIS Expert indicated that because of high number of the participants, it was difficult to organize CCALM practice individually; nevertheless, participants' knowledge of ASDC use has also improved. During the training, 22 test Locust Survey Forms and 16 test Spray Monitoring Forms were completed and sent to CCALM database. Besides, 16 participants sent 32 test Locust Survey Forms and 32 test Spray Monitoring Forms filled out on the printed paper forms. It was recommended to use ASDC and CCALM in the plant protection service of the Russian Federation.

- **Armenia – Two Training Courses, 27-29 April and 28-29 September 2021 (GCP/GLO/963/USA and FAO Regular Programme)**

45. The Delegate from Armenia reported about the three-day training delivered remotely on 27 29 April to the five staff, including two Locust Experts from the Division of Phytosanitary of Ministry of Economy and three from the Agricultural Services Center. Participants included two men and three women, whose age ranged from 21 to 65 years old. The training focused mainly on CIT and included similar topics as for the other countries. The second two-day training was organized upon request from the Division of Phytosanitary, based on the need of staff to further familiarize with ASDC and CCALM. It therefore focused on the use of both systems. It was delivered to four experts, including two men and two women who had already participated in the first training, by the GIS Expert. In conclusion, the Delegate noted the usefulness of the information received and expressed the readiness to use ASDC and CCALM in Armenia.

- **Kazakhstan: Refresher Course, 17-21 May 2021 (FAO Regular Programme)**

46. The Delegate from Kazakhstan reported about the five-day training delivered online on 17-21 May 2021 to the benefit 45 locust specialists from the State Institution «Republican Methodological Center for Phytosanitary Diagnostics and Forecasts» of the State Inspection Committee in the Agro-Industrial Complex of the Ministry of Agriculture and their 14 oblasts' branches and from the Departments of the State Plant Protection Inspection of Oblast's Territorial Inspectorate of the State Inspection Committee. Participants included 29 men and 16 women, with age ranging from 25 to 65 years old. The Delegate underlined the usefulness of the information received on DMA, CIT and LMI biology, ecology, monitoring and forecasting and ASDC use during survey and control operations. The participants got also acquainted with CCALM interface and were trained on its use, including analyzing Kazakhstan locust historical data from 2000 until 2020 at the first administrative level. The Delegate noted that this training was unfortunately conducted online and would need to be organized annually in-person. The Agricultural Officer/Locust management noted that the results of the pre- and post-evaluations showed an increase of knowledge from 64 to 83 percent. The GIS Expert said that 23 test Locust Survey Forms and 16 test Spray Monitoring Forms had been completed and sent to CCALM database as well as 11 test Locust

Survey and Spray Monitoring Forms on paper forms). It was recommended to use as widely as possible ASDC or the hard-copy Locust Survey and Spray Monitoring Forms during the 2021 and next locust campaigns.

- **Azerbaijan: Refresher Course, 24-28 May 2021 and four national sessions, June-July 2021 (GCP/GLO/963/USA)**

47. The Delegate from Azerbaijan reported about the five-day remote training organized remotely on 24 - 28 May 2021 for 27 locust experts from the Agro Services Agency (ASA) of the Ministry of Agriculture, on DMA, CIT and LMI locust monitoring and information management, including the use of ASDC and CCALM. Participants included 20 men and seven women from 24 to 60 years old. Seven of them have attended similar training before (including one Master-Trainer). The training was conducted in Russian with consecutive translation into Azeri. The results of the training pre- and post-evaluation did not show any increase of knowledge, which may however be due to a number of reasons, including interpreter's refusal to translate the test into Azeri as well as low number of completed tests, which probably influenced the statistics and produced inconsistent results. During the training, nine test Locust Survey Forms and 11 test Spray Monitoring Forms were completed and sent to CCALM database and six participants also sent filled paper forms. The turnover of staff was mentioned as an issue by the Delegate, as very knowledgeable people having left.

48. The Delegate from Azerbaijan reported also about four national sessions delivered by the Master-Trainers to 69 staff/local manpower in June-July 2021, as follows: on 4 June in Jeyranchel, Agstafa region (Aghstafa, Gazakh, Tovuz, Shamkir districts – 15 persons), on 14 June in Kudrin steppe, Saatlı region (Bilasuvar, Imishlinsky, Saatlinsky, Sabirabad districts – 18 persons), on 24 June in Eldar Plain, Samukh region (Samukh, Goygol, Goranboy districts- 18 persons) and 6 July in Ajinour steppe, Sheki region (Sheki, Gakh districts- 19 persons). It was said that the material received during the Refresher Course has been translated into Azeri and had been very useful.

49. During the discussions, the Delegate from Afghanistan expressed thanks to FAO and underlined the needs to organize trainings in coming years for Afghan specialists as many experts had left the service. The Delegate from Kyrgyzstan reiterated that it is necessary to continue organizing national and briefing sessions before each locust campaign and expressed the hope that staff turnover will stop soon also in his country. The Delegate from Armenia requested to train several Master-Trainers from the Plant Protection Service. The Delegate from Turkmenistan expressed the readiness to use ASDC and CCALM during the 2021 locust campaign, as well as the Delegate from Kazakhstan, after having confirmed the reception of 20 tablets delivered by FAO. The Delegate from Tajikistan suggested in the future to conduct the training in Tajik in December/January or in the field during locust treatment's season. The Delegate from Georgia emphasized the importance of using ASDC also for environmental matters. In reply, the FAO Consultant, Senior Environmental Expert, suggested to include, in ASDC training, exercises on assessing the impact of insecticides on national parks and specially protected areas in CCA countries.

50. In conclusion, the FAO Agricultural Officer/Locust management reminded that ASDC/CCALM is one of the main achievements of the Programme. It was developed based on FAO experience with Desert Locust where the so-called eLocust system covers more than 30 countries. It is paramount, for the whole CCA region, that each country introduces this new system. Then, he underlined that trainings are a very important activity as field specialists need to increase their knowledge and capacities. They should be continued in presence, with field component, the reason for which in-person Training-of-Trainers are envisaged in 2022. Regarding languages specifically, he noted that the consecutive interpretation into national language (rather than simultaneous one) is the preferred option as some participants understand Russian and have opportunity to listen twice and understand the problem deeper. He suggested that Master-Trainers send, if needed, the questions raised during the national sessions to FAO. The FAO International Consultant, GIS Expert, underlined that it is very important to use ASDC as widely as possible in each of CCA countries as this is a main source of data to analyse locust situation and make forecast for the

next locust season. She also urged the participants to actively test CCALM in national languages in order to discuss all inaccuracies in the interface and functioning at the next GIS workshop planned in early 2022.

Background literature: Monographs, Practical Guidelines, Posters (Item 5.2)

51. The Agricultural Officer/Locust Management, NSPMD, provided an update on progresses made on publications during Programme Year 10. He also reminded the importance of this reliable material versus incorrect information that may be found on the internet on these very specific and highly technical topics.

52. Regarding the two monographs on Italian and Moroccan Locusts, he indicated that the texts of both books were technically finalized (Russian language). The CIT monograph (~350 pp.) was currently under approval in the FAO system for official publication; during the next year, it will thus be printed for CCA countries, based on available resources. The layout and graphic of the DMA monograph was under finalization.

53. As far as the Practical Guidelines on locust management are concerned, it was reminded that two volumes had been produced so far, one on pesticide risk reduction of locust control in CCA (PG RR) and the other on the three locust pests in CCA (PG 3P). They were respectively published in 2019 and 2020 and dispatched to several countries. In 2021, both Guidelines were provided in English and in Russian to additional five countries: Armenia, Azerbaijan, Georgia and Russian Federation and, for the PG 3P, to Kyrgyzstan. They were also translated into six national languages (Azeri, Georgian, Kyrgyz, Tajik, Uzbek and Turkmen) while the printing was in process for five countries, thanks to different funding sources.

54. In addition, posters on CIT and DMA were developed by FAO in liaison with the national services in charge of locust management to provide an overview on morphology, biology, behavior and monitoring of these locust species, to the benefit of national staff. They are adapted to local context to reflect the locust situation and produced in Russian as well as in national languages, i.e. Azeri, Georgian, Kyrgyz, Tajik, Turkmen and Uzbek (while they are under preparation in English for Afghanistan), thanks to different funding sources.

Equipment delivered in 2021 to strengthen operational capacities (Item 5.3)

55. The FAO International Consultant, Operations Expert, presented an update on the locust equipment procured during Year 10 of the Programme, from 1 October 2020 to 30 September 2021, 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 five available projects funded by JICA, USAID and FAO/TCP.

56. Under Programme Result 3 "Locust issues and disasters better anticipated and mitigated", Activities 3.1.2. Strengthen operational capacities for locust monitoring (survey equipment) and 3.2. "Develop monitoring and analyzing systems", the following progresses were made:

    - Tablets - a total of 113 devices, including accessories, were procured for six CCA countries against various funding sources: Azerbaijan - 20 units in July (10 others scheduled in October/November - USAID); Georgia - 10 units in May (six others scheduled in November - USAID); Kyrgyzstan - 20 units in June (15 units on JICA and five on USAID); Tajikistan - 13 units in June (national TCP); Turkmenistan - ten units in October (JICA); Uzbekistan - 14 units (USAID, delivered to the FAO office in June and to be handed-over); In addition, 20 tablets, purchased the previous year, were officially transferred to the Ministry of Agriculture, Kazakhstan, in July 2021 (USAID).

- IT equipment for Georgia (national TCP): ten laptops, three desktop computers and three printers were delivered between January and August 2021 (delayed due to the extraordinary demand for IT products in 2021 in the COVID-19 context).

- Motorbikes (JICA): 30 units including accessories were purchased for Afghanistan, with delivery expected in November 2021 (delayed due to COVID-19 and political turmoil in August);

57. Under Programme Result 4 "Improved response mechanisms to locust outbreaks", Activity 4.1.2. "Strengthen operational capacities (control equipment)", the following can be noted:

- Tractors (JICA): six tractors, including spare parts, were delivered to Kyrgyzstan in September 2021 (number reduced from seven to six units due to higher market cost) as well as eight tractors, including spare parts, delivered to Tajikistan in October 2021 (number reduced from nine to eight units for same reason).

- Ultra-Low Volume (ULV) sprayers, including spare parts, were purchased for five countries (all against JICA except for Georgia, against the national TCP). This included the delivery, in May 2021, of: 200 ULV hand-held sprayers (Ulva+) and 70 ULV knapsack sprayers (AU 8000) to Afghanistan; two ULV vehicle-mounted sprayers (AU 8115M) to Georgia; and two ULV vehicle-mounted sprayers (AU 8115M) to Kyrgyzstan. Four ULV vehicle-mounted sprayers (AU 8115M) were also procured for Turkmenistan (with delivery on hold pending the internal project registration with the Ministry of Finance) as well as five ULV vehicle-mounted sprayers (AU 8115M) for Uzbekistan (with delivery scheduled in November 2021).

- EC sprayers:

  - Kyrgyzstan (JICA): two orders issued in July 2021, one for four sprayers and the other for 12 sprayers (overall quantity reduced from 17 to 16 units due to higher market costs); however, due to the increase cost of raw material, the second supplier could not maintain the same prices and the order was amended in October to include only four sprayers with delivery planned in December 2021 while a new tender will be needed for the other eight units.
  - Tajikistan (JICA and national TCP): also in this case, the actual market costs of some EC sprayers resulted higher than estimated and related long negotiations took place with the country. An order for nine sprayers was eventually placed in September 2021 on the TCP project (with tentative delivery the next month); later, thanks to some savings on the same project, it was agreed to procure other nine units on the TCP project and two units on the JICA one (instead of envisaged six units) with delivery planned in January 2022 (for a grand total of 26 units instead of 33). However, one of the suppliers then informed, in early November, that due to the further increase in prices, it was not in a position anymore to deliver the requested items; a new tender will thus be required for the concerned types of sprayers.

- Pesticides for Georgia as follows (national TCP): 1000 l of Insect Growth Regulator Teflubenzuron 30g active ingredient (a.i.)/l (ULV formulation) were delivered in March 2021 as well as 5 000 l. of Lamba-Cyhalothrin 50 g a.i./l (EC formulation) in April.

- Tires for Tajikistan (national TCP): 148 units for tractors, 54 units for motorbikes and 46 units for pick-up vehicles were delivered in May and June 2021.

58. Under Programme Result 5 “Impact on human health and the environment mitigated and monitored” and more specifically Activities 5.1.2 & 5.2.2 "Strengthen operational capacities”:

- PPE were procured for three countries, with some delivery delays in the context of the COVID-19 pandemic, as follows: 60 kits were delivered to Georgia in August 2021 (national TCP); 110 PPE kits were procured for Kyrgyzstan, including 60 kits delivered in May 2021 (national TCP project) and 50 kits purchased, with expected delivery in October/November 2021 for

different shipments (JICA); and 100 PPE kits delivered for Uzbekistan in the FAO country office between August and October 2021 (yet to be handed over JICA).

- AChE Erythrocyte Cholinesterase Assay kits (reagents) for Tajikistan (JICA): ten kits were procured following a specific request from the country, to be delivered in November, for the Human Health and Environmental Monitoring Teams.

59. The Operations Expert also provided information on ongoing procurement, including water-tank lorries, minibuses, vehicles, and camping equipment. She indicated that procurement was impacted by the pandemic in 2021, due to: increased global market costs, leading to a revision of the procurement plan for tractors and EC sprayers for Kyrgyzstan and Tajikistan (reduced quantities delivered – JICA project); and longer transportation than planned in some cases (motorbikes for Afghanistan and PPE for Uzbekistan -JICA project- as well as IT equipment and PPE for Georgia -TCP project). Procurement was also delayed due to: the preparation of technical specifications for new items, which had to be tailored to specific country's needs; the need for clearance of transportation means by another UN agency; and the project registration by the Ministry of Finances for customs clearance question in Turkmenistan as well as the governmental restructuring in Uzbekistan, with procurement process temporarily kept on hold for both countries.

SESSION 3: DEVELOPING MONITORING AND ANALYSING SYSTEMS

Developments of ASDC and CCALM in 2021 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2022 (Item 6)

60. The FAO International Consultant, GIS Expert, reported on ASDC use, the system that was developed since 2013 to facilitate collection and sharing of standardized locust data. It is based on the FAO standard "Locust Survey Form" and "Spray Monitoring Form" for CCA and serves as a data source for the locust GIS in CCA named CCALM. Presently ASDC is available in 11 languages (Armenian, Azeri, Dari, English, Georgian, Kazakh, Kyrgyz, Russian, Tajik, Turkmen and Uzbek) for use on tablets, smartphones and computers. During the previous TW on Locusts in CCA and the Workshop on Locust Data Analysis, Forecast and Reporting in CCA, respectively held online in November 2020 and March 2021, most delegates reiterated their interest as well as the need for further technical or operational support for full covering of the national territory with ASDC.

61. During Programme Year 10 (1st October 2020 - 30 September 2021), all trainings delivered included ASDC and CCALM use. Therefore, a total of 584 experts were trained, i.e. 219 Plant Protection/Locust experts from nine countries (all but Uzbekistan) during 10 Refresher courses delivered by the GIS Expert, and 285 Plant Protection/Locust experts from Azerbaijan, Georgia, Kyrgyzstan and Tajikistan during 12 national sessions and 14 briefing sessions delivered by Master-Trainers. This was possible with the support of several funding sources (see Item 5.1). To support ASDC use, FAO also procured 113 tablets to the benefit of seven countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan) during Year 10 (for a total of 324 tablets to CCA countries since 2014).

62. Concerning system improvement, the FAO International Consultant, GIS Expert, reported that the ASDC and Web-interface were updated and adapted to smartphones with a five-inch screen size. In addition, as agreed during the GIS Workshop held in March 2021, the new beta version of ASDC was tested by Georgian and Russian specialists to check the new functionality related to the visualization of the location of locust experts in the field as well calculation of the surveyed area. The results of testing will be discussed during the GIS Workshop scheduled in early 2022.

63. During Programme Year 10, a total of 5 178 reports and 73 test reports, from both locust survey and spray monitoring forms, were made by 133 ASDC users from all ten CCA countries. This represented a very positive increase with respect to the 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 and 4285 reports (from 100 users) from eight countries in 2020.

64. In 2021, the number of reports per country was more specifically as follows: 451 reports from 14 Afghan Experts; 9 test forms from four Armenian Experts; 1497 reports from 25 Azeri Experts; 1524 reports from 11 Georgian Experts; 45 test reports from 12 Kazakh Experts; 73 reports from 12 Kyrgyz Experts; 325 reports from 17 Russian Experts; 598 reports from 19 Tajik experts; 19 test reports from four Turkmen Experts; and 710 reports from 34 Uzbek Experts. The GIS Expert highlighted that Georgia and Uzbekistan had largely increased the number of reports this year, covering a significant part of both survey and control operations.

65. ith the overall objective that all CCA countries operationally use ASDC in the coming years, together with CCALM, a number of recommendations were formulated for the 2022 national locust campaign, as follows:

- To countries:

  (a) Use ASDC as widely as possible during locust surveys and control operations, test CCALM in national languages and issue GIS products (even in case of absence of specific external funding sources);

  (b) Make the filling of Locust Survey and Spray Monitoring Forms an integral part of the Locust Experts' duties - plant protection managers should encourage this use;

  (c) Ensure that tablets delivered by FAO for ASDC use are registered in CCALM as well as, possibly, smartphones used for data collection.

  (d) Specifically to the Master-Trainers and advanced ASDC users: continue supporting national staff on ASDC use (during refresher courses on national budget and/or on on-the-job basis).

  (e) Specifically to Kazakhstan: support use of ASDC forms by national Experts and if possible test the system by entering data in tablets, mobile phones or computers; further explore possibilities to ensure automated import of the locust survey data from Kazakhstan system into CCALM.

- To FAO:

  (a) Organize a ToT on locust management, including ASDC use, for all or most CCA countries;

  (b) Provide remote technical assistance on a continuous basis to the countries for any challenge or difficulty met;

  (c) Update and finalize English and Russian versions of ASDC and CCALM manuals and follow-up for their translation into national languages;

  (d) Ensure the release of video manuals on the use of ASDC, CCALM and QGIS in Russian and English, subsequently and if possible, with subtitles in national languages.

66. During the discussions, the Delegate from Georgia underlined that no difficulties were encountered while using ASDC in Georgian language. The Delegate from Kyrgyzstan noted the need for continuous training hoping that staff turnover will stop, agreed on the importance of training, to be organized before the campaign starts. The Delegate from Azerbaijan underlined the importance of ASDC and the positive perception of the system during on-site trainings. The Delegate from Turkmenistan said that in 2022, the specialists intend to use ASDC, in line with the government recommendation to use innovative digital technologies. The Delegate from Armenia also informed of a similar intention. The Delegate from Kazakhstan indicated that in 2021, 20 tablets had been received from FAO, which would be used in 2022 to collect data with ASDC.

Development of CCALM in 2021 (progress made, issues encountered lesson learnt and recommendations) and next step for 2022 (Item 7)

67. 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 then presented the progresses made during Programme Year 10. It was also underlined that the effective functioning of CCALM depends on the effective ASDC use by all CCA countries.

68. The GIS Expert reported that the second regional Workshop on Locust Data Analysis, Forecast and Reporting in CCA (named as GIS Workshop) took place on 16-18 March 2021, with the participation of nine countries (all but Tajikistan) and up to 66 participants. It allowed discussing the use of CCALM to analyse ASDC locust data and different satellite products to improve locust forecast and ultimately, reporting. In line with a recommendation of this Workshop, a meeting of E-Committee on CCALM was then convened on 28 July 2021, with 30 Locusts/Forecasting Experts from all ten CCA countries, FAO and ISTT. It allowed discussing locust forecasting algorithms as well as the creation of a user-friendly WEB-page to visualize GIS products, with a view to improve and expand CCALM functionalities.

69. Concerning training, during the Refresher courses delivered online during Programme Year 10 (see Item 5.1), CCALM was demonstrated to eight Afghan, seven Armenian, 27 Azeri, ten Georgian, 45 Kazakh, seven Kyrgyz, 25 Russian, five Tajik and five Turkmen specialists. All participants practiced using CCALM and tested its interface in national languages.

70. In accordance with the recommendations formulated by CCA countries and FAO, both during the Technical Workshop on Locusts in CCA held in November 2020 and the GIS Workshop held in March 2021, the following improvements were introduced in CCALM in 2021:

    (1) Locust historical data (areas infested by locusts, areas infested by locusts with densities exceedingET. and treated area) for 2020 were inserted into CCALM database for nine CCA countries (except Azerbaijan);

    (2) An extension of CCALM products from the first national administrative level (region or province or oblast) to the second administrative level (i.e. district or municipality or rayon) was done for Georgia on the basis of the information received from the country;

    (3) Two modules for importing into CCALM and saving daily air temperature and precipitation data were developed. The fields of temperature and precipitation data are downloaded for CCA countries from https://www.ftp.ncep.noaa.gov and have been saved in CCALM database starting from 10 August 2021. The data storage period is provided for 24 months;

    (4) The module for importing and storing satellite information on soil temperature was improved for daily data loading and information storage during 24 months;

    (5) A module for storing Normalized difference vegetation index (NDVI), twice every month, and Normalized difference water index (NDWI), every 10 days, was developed; the data storage period is provided for 12 months;

    (6) A module for calculating the Normalized Difference Snow Index (NDSI) based on data from channel 6 and channel 4 of MODIS satellite data (500 meter resolution) was developed. The data will be saved every 10 days during the period January-March for all CCA countries and storage period is provided for 12 months;

    (7) CCALM interface was made available in three additional languages in 2021: Armenian, Tajik and Turkmen. As a result, in addition to Russian and English as well as Azeri, Dari, Georgian, Kyrgyz and Uzbek, the interface is now available in ten languages (only Kazakh version is missing).

    (8) A mock-up WEB-page was created for the visualization of locust surveys and treatments for the ongoing month and satellite products. As of now, it is only a draft, located at: http://ccalm.org/test.

71. The GIS Expert also indicated that the cooperation on importing/exporting data from the Russian Federation system into CCALM was pursued. In 2021, a total of 8034 reports (mainly from survey) 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. Besides, the list of collected information by the Russian national system was expanded, in accordance with the FAO Locust Survey Form used by ASDC. Possibilities to ensure automated data import from Kazakhstan into CCALM were further explored; a FAO letter will be needed to facilitate exchanges between the two systems.

72. Then, the GIS Expert suggested that the following activities be carried out in 2022 to further improve CCALM:

- Concerning the creation of GIS products: (1) Based on historical locust data, build graphs of distribution of the infested areas with densities above ET during the last 20 years; (2) Calculate the hydrothermal coefficient, starting from the day when average air temperature exceeds 10°C in the spring until the end of August, and prepare a map of CCA hydrothermal coefficients; (3) prepare a map with three classes: water; non-water and the areas from which the water has receded on the base of satellite water indexes.

- Concerning the strengthening of human capacities and future use of CCALM: (1) Organize a specific refresher course on CCALM and QGIS (one-week duration) for limited number of staff responsible for CCALM from all countries, subject to availability of funds; the participants of such course must have relevant education and professional skills; (2) 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); (3) The staff responsible for CCALM management at the national level has to be appointed with a clear definition and description of all related tasks and responsibilities; FAO may send a letter together with suggested Terms of Reference to countries to support this process.

73. During the discussions, the Delegate from Georgia underlined that initially, it was difficult for the Georgian specialists to see the usefulness of the information collected on environmental aspects. However, in 2021, they could appreciate the importance of ASDC data collected during locust season. The Delegate from Azerbaijan thanked for the presentations of ASDC and CCALM and promised to transmit shortly the locust historical data to be inserted into CCALM database. The Agricultural Officer/Locust Management underlined that ASDC data collection, feeding CCALM, is crucial to analyse the locust situation analyzing and that CCALM allows to visualize activities in CCA countries. Last, the GIS Expert reminded that the effective functioning of CCALM (analysis and forecast of locust situation at both regional and national levels) strongly depends on the data collected through ASDC either installed on tablets/mobile devices or entered in the database through WEB-interface. At present, the use of such system by locust/plant protection services is the new technology to enhance responsiveness.

SESSION 4: RISK REDUCTION FOR HUMAN HEALTH AND THE ENVIRONMENT

Monitoring impact of locust control operations (Item 8)

74. Countries reported on Human Health and Environment Monitoring Teams' (HH&EMT) work during the 2021 anti-locust campaign. The Delegate from Azerbaijan reminded that the HH&EMT had been created in 2019 upon FAO recommendation. It includes three experts: a specialist on plant protection, a specialist on spraying equipment and a medic, hygienist/toxicologist. In its work, the HH&EMT followed the Practical Guidelines on pesticide risk reduction for locust control in CCA published by FAO. In 2021, the HH&EMT conducted four missions: (1) on 1-6 June to Djeyranchel steppe (Akstafa, Gazakh, Tovuz and Shamkir districts); (2) on 11-16 June to Kudrin steppe (Bilasuvar, Imishli, Saatli and Sabirabad districts); (3) on 22-27 June to Eldar Plain (Samukh,

Geygel and Goranboy districts); and (4) on 2-7 July to Adjinour steppe (Sheki and Gakh districts). During the missions, the HH&EMT monitored the filling out of the FAO Spray monitoring forms and Pesticide use passports, checked the availability and proper use of PPE, made inquiries regarding staff pesticide poisoning incidents, identified ecologically sensitive zones, assessed the pesticide impact on non-target organisms and monitored management of empty pesticide containers. Based on the missions' findings, the HH&EMT made recommendations aiming at reducing the potential negative impact of pesticides on human health and environment. In particular, it was recommended to ensure mandatory medical checks among the staff before and after the campaign, reinforce the daily filling out of Pesticide use passports and closely follow the triple-rinse and puncture procedures with empty pesticide containers.

75. The Delegate from Georgia explained that the HH&EMT included three specialists from the NFA and that it had conducted three field missions to Kakheti, Kvemo-Kartli and Mtskheta-Mtianeti on 2-17 June, 1-18 July and 6-16 August 2021. During the missions, specific attention was devoted to monitoring the acetylcholinesterase (AChE) levels in the blood of up to 25 staff dealing with chlorpyrifos. Non-target effects of the application of the new for Georgia insecticides, lambda-cyhalothrin and teflubenzuron, were assessed. Samples of vegetation treated with deltamethrin and chlorpyrifos were taken for the analyses of pesticide residues and establishment of re-entry periods for livestock. The HH&EMT observed some cases of non-target arthropod (ants, beetles and spiders) mortality after applications of lambda-cyhalothrin and teflubenzuron; however, these negative effects were mild as numerous live arthropods were also observed. Based on these findings, the Team recommended the above two insecticides as a replacement for the organophosphate chlorpyrifos. Tests of AChE levels in the blood revealed no significant decline. It was recommended to pay maximum attention to spraying equipment calibration in order to ensure that the anti-locust treatments are done according to the best practices. Another recommendation concerns the increase of the public awareness regarding pesticide treatments, particularly of livestock owners and beekeepers. The Delegate also shared the Georgian experience of hiring a private company to manage empty pesticide containers. As one of the difficulties, the Delegate mentioned that it was not possible to fill out the Pesticide use passport regularly because of the high intensity of anti-locust treatments in 2021.

76. The Delegate from Kyrgyzstan reported that the HH&EMT included seven specialists from the Department of Chemicalization, Plant Protection and Quarantine. In 2021, five field missions were conducted with four specialists participating in each: (1) on 12-17 April to Jalal-Abad region (Aksyi and Nooken districts); (2) on 3-8 May to Osh region (Nookat and Aravan districts); (3) on 17-22 May to Batken region (Leilek and Batken districts); (4) on 31 May to 5 June to Talas region (Kara-Buurin and Manas districts); and (5) on 14-19 June to Naryn region (At-Bashi and Ak-Talin districts). During the missions, special attention was devoted to raising public awareness regarding anti-locust pesticide treatments. Evaluation of AChE blood levels was done for staff dealing with chlorpyrifos. Monitoring of non-target effects on beneficial arthropods was conducted on 9350 ha with specific attention to honeybees and its results were entered into ASDC. Pesticide use passports were introduced for each person operating vehicle-mounted AU8115 sprayers. The HH&EMT recommended to develop infrastructure for managing empty pesticide containers, for example, a plastic container press. The overall recommendation was to continue the very important work of the HH&EMT in the future.

77. As for Tajikistan, while the HH&EMT had not carried out any monitoring missions in 2021, pesticide risk reduction activities nevertheless took place, including medical checks of the staff, trainings on the proper PPE use, calibration of sprayers and raising public awareness regarding anti-locust campaign. The Delegate of Tajikistan indicated that the Team would resume its work in 2022 and that a Refresher course would be most useful to that end.

78. During the discussions, the Delegate from Afghanistan said that experience sharing from the above countries was very interesting, indicating however that IGRs were not mentioned while they should be increasingly used to limit the negative impact of locust control. The Delegate from

Kyrgyzstan said that it would be most useful to receive a description of the main families of pesticides and their classification as well as impact on human health and the environment. With respect to the Refresher courses, the Agricultural Officer/Locust Management indicated that pesticide risk reduction aspects would be addressed in the ToTs envisaged in 2022 and the FAO International Consultant, Environmental Expert, added that meetings with each HH&EMT could also be organized before next campaign start.

Progress made on control operations, pesticides and biopesticides, and on safety and environmental precautions (Item 9)

79. Countries reported on the progress made in 2021 on control operations, pesticides and biopesticides and on safety and environmental precautions. The Delegate from Afghanistan explained that, 30 700 l of pesticides were used for anti-locust treatments, including 23 700 l in ULV formulation (a.i. diflubenzuron and deltamethrin) and 7000 lin EC formulation (a.i. deltamethrin). No biopesticides or new technologies were used in 2021.

80. The Delegate from Azerbaijan reported that in total, 20 820 l of pesticides were used. The bulk of treatments was done with 17 353 l of a ULV formulation (a.i. alpha-cypermethrin) sprayed with AU8115 vehicle-mounted sprayers. The rest of the area was sprayed with water-based formulations (a.i. cypermethrin and acetamiprid) by tractor-driven ventilator sprayers and Scout 28-s 300 sprayers. Biopesticides are not registered in Azerbaijan.

81. According to the presentation provided by the Delegate from Armenia, in 2021, anti-locust treatments were conducted with 210 l of a.i. cypermethrin in EC formulation.

82. The Delegate from Georgia reported that 20 different sprayers were used in 2021 in anti-locust treatments including eight ULV (AU8115) and 12 Low Volume (Tifone, Scout MMT Hunter and Wind) sprayers. Most of the treatments were done by a.i. deltamethrin (EC) and chlorpyrifos (ULV) with the rest of the areas treated with lambda-cyhalothrin (EC) and teflubenzuron (ULV). The latter two pesticides, which were provided by FAO in the framework of an emergency project TCP/GEO/3801 (E), were new to Georgia. Their biological efficacy was assessed at 80-97 percent for lambda-cyhalothrin and 60-75 percent for teflubenzuron. These results allowed to recommend the two pesticides for registration. The Delegate also noted significant efforts to reduce negative pesticide impacts by training 44 sprayer operators on best spraying practices including equipment calibration and PPE use. Treatments were monitored by HH&EMT and results were entered in ASDC.

83. The Delegate from Kazakhstan indicated that in 2021, anti-locust treatments were executed by 183 different sprayers with pesticides from four chemical groups – neonicotinoids, benzoyl-urea (IGRs), pyrethroids and biologicals, all in water-based formulations. The biopesticide used is actually a botanical one based on neem tree extract (a.i. azadirachtin).

84. The Delegate from Kyrgyzstan reported that ten AU8115 ULV sprayers and four tractor-driven ventilator sprayers were involved in locust control. Ninety-two percent of the areas were treated with EC pesticides (a.i. alpha-cypermethrin and lambda-cyhalothrin) and eight percent – with ULV pesticides (a.i. deltamethrin and chlorpyrifos). In total, 10 164 l of pesticides were used. No biopesticides are registered for locust control in Kyrgyzstan.

85. The Delegate from the Russian Federation informed that the neonicotinoid imidacloprid was the main pesticide used in anti-locust treatments in 2021. Numerous other a.i. were used including different pyrethroids, benzoyl-ureas, phenyl-pyrazoles, binary mixes etc. All pesticides were applied in water-based formulations. There are two biopesticides based on fungi *Beuveria bassiana* and *Metarhizium anisopliae* registered for locust control; however, they were not used operationally in 2021. The Delegate mentioned a decrease of pesticide efficacy under high

temperature conditions, which required to adjust the treatment timing to early mornings or late evenings. Locust breeding in ecologically sensitive areas such as nature reserves and near water bodies necessitated to carefully respect buffer zones. Locust hopper bands frequently infested roadsides and fallows near crop fields; in such cases treatments had to be applied to prevent migration into crops. Finally, the Delegate shared the information on large-scale empty container management in the Russian Federation and activities to raise public awareness of anti-locust campaign.

86. The Delegate from Tajikistan informed that different spraying equipment was used in 2021 including tractor-driven ventilator sprayers (OVH-600, TOS-600 and TOS-2000), handheld and knapsack sprayers (AU8000, Micro-Ulva and others) and vehicle-mounted sprayers (AU8115). Pesticides used were in EC formulation and included a.i. alpha-cypermethrin, lambda-cyhalothrin and a binary mixture (a.i. chlorpyrifos and cypermethrin). Post-treatment monitoring showed no incidents related to pesticide use. In order to prevent potential livestock poisoning, local population was timely informed about the upcoming treatments. The Delegate also informed about the empty pesticide container management.

87. The Delegate from Turkmenistan indicated that in 2021, two pyrethroids pesticides with a.i. alpha-cypermethrin and deltamethrin, both in EC formulation, were used to control locusts. They were applied by vehicle-mounted AU8115 sprayers, knapsack sprayers and tractor-driven Wind 634 Flexigun sprayers. Biopesticides are not registered for locust control in Turkmenistan.

88. The Delegate from Uzbekistan informed that pesticides with five a.i. were used for locust control in 2021. The largest areas were treated with two pyrethroids, lambda-cyhalothrin and alpha-cypermethrin, followed by two neonicotinoids (a.i. imidacloprid and acetamiprid) and a phenyl-pyrazole (a.i. fipronil). All pesticides were used in water-based formulations. Vehicle-mounted ULV sprayers treated the largest proportion of the total area followed by tractor-driven sprayers, ultra-light aircraft, knapsack sprayers and large aircraft. There are registered biopesticides for locust control in Uzbekistan, however, they were not used operationally in 2021.

89. During the discussions, several delegates underlined the big challenge represented by the disposal of empty containers, suggesting FAO to provide related technical support, especially information and training. The Agricultural Officer/Locust Management reminded in this regard that the "Practical Guidelines on Pesticide Risk Reduction for Locust Control in CCA" include a specific part on this topic.

Data collection for the Pesticides Referee Group (PRG) and trials with new pesticides (item 10)

90. The Agricultural Officer (Locust Management), NSPMD, presented the FAO Pesticide Referee Group (PRG), which is an independent body of experts advising FAO on the effectiveness of locust control and the adverse effects of pesticides used in locust control operations on human health and the environment. The PRG reviews insecticide efficacy trial reports and establishes recommended dose rates against the Desert Locust and other species of locusts; and it evaluates environmental impact studies and classifies insecticides with recommended rates as to their environmental and health risks. The results of the PRG reports serve as basis for selection of insecticides in FAO-supported locust control programs against Desert Locust and other locust species, including those from CCA. Since the last (tenth) PRG meeting took place in 2014, FAO took steps aiming at reactivating the group.

91. The eleventh meeting of the PRG thus took place on 9-10 February 2021 in a virtual format, comprising seven renowned experts, assisted by FAO staff. It was decided to rename the group as "Locust Pesticide Referee Group" (LPRG) for sake of clarity. In preparation for the meeting, major pesticide manufacturing and formulating companies (29 in total) as well as national locust control organizations, plant protection services and research institutions in locust-affected countries (69 in total), had been approached by FAO in July 2020 to obtain new field efficacy trials

and environmental impact studies of insecticides for locust control. However, only seven companies provided efficacy data. In addition, a limited number of publicly or privately funded studies on biological efficacy and environmental impact of locust and grasshopper control were received. In total, 13 reports on biological efficacy, were made available to the LPRG for review. Of these, only six studies were done under field or semi-field conditions. In addition, 47 environmental impact studies had been reviewed, most of them scientific papers. LPRG conclusions based on the submitted information can be summarized as follows:

(1) **Efficacy**. Compared to the previous, tenth PRG meeting report (2014), only two new insecticides emerged as potentially efficacious locusticides. The first is Chlorantraniliprole from the chemical class of anthranilic diamides with a novel and specific mode of action (interaction with ryanodine receptors); the second is Spinosad, an insecticide based on chemical compounds found in the bacterium *Saccharopolyspora spinosa*. Unfortunately, the data submitted were not sufficient to derive efficient and verified dose rates for locust control for either compound and further research is needed to establish them.

(2) **Organophosphates.** Although many locust control campaigns continue to rely heavily on organophosphates because of their high efficacy and low cost, LPRG does not recommend this class of insecticides due to their high risks to human health and environment.

(3) **Biopesticides.** Biopesticide based on the fungus *Metarhizium acridum* should be considered as the first priority when selecting insecticides for locust control. While its speed of action is slow compared to neurotoxic insecticides, it has the beneficial effect of posing very low risks to non-target organisms, and it is particularly suitable for ecologically sensitive areas.

(4) **Application mode.** LPRG states that for ecological reasons, as well as from an economical point of view, barrier treatments are preferred over blanket treatments. Insect Growth Regulators (IGRs) and fipronil are most suitable for blanket treatments.

(5) **Preventive control strategy.** Preventive strategy based on efficient monitoring is the preferred strategy of locust control. The LPRG reiterated that better surveillance of locusts allows earlier and more targeted preventive control with less harmful products.

92. LPRG made a series of recommendations to FAO, pesticide industry and locust control organizations. Some of the most important ones are summarized below.

- In view of a dearth of efficacy studies submitted by the pesticide industry, in particular of new and low-risk insecticides holding potential for locust control, the LPRG recommended that FAO continues to engage with the pesticide industry and initiate a dialogue on how best to test and further develop such insecticides for locust control.
- The LPRG stressed the importance of rigorous and scientifically sound efficacy testing, to ensure that dose recommendations are precise and robust. Therefore, the LPRG recommended that FAO continues to actively disseminate the various guidelines for efficacy testing of insecticides for locust and grasshopper control.
- The LPRG recommended that the potential for drones both to survey and to control locusts be further investigated.
- In view of the low quality of many environmental impact studies, the LPRG proposed that FAO elaborates guidance for experimental environmental field studies in locust control.
- For countries to have access to low-risk insecticides, the LPRG recommended that countries are encouraged to speed up the registration of IGRs and Metarhizium.

- With the aim to propose provisional withholding periods, re-entry intervals and pre-harvest intervals for the insecticides used in locust control, the LPRG recommended that FAO should conduct a review of available data on such waiting periods, including data that may be extrapolated to locust control insecticide formulations and use conditions.

- In view of the great importance of training and capacity building of staff to ensure that locust control is effective and does not pose undue risks to human health and the environment, the LPRG recommended that countries and FAO maintain their emphasis on training in good locust control practices. This also includes the need to raise awareness amongst communities in areas where locust control is taking place.

93. It was last indicated that the findings of the LPRG were summarized in a report, which was under finalization and would be published on FAO website "Locust Watch in CCA" upon completion, both in English and in Russian.

94. During the discussions, in reply to questions on the use of drones for locust survey and control, the Agricultural Officer (Locust Management) indicated that FAO had worked for the past few years to develop adequate technical specifications for drones for locust survey (for identification of locust presence). Drones should indeed be suitable, and software well adapted to the needs, in order to provide meaningful information and pictures, that have then to be managed. Unlike for survey, no technical specifications for drones for control are available yet. Indeed, a number of issues need first to be solved, concerning primarily effectiveness and safety aspects as many factors and parameters have to be taken into account and sorted out. Research is thus ongoing.

Development of a Locust Pesticide Management System (Locust-PMS) (Item 11)

95. Mr Mohammed Ammati, FAO International Consultant, Senior Pesticide Management Expert, presented the Locust Pesticide Management System (LPMS) developed by the Locusts and Transboundary Plant Pests and Diseases Team (NSPMD) and Information Technology Division of FAO. LPMS is designed as a web-based application hosted by a cloud server to monitor and manage pesticide stocks and equipment used for locust control. The system is country-specific and includes four modules: (1) Database of registered pesticides; (2) Management of pesticides, spray and safety equipment; (3) Usage for locust control; (4) Management of obsolete pesticides and associated wastes.

96. Regarding the key functionalities, LPMS will be useable from tablets, smartphones and on computer browsers. It is available in four languages including Arabic, English, French and Russian. The system has an administration panel for user and data validation; there are also alerts for quality control of pesticide products, end of registration period and insufficiency of pesticide stocks and equipment. The system is robust with advanced data visualization and geospatial analysis and data import and export. Data will be aggregated by country, by region and globally in reports that will feature maps and photos of pesticide stores, useable and obsolete pesticides, warehouses, safety, spray equipment and data on registered pesticides and pesticide application equipment.

97. FAO is responsible for LPMS software design, development, testing, deployment, maintenance, data analysis, reporting at national, regional and global levels and data confidentiality. FAO can supply countries with tablets and laptops for the daily use of the system and it rents the cloud server for data analysis and archiving. Also, FAO ensures the necessary trainings.

98. In each country, the national services in charge of locust management should nominate a focal point and technical agents with a background in plant protection and experience in the use of computers to implement LPMS activities on the ground. In particular, the focal point should provide the following information: (1) List of registered pesticides; (2) List of pesticide stores for locust control to inventory pesticide products; (3) List of warehouses to inventory safety and spray equipment; (4) List of storage facilities for drum-crusher (if present), empty containers and clean containers; (5) List of heavily-contaminated sites generated as a result of inappropriate storage of

full and empty pesticide containers and/or accidents during transport, mishandling products and pesticides applications.

99. During the discussions, the Delegates from Georgia raised the question of linkages between ASDC and the LPMS, which would be investigated. Exchanges also concerned laboratory analysis, as pesticides quality control is an important issue for all countries; the NSPMD Team Leader indicated that FAO will soon make a call for interest with a view to establish a list of accredited laboratories. In reply to a question on possible transfer of equipment between countries, it was indicated that triangulation of pesticides can be organized by FAO if needed and upon agreement of the concerned countries (entailing a donation of certified pesticides by one country to another, with FAO assistance). The Delegate of Kyrgyzstan referred to the former existing system (called Pesticide Stock Management System), indicating that the new LPMS was extremely interesting and quite advanced. In conclusion, Georgia proposed to act as a pilot country in CCA to start testing the LPMS, which was very welcome and appreciated by FAO.

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

New projects and resource mobilization (Item 12)

100. The Locust Programme Officer, NSPMD, reminded that the FAO Locust Programme in CCA is implemented based on a Roadmap (adopted by countries in 2011 and updated in 2017), which includes six expected results covering all main aspects of locust management. All new projects fit with this Roadmap, which provides the overall structure and a consistent approach under the Programme umbrella. During the previous TW held in November 2020, it had been stressed that resource mobilization was still required, over the coming years, for Caucasus countries, biopesticides and some other topics, in particular post-graduate education/fellowship and applied research. During Year 10, efforts therefore focused on the above, especially the two first points, in liaison with USAID, based on preliminary exchanges that had taken place the previous year.

101. This resulted in the approval by USAID of a new project “Reducing risks of locust disasters in Caucasus and Central Asia (CCA)” to the benefit of nine CCA countries (all except the Russian Federation), of USD 1.8 million (GCP/GLO/917/USA). This project is a major contribution to the Programme, especially as far as Caucasus is concerned, and a continuation of the previous USAID project. It includes two components: (1) Prevention and disaster risk reduction in Caucasus, which acts as a complement to the JICA project for Central Asia as it contains similar activities to support regional cooperation and capacity strengthening (including in terms of equipment); and (2) Use of up-to-date control methods, such as ULV technology, and operational research on biopesticides in CCA; this component covers the nine beneficiary countries and includes advocacy and capacity-building activities, in particular regional demonstrations/trials, workshops and trainings. As already indicated, with to this latest contribution, the total contributions to the Programme amounted to USD 19 million at the end of the Programme Year 10.

102. During Year 10, a proposal for the FAO-Yanbao Fund for Agriculture Talents (China), entitled “Training and Study tour on Migratory Locust control and management for concerned countries in Asia and Africa” was also developed and submitted in August 2021 (as follow-up of exchanges started the previous year). No reply was received yet as of September 2021.

Towards the establishment of an FAO Commission on locusts in CCA (Item 13)

103. The Agricultural Officer/Locust Management, introduced the item by providing a historical insight. He reminded that the first attempt to formalize regional cooperation dated back to 2000 when Ministers or Vice-Ministers for Agriculture of Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan and Uzbekistan requested the FAO Director-General to study the possibility of a Central

Asian Locust Commission under FAO aegis; consultative missions had been carried out in 2002/2003 but no further action was taken at that time. It has been a recurring question since then, and when the FAO "Programme to improve national and regional locust management in CCA" was developed, it was decided to examine all possible options for a long-term solution. This was done in 2014, with a "Study on possible mechanisms for long-term regional cooperation on locusts in CCA". In 2016/2017, when the results achieved by the Programme over the first five-year period were reviewed, an extremely positive feedback was received from all stakeholders, especially regarding the now existing technical network and the need to proceed with the identification of the best long-term solution for sustainable regional cooperation. Specific discussions therefore took place with the ten CCA countries during the annual TW of November 2018, during which it was agreed that an FAO Commission, under Article XIV of its Constitution, was the solution offering the highest guarantees in terms of sustainability. Considering the related legal and financial commitments, countries requested that such option be presented to the decision-makers of each country. Related round-trip missions in all CCA countries, to be conducted by FAO Officers, were scheduled in 2020 and then again in 2021 but they had to be cancelled in the context of Covid-19 and related travel restrictions.

104. In 2021, it was thus decided to conduct online high-level meetings with each CCA country. This was done in September 2021 mainly, with seven of the ten CCA countries so far (still missing: Afghanistan, Kyrgyzstan and Kazakhstan). Participants included the officials from the concerned country, representatives from FAO country office and staff from the organizer FAO unit, NSPMD, FAO headquarters. A factsheet (available on the FAO website "Locust Watch in CCA") as well as background material was dispatched by NSPMD prior to the meetings to serve as reference documents. The meetings allowed presenting the following issues: the locust threat; the current regional cooperation as part of the FAO Locust Programme in CCA, its achievements and the key issue, i.e. dependence on external funds and thus absence of guarantee in the long term; why the FAO Commission is deemed best solution in terms of sustainability; main activities/core functions of the Commission; how such a Commission works (membership, governance structure and rules, secretariat, financial matters); how the Commission would be funded; and the next steps to create a Commission. The examples of the three existing FAO Desert Locust Commissions (founded in the 1960's for the two oldest one) were given, as well as of CACFISH, which concerns the CCA region.

105. Overall, there was a very positive feedback from each of the seven countries. Regarding the next steps, it was clarified that the initiative was with the countries. Should interest be confirmed, the willingness to launch the process should be officially expressed and conveyed to FAO, based on which regional meetings would be organized for in-depth discussions on all aspects related to the creation of such a Commission, before a final decision is taken. The discussions concerned the ways to support the process, both by countries' delegates and by FAO. It was agreed that liaison would be pursued as needed at bilateral level.

Programme of work during 2022 (Item 14)

106. The Locust Programme Officer, NSPMD, presented the annual Workplan for Year 11, from 1st October 2021 to 30 September 2022, indicated that there are six available funding sources covering all or part of the concerned period, as follows:

- Five-year JICA-funded project GCP/INT/384/JCA for Central Asia.
- Three-year USAID-funded project GCP/GLO/917/USA for nine CCA countries (as soon as it operationally starts).
- TCP/KYR/3801 for Kyrgyzstan (up to its completion in December 2021).
- TCP/TAJ/3806 for Tajikistan (up to its completion in December 2021).
- TCP/GEO/3801 for Georgia.

- FAO Regular Programme (RP), as a modest contribution, subject to confirmation of available funds, may be envisaged to complement other funding sources.

107. 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 (being understood that the Workplan for the JICA project would be officially endorsed during the Project Steering Committee, scheduled on 7 December 2021). Overall, it was said that alternative solutions (Plan B) should continue to be identified for the activities involving international travels, should COVID-19 travel restrictions still remain in place. Related tentative budgets are provided in Annex V.

Table 3. Endorsed workplan for Year 11 of Programme implementation (2022): activities

OUTPUTS/ACTIVITIES	GCP/INT/384/JCA *For **Central Asia** countries except if specified otherwise*	GCP/GLO/917/USA *For **Caucasus** countries except if specified otherwise*	TCP/ KYR/ 3801	TCP/ TAJ/ 3806	TCP/ GEO/ 3801	RP
OUTPUT 1- Regional cooperation further developed						
Activity 1.1. Facilitate regional exchanges to manage locust situations 1.1.1 Regular information sharing of standardized data: national and regional monthly bulletins issued yearly from March to October 1.1.2 Direct experience exchange: annual Technical Workshops in CCA	Bulletins TW 2021 (online, all CCA countries)	Bulletins				
Activity 1.2. Support joint or cross-border surveys (CBS)	5 CBS	1 Joint survey				
Activity 1.3. Organize country-to-country visits within the region	1 visit to be coupled with CBS	*Not applicable*				
Activity 1.4. Identify the best long-term solution for sustainable regional cooperation	Countries to officially express their opinion and if possible regional meeting to be held					
Activity 1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme	Yes	Yes	Yes	Yes	Yes	Yes
OUTPUT 2- National capacities further strengthened						
Activity 2.1. 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: *Locust monitoring and information management: 21-25 Feb. 2022 *Locust spraying and pesticide risk reduction: 28 Feb.-4 March 2022 Venue to be decided - National and briefing sessions	Regional sessions: *Locust monitoring and information management: 14-18 March 2022 *Locust spraying and pesticide risk reduction: 21-25 March 2022 Georgia - National and briefing sessions				
Activity 2.2. Make available background documentation (Practical guidelines - PG, monographs, etc.)	Ongoing for PG and posters Monographs (print-out)	Monographs (print-out)	PG 3P in Kyr-gyz	PG 3P in Tajik	PG RR & 3P Geor-gian	Mo no graph s
Activity 2.3. Organize exposure visits on locust management outside CCA	*Postponed to 2023*	*Not applicable*				
Activity 2.4. Support post-graduate education/fellowships	*Not applicable*	*Not applicable*				
Activity 2.5. Support applied research	*Not applicable*	*Not applicable*				
OUTPUT 3- Locust issues and disasters better anticipated and mitigated						
Activity 3.1. Strengthen human and operational capacities for locust monitoring 3.1.1 Human capacities on survey 3.1.2 Operational capacities (survey equipment)	Survey equipment	Survey equipment	Sup-port to sur-vey		Sup-port to surve y: 2022	

Activity 3.2. 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 Systems maintenance and improvements GIS Workshop 16-18 February 2022	Support to ASDC and CCALM use by countries GIS Workshop 16-18 February 2022				
Activity 3.3. Enhance preparedness for risk reduction through harmonized national contingency plans (at least one pilot country)	Contingency plan-pilot country: Tajikistan	*Not applicable*				
OUTPUT 4- Improved response mechanisms to locust outbreaks						
Activity 4.1. Strengthen human and operational capacities for locust control 4.1.1 Human capacities on control 4.1.2 Operational capacities (control equipment)	Control equipment	Control equipment		EC spra-yers	Sup-port to contr olin 2022	
Activity 4.2. 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	E-Committee on pesticides *(anticipated to 2022)* Promotion of ULV technology	E-Committee on pesticides Promotion of ULV technology Protocol for biopesticides efficacy trials and environmental post-treatment monitoring (all countries)				
OUTPUT 5- Impact on human health and the environment mitigated and monitored						
Activity 5.1. 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	Pesticides and empty containers management, i.e. Introduction of Locust-PMS - pilot activity: Georgia			Nitril e glove s	
Activity 5.2. 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 in one/two new countries Human Health and Environmental Monitoring Teams (Kyrgyzstan, Tajikistan) Related equipment	Human Health and Environmental Monitoring Teams (Azerbaijan, Georgia) Related equipment Pesticide residue analysis (Georgia)				
OUTPUT 6- Public information and awareness increased						
Activity 6.1. Develop awareness among local populations	Calendars Uzbekistan, Turkmenistan	Yes				
Activity 6.2. Enhance visibility of locust issues to promote regional cooperation and improved management	Yes	Yes				

Any Other Business (Item 15)

- **Update on Desert Locust situation in Eastern Africa and Southeast Asia**

108. The Team Leader, NSPMD, reported on the Desert Locust upsurge and other locusts' management in Africa and beyond in 2021. While in the Western (north and north-west Africa) and Eastern (south-west Asia) Desert Locust regions, the situation remains calm, it was quite serious in the Central region, where intense control operations continue in Ethiopia, Somalia, Eritrea, Northern Kenya and Yemen. Overall, 668 000 ha were treated against the Desert Locust in 2021 for a total of 2.4 million ha since late 2019, which allowed to avert 4.5 million tonnes of crop damage and ensure food security for over 40 million people. It should be emphasized that 240 000 ha in Somalia were treated exclusively with the biopesticide *Metarhizium acridum*, which showed excellent results.

109. Beside the Desert Locust, other locust species exhibited increased populations in Africa. The African Migratory Locust produced an outbreak in southern part of Africa in Angola, Botswana, Namibia, Zimbabwe and Zambia, which covered 1.7 million ha. As a result of the FAO response, locusts were successfully controlled on 366 000 ha. On Madagascar Island, the Malagasy Migratory Locust also produced an outbreak and required treatments of 47 000 ha in 2021. FAO developed an action plan, which includes control operations on 400 000 ha using environmentally less hazardous pesticides such as Insect Growth Regulators (IGR) and biopesticides based on the fungus *Metarhizium acridum.*

110. The Team Leader concluded by reporting on the technological innovations developed by FAO and introduced in locust management in 2020-2021. They include the use of the green technology (biopesticides), the updated version of the eLocust3 software for Desert Locust data collection (named eLocust3mPRO), the development of the LPMS and the use of drones for locust survey. He concluded by answering questions on current locust outbreaks all over the world and the role of FAO in managing them.

Celebration of the 10th anniversary of the Locust Programme in CCA: main achievements, memories and virtual toast (Item 16) & Closure of the meeting (Item 17)

111. The Agricultural Officer, Locust Management, introduced the celebration by congratulating all countries for this tenth anniversary and by welcoming, for this last part of the TW: Ms Annie Monard, former NSPMD Team Leader, thanks to whom the FAO Programme on locusts in CCA had been launched; and Ms Anna Volkova, translator, thanks to whom all texts are available in both languages of the Programme, English and Russian.

112. Then, a short presentation was made of the main achievements reached during the ten years of implementation of the Programme, from October 2011 to nowadays. After having recalled how the Programme was developed, he reminded that its implementation had been possible with the support of JICA, USAID and Turkey, with a total amount reaching USD 19 million. The following was mentioned:

    - The establishment of an active technical network on locusts in CCA and the now effective cooperation, which is considered as a major achievement; it includes regular information exchange through monthly bulletins on locust situations, experience sharing during the annual workshops and intra-regional assistance.

    - A total of 24 joint or cross-border surveys, involving 261 Locust Experts from the ten countries, organized with the Programme assistance from 2011 to 2019 (interruption in 2020 and 2021 due to the pandemic), allowing the joint collection of data and evaluation of the locust situation in border areas, thus contributing to prevent worsening of any locust crisis, reduce tensions regarding the sources of locust invasions and build the regional network of technical experts – this was also recognized as a major breakthrough.

- The strengthening of human capacities, with a total of 1931 Experts trained on a wide range of locust-related topics through nine internships on locust management organized in performing Anti-Locust Centres outside CCA and 132 regional, national training and briefing sessions (including successful Training-of-Trainers). In addition to other material, two practical guidelines were also published, i.e. the Practical Guidelines on three locust pests (so far available in five languages) and the Practical Guidelines on Pesticide Risk Reduction (available in eight languages).

- Innovations, i.e. monitoring and analyzing tools developed from scratch to the benefit of the ten countries, including: ASDC, now available in 11 languages for use on tablets, smartphones and computers and whose use is increasing; and theGIS in CCA, entitled CCALM, fully deployed in March 2017, being introduced in CCA countries and under testing.

- Strengthening of operational capacities, with the delivery of equipment, including: a limited number of items for demonstration/training purposes to all countries; conventional pesticides in ULV formulation to Georgia, Kyrgyzstan and Tajikistan (including through triangulation process from Morocco to Tajikistan); and substantial equipment (since 2016), mainly to Central Asian countries. Overall, 82 motorbikes, 114 Global Positional System (GPS) devices, 324 tablets, 318 hand-held Ulva+ sprayers, 195 Knapsack Micron AU8000 sprayers, 75 vehicle-mounted Micron AU8115/Ulvamast sprayers, 41 vehicles, 19 tractors and 1420 PPE kits were delivered, in addition to other material.

- Following a review of pesticides registered and frequently used against locusts in CCA (2012), introduction and development of updated control methods and spraying techniques, in particular the ULV technology.

- National integral systems for environmental and health monitoring of locust control operations were developed in pilot countries, Tajikistan (2014) and Kyrgyzstan (2015) and then Azerbaijan (2017) and in Georgia (2019). As a result, Human Health and Environmental Monitoring Teams were set up in those four countries, for the first time ever in CCA. Other activities aiming at reducing risks of control operations on human health and the environment were also undertaken.

113. The Locust Programme Officer congratulated all countries, being the main actors, for such achievements. She invited all participants to indicate, in their opinion, what had been the main achievements during the past ten years as well as to share their expectations for the coming years. This was done through an online poll, with the below indicated results (detailed results are provided in Annex VI).

114. In terms of main achievements from 2011 to 2021, half of the participants selected all seven proposed topics and the topics which received maximum votes overall were:

- Creating a regional network (bulletins, annual workshops, cross-border surveys, etc.)
- Increased knowledge and information sharing (monographs, Practical Guidelines, posters etc.)
- Developing a locust GIS for CCA (ASDC and CCALM)
- Strengthening human capacities (trainings)
- The other aspects, i.e. delivery of equipment, introducing ULV technology, and improving pesticide risk reduction aspects, were also mentioned with less and decreasing votes.

115. Regarding the expectations for the coming years, the results were as follows, starting from the topics having received maximum votes:

- Creating an FAO Commission on locusts in CCA
- Introducing biopesticides
- Improving pesticide management and risk reduction
- Other four aspects, i.e. increasing regional exchanges in the field, introducing new technologies (drones, etc.), extending ASDC and CCALM to cover all survey and control operations as well as trainings, were also very high in the votes

- The remaining two topics were also selected with less votes, i.e. more equipment and to a lower extent increasing use ULV spraying – all of this calling for a work covering all topics related to locust management in the framework of the Programme.

116. Afterwards, FAO played a video, prepared to the attention of all participants for the celebration of the tenth anniversary of the Programme. The video had been arranged as a walk throughout the years, from one annual Technical Workshop to another in the different CCA countries, sharing fond common memories.

117. Participants then raised a virtual toast. A number of country delegates acknowledged the work jointly made over the past ten years and the results achieved and also thanked FAO for its support. Ms Monard said that it was very nice to have virtually met all participants and seen the progresses made and she wished all the best to all. Last, Mr Al Dobai, Team Leader, NSPMD, expressed congratulations for the achievements over the past ten years, which would not have been possible without the collaboration of all, countries, governments, resource partners, FAO country offices and FAO headquarters. He said that it was now time to move to a more sustainable situation to ensure regional cooperation in the long-term. He concluded by thanking all, looking forward for future collaboration and new achievements in the coming years. Afterwards, the meeting was closed

ANNEXES

Annex I - List of participants

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Mr. Ilham BAYRAMOV	Deputy Head, Unit for Organization of Crop Husbandry of Agrarian Services Agency, MoA
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Altynai KANZHARBEK	Entomologist of the Pavlodar Regional Branch, Pavlodar region
Kabiden SADVAKASOV	Head of the North Kazakhstan Regional Branch, North-Kazakhstan region
Zura KENZHEGALIEVA	Chief agronomist of the North Kazakhstan Regional Branch, North-Kazakhstan region
Alexander BELOV	Entomologist of the North Kazakhstan Regional Branch, North-Kazakhstan region
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Nurzhan KASHKENOV	First Deputy Head, Central Office of Nur-Sultan
Gulzhan ABDUGALIEVA	Head of the Entomology Department, Central Office of Nur-Sultan
Aliya TOYLYBAEVA	Quarantine Agronomist, Central Office of Nur-Sultan
Azamat SMAGULOV	Entomologist, Central Office of Nur-Sultan
Saltanat KOBZHANOVA	Entomologist, Central Office of Nur-Sultan
Dauletkhan SHALGYNBAEV	Plant Protection Agronomist, Central Office of Nur-Sultan
Rano AKHPANOVA	Agronomist, Central Office of Nur-Sultan
Nurlan TLEUBAEV	Agronomist for the city of Nur-Sultan, Central Office of Nur-Sultan

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Ayganym TELKHOJA	Phytopathologist, Central Office of Nur-Sultan
Dulat SMAGULOV	Head of the Herbology Department, Central Office of Nur-Sultan
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Kyzgaldak SALYK	Plant Protection Agronomist, Central Office of Nur Sultan
Gulzira BOLKENOVA	Quarantine Agronomist, Central Office of Nur-Sultan
Kairat TLEUKABYLOV	Agronomist, Central Office of Nur-Sultan
Umit BOLAT	Head, Almaty city
Talgat TASHKENBAEV	Agronomist, Almaty city
Aytugan ZHUMAGALIEV	Entomologist, Almaty city
Elmira ABDIMAZHITOVA	Quarantine Agronomist, Almaty city
Meirlan TURSYNBAY	Head, Shymkent
Talgat DZHANBAEV	Agronomist, Shymkent
Serik MAKHANBET	Entomologist, Shymkent
Ermek GALDAROV	Phytopathologist, Shymkent

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Ms Gulzar SULTANBEK KYZY	Chief specialist, Plant Protection and Pesticides Registration Department, DCPPQ, MoAWRRD
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Mr Dmitriy GOVOROV	Deputy Director, Russian Agricultural Centre
Mr Aleksey DOLGOV	Expert, Russian Agricultural Centre
Mr Vladislav UMNIKOV	Plant protection agronomist, Russian Agricultural Centre
Mr Andrey PASHONIN	Programmer
Ms Natalia BUZINA	Branch specialist, Russian Agricultural Centre
Ms Irina MARUHINA	Branch specialist, Russian Agricultural Centre
Mr Valeriy SHARIPOV	Branch specialist, Russian Agricultural Centre

NAME	TITLE & AFFILIATION
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Ms Olga KUZNECOVA	Branch specialist, Russian Agricultural Centre
Mr Faina DEREVYANKINA	Branch specialist, Russian Agricultural Centre
Ms Marina NESTEROVA	Branch specialist, Russian Agricultural Centre
Ms Olga MALENKOVA	Branch specialist, Russian Agricultural Centre
Ms Olga VOROBCHENKO	Branch specialist, Russian Agricultural Centre
Mr Nurbulat IMASHEV	Branch specialist, Russian Agricultural Centre
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JICA REPRESENTATIVES	
Mr Shohrukh ATOEV	Programme Officer, JICA Office in Tajikistan
OTHER OBSERVERS	

NAME	TITLE & AFFILIATION
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Mr Wenjiang HUANG	Director, Key Laboratory of Digital Earth Science Aerospace Information Research Institute, Chinese Academy of Sciences
Mr Wangpeng SHI	Head, Department of Entomology, China Agricultural University
Mr Yuxian XIA	Professor in Microbiology, School of Life Sciences, Chongqing University, Chongqing
Mr Mahmoud CHALAKI	Deputy head of general and public pests Plant Protection Organization Ministry of Jihad-e Agriculture
INTERPRETERS	
Ms Veronika GRUSHEVSKAYA	
Mr Nizomiddin SHAMSUDDINOV	

Annex II - Agenda

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

23-25 NOVEMBER 2021

9.00–12.00 & 13.00-16.00 (Rome time, GMT +1)

(Via Zoom)

PROVISIONAL AGENDA & TIMETABLE

ITEMS	DOCUMENTS	PRESENTERS	TIMING
1. Opening of the Meeting	-	Shoki Al Dobai, Team Leader, Locusts and Transboundary Plant Pests and Diseases (NSPMD)	**Tuesday 23 November** 9.00-9.30
2. Adoption of the Agenda	Provisional agenda & timetable	Alexandre Latchininsky, Agricultural Officer (Locust Management), NSPMD, & Workshop Moderator	
Session 1: National 2021 locust campaigns and forecasts for 2022			
3. National locust campaigns in 2021, forecasts for 2022 and preparation of the next campaigns	Working Paper (WP) 3 (template)	Countries' presentations: Afghanistan, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan	9.30-12.00 & 13.00-16.00
		Countries' presentations: Russian Federation, Armenia, Azerbaijan, Georgia	

Session 2: Programme implementation and capacity strengthening in 2021			
4. Overview on Programme implementation in 2021	WP 4	Marion Chiris, Locust Programme Officer, NSPMD	**Wednesday 24 November** 9.00-12.00
5. National capacities' development in 2021			
5.1 Training sessions a) Online Refresher courses or National Sessions on locust monitoring and information management as well as pesticide risk reduction, including ASDC and CCALM: Georgia (December 2020), Afghanistan (January 2021), Turkmenistan (February), Tajikistan (February), Russian Federation (March), Armenia (April and September), Kazakhstan (May 2021), Azerbaijan (May) and Uzbekistan (October) b) National sessions on locust management and Briefing sessions on locust spraying and pesticide risk reduction: Azerbaijan (June-July), Georgia (April and June), Kyrgyzstan (November 2020 & April-June 2021) and Tajikistan (March-May)	WP 5.1 (template and FAO Report)	a) Overview by trainers', to be completed by countries b) Countries' presentations	
5.2 Background literature on the locust pests in CCA (Monthly Bulletins, Practical Guidelines, posters, monographs)	WP 5.2	Alexandre Latchininsky, NSPMD	
5.3 Equipment delivered in 2021 to strengthen operational capacities	WP 5.3	Greta Graviglia, International Consultant, Operations Expert, NSPMD	

Session 3: Developing monitoring and analyzing systems			
6. Developments of ASDC in 2021 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2022	WP 6	Nadiya Muratova, International Consultant, Geographical Information System (GIS) Expert, & countries' feedback	13.00-14.30
7. Developments of CCALM in 2021 (progress made, issues encountered, lessons learnt and recommendations) and next steps for 2022	WP 7	Nadiya Muratova, GIS Expert, & countries' feedback	
Session 4: Risk reduction for human health and the environment			
8. 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	WP 8 (template)	Countries' presentations: Azerbaijan, Georgia, Kyrgyzstan and Tajikistan	**Wednesday 24 November** 14.30-16.00
9. Progress made on control operations, pesticides and biopesticides, and on safety and environmental precautions	WP 9 (template)	Countries' feedback: all	**Thursday 25 November** 9.00-11.30
10. Pesticides Referee Group (PRG) meeting in 2021	WP 10	Alexandre Latchininsky, NSPMD	
11. Development of a Locust Pesticide Management System (Locust-PMS)	WP 11	Mohamed Ammati, Pesticide Management Consultant, NSPMD	
Session 5: Locust Programme in CCA: what is next?			
12. New projects and resource mobilization	WP 12	Marion Chiris, NSPMD	11.30- 12.00 & 13.00-14.30
13. Towards the establishment of a FAO Commission on locusts in CCA	WP 13	Alexandre Latchininsky/Marion Chiris, NSPMD & countries' feedback	
14. Programme of work during 2022	WP 14	Marion Chiris, NSPMD	

Closing			
15. Any other business **1.** Incl. short updates on Desert Locust situation in Eastern Africa and Southeast Asia as well as Migratory Locust in Madagascar	-	Shoki Al Dobai, Team Leader, NSPMD & any other presenters	14.30- 15.00
16. Celebration of the 10th anniversary of the Locust Programme in CCA: main achievements, memories and virtual toast	-	All participants	15.00- 16.00
17. Closure	-	Alexandre Latchininsky, NSPMD	

Annex III – Programme funding situation as of 30 September 2021

Project	Amount (USD)	Beneficiaries	Starting & ending dates	Funding sources
FAO Regular Programme	445 000	All ten CCA countries	October 2011-September 2020	FAO
GCP/INT/134/USA	1 660 000	All ten CCA countries	November 2011-April 2017	USAID
TCP/KYR/3305	367 000	Kyrgyzstan	February 2012-December 2013	FAO TCP
TCP/TAJ/3401	367 000	Tajikistan	August 2012-November 2014	FAO TCP
TCP/UZB/3401(Facility)	38 175	Uzbekistan	April-December 2013	FAO TCPf
GCP/SEC/004/TUR	600 000	Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan	March 2014-February 2019	Turkey (FTPP)
GCP/INT/238/JPN	4 883 214	Afghanistan, Kyrgyzstan and Tajikistan	December 2015-June 2019	Japan/JICA
TCP/KAZ/3701/C1 (Facility)	36 000	Kazakhstan	June 2018-December 2019	FAO TCPf
GCP/GLO/963/USA	480 000	All ten CCA countries	September 2018-September 2021	USAID
TCP/KYR/3801 (emergency)	250 000	Kyrgyzstan	May 2020-December 2021[4]	FAO TCPe
GCP/INT/384/JCA	7 548 724	Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan	July 2020-June 2025	Japan/JICA
TCP/TAJ/3806 (emergency)	250 000	Tajikistan	September 2020-December 2021[5]	FAO TCPe
TCP/GEO/3801 (emergency)	250 000	Georgia	November 2020-November 2021[6]	FAO TCPe
GCP/GLO/917/USA	1 800 000	Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan	July 2021-July 2024 (yet to be operationally started)	USAID
Total	**18 975 113**			

[4] Project TCP/KYR/3801 was extended from May 2021 to December 2021 with the objective to fully cover the 2021 locust campaign.

[5] Project TCP/TAJ/3806 was extended from 11 November 2021 to 31 December 2021 to finalize a few last activities.

[6] Project TCP/GEO/3801 is being extended from November 2021 to November 2022 to cover also the 2022 campaign.

Annex IV – Implementation of the Programme during Year 10 (1 October 2020- 30 September 2021): budget and tentative expenditures

Res. & Act.	Tentative expenditures for Programme Year 10 (1 Oct. 2020 - 30 Sept. 2021)	TOTAL EXPENDITURES (USD) YEAR 10 (1 Oct. 2020- 30 Sept. 2021)		GCP/GLO/963/USA USAID project		TCP/KYR/3801 TCPe project		TCP/TAJ/3806 TCPe project		TCP/GEO/3801 TCPe project		GCP/INT/384/JCA JICA project		FAO Regular Programme (RP)	
		Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10*	Expend. Year 10
R1 - Regional cooperation further developed		**418,363**	**231,118**	**42,000**	**1,493**	**15,960**	**17,602**	**14,570**	**11,783**	**15,620**	**11,393**	**327,713**	**186,447**	**2,500**	**2,400**
1.1. Facilitate regional exchanges to manage locust situations		**112,646**	**24,521**	**0**								**110,146**	**22,121**	**2,500**	**2,400**
1.1.1. Regular information sharing of standardized data: national and regional monthly bulletins issued yearly from March to October		17,887	18,458									17,887	18,458		
1.1.2. Direct experience exchange: annual Technical Workshops in CCA		94,759	6,063									*92,259*	3,663	2,500	2,400
1.2. Support joint or cross-border surveys (CBS)		**57,021**	**0**	**12,000**	**0**							**45,021**	**0**		
1.3. Organize country-to-country visits within the region		**15,140**	**0**									***15,140***	**0**		
1.4. Identify the best long-term solution for sustainable regional cooperation		**30,000**	**6,486**	**30,000**	**1,493**								**4,993**		
1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme		**203,556**	**200,111**			15,960	17,602	14,570	11,783	15,620	11,393	**157,406**	**159,333**		
R2 - National capacities further strengthened		**379,988**	**152,163**	**15,000**	**21,303**	**10,400**	**11,692**	**35,180**	**22,994**	**38,650**	**15,455**	**271,258**	**38,319**	**9,500**	**42,400**
2.1. Extend Training-of-Trainers (ToT) on locust management to all CCA countries		**341,864**	**62,816**	**15,000**	**3,501**	**9,000**	**9,510**	**28,560**	**22,056**	**34,650**	**11,014**	**254,654**	**13,235**	**0**	**3,500**
2.1.1. Regional sessions/Refresher course (for Master Trainers)		174,339	24,845	3,500	3,501			3,850	2,093	8,525	4,879	*158,464*	10,871		3,500
2.1.2. National sessions (for staff)		138,527	21,269	11,500	0	9,000	9,510	12,303	7,203	18,625	4,555	*87,099*	0		
2.1.3. Briefing sessions (for staff/ local manpower)		28,997	16,703					12,406	12,759	7,500	1,581	*9,091*	2,363		
2.2. Make available background documentation (Guidelines, monographs, etc.)		**38,124**	**89,347**	**0**	**17,802**	**1,400**	**2,182**	**6,620**	**938**	**4,000**	**4,441**	**16,604**	**25,084**	**9,500**	**38,900**
a	Biblio & Material to be made available (e-committee)	0	0												
b	Monographs	6,000	28,375											6,000	28,375
c	Guidelines	15,520	60,972		17,802	1,400	2,182	6,620	938	4,000	4,441		25,084	3,500	10,525
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		**643,612**	**380,645**	**13,000**	**37,439**	**20,000**	**3,795**	**31,023**	**34,260**	**34,500**	**32,022**	**540,089**	**272,429**	**5,000**	**700**
3.1. Strengthen human and operational capacities for locust monitoring		**439,405**	**235,813**	**0**		**20,000**	**3,795**	**25,023**	**29,190**	**34,500**	**32,022**	**357,382**	**170,806**	**2,500**	
3.1.1. Human capacities on survey		413,232	209,392			20,000	3,795	19,850	20,889	13,500	13,902	357,382	170,806	2,500	
3.1.2. Operational capacities (survey equipment)		67,642	26,421					5,173	8,301	21,000	18,120				
3.2 Develop monitoring and analyzing systems		**204,207**	**144,832**	**13,000**	**37,439**	**0**		**6,000**	**5,070**			**182,707**	**101,623**	**2,500**	**700**
3.2.1. ASDC: tablets delivered		116,422	57,265	13,000	35,630			6,000	5,070			41,469	16,565		
3.2.2. CCALM: support for use at the national level (GIS introduction and trainings)		46,316	41,993		1,809							*97,422*	39,484	2,500	700
3.2.3. CCALM: support for use at the regional level (GIS management and improvement		43,816	45,574									43,816	45,574		
3.4. Enhance preparedness for risk reduction through national contingency plans (at lea		**0**	**0**												

Res. & Act.	Description - Activities envisaged for Year 10 (1 Oct. 2020 - 30 Sept. 2021)	TOTAL EXPENDITURES (USD) YEAR 10 (1 Oct. 2020- 30 Sept. 2021)		GCP/GLO/963/USA USAID project		TCP/KYR/3801 TCPe project		TCP/TAJ/3806 TCPe project		TCP/GEO/3801 TCPe project		GCP/INT/384/JICA JICA project		FAO Regular Programme (RP)	
		Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10	Budget Year 10	Expend. Year 10
R4- Improved response mechanisms to locust outbreaks		**929,306**	**1,159,347**	**0**	**0**	**22,243**	**31,580**	**113,544**	**99,564**	**95,985**	**103,548**	**697,534**	**924,655**	**0**	
4.1. Strengthen human and operational capacities for locust control		**929,306**	**1,159,347**	**0**	**0**	**22,243**	**31,580**	**113,544**	**99,564**	**95,985**	**103,548**	**697,534**	**924,655**	**0**	
4.1.1. Human capacities on control		53,350	64,921			20,000	30,130	19,850	20,889	13,500	13,902				
4.1.2. Operational capacities (control equipment)		875,956	1,094,426			2,243	1,450	93,694	78,675	82,485	89,646	697,534	924,655		
4.2. Promote less harmful pesticides and alternatives to conventional pesticides		**0**	**0**	**0**	**0**	**0**		**0**		**0**				**0**	
4.2.1 E-Committee on pesticides		0	0												
4.2.2. Promotion of the ULV technology		0	0												
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	0												
R5 - Impact on human health and the environment mitigated and monitored		**261,249**	**116,581**	**7,324**	**9,660**	**8,666**	**4,172**	**20,000**	**0**	**28,850**	**28,133**	**196,409**	**74,617**	**0**	
5.1. Mitigate impact of locust control operations on human health and the environmen		**96,201**	**72,867**	**0**		**8,666**	**3,952**	**20,000**	**0**	**17,000**	**18,168**	**50,535**	**50,746**	**0**	
5.1.1. Personal protective equipment (PPE) delivery		96,201	72,867			8,666	3,952	20,000	0	17,000	18,168	50,535	50,746		
5.1.2. Pesticides and empty containers management11/11/2020 : pilot activity on empty containers		0	0												
5.1.3. Extension material for staff		0	0												
5.2. Monitor impact of locust control operations on human health and the environment		**165,048**	**43,714**	**7,324**	**9,660**	**0**	**220**	**0**		**11,850**	**9,964**	**145,874**	**23,870**	**0**	
5.2.1. Human capacities and national systems for health and environmental		60,743	0									*60,743*			
5.2.2. Human Health and Environmental Monitoring Teams		73,255	34,494	7,324	9,660					8,250	9,006	57,681	15,828		
5.2.3. Health and environment monitoring equipment		31,050	8,262				220			3,600	0	27,450	8,042		
5.2.4. Pesticide residue analysis and impact assessment		0	958								958				
R6 - Public information and awareness increased		**22,974**	**12,184**	**0**	**0**	**1,120**	**442**	**1,600**		**0**	**769**	**20,254**	**10,973**	**0**	
6.1.Develop awareness among local populations		**12,438**	**3,999**									**12,438**	**3,999**		
6.2. Enhance visibility of locust issues to promote regional cooperation		**10,536**	**8,185**			**1,120**	**442**	**1,600**			**769**	**7,816**	**6,974**		
Other		**69,788**	**19,669**	**16,100**	**13,100**	**5,012**		**17,728**		**20,040**	**0**	**10,908**	**6,569**	**0**	
Reporting and Evaluation		24,200	13,100	16,100	13,100	2,700		2,700		2,700					
TSS		45,588	6,569			2,312		15,028		17,340		10,908	6,569		
Sub-total		**2,725,279**	**2,071,707**	**93,424**	**82,994**	**83,401**	**69,283**	**233,645**	**168,601**	**233,645**	**191,321**	**2,064,165**	**1,514,008**	**17,000**	**45,500**
Support cost		194,474	87,612	7,616	5,012	9,656	8,390	16,355	9,418	16,355	12,513	144,492	52,279	0	0
Total		**2,919,753**	**2,159,319**	**101,040**	**88,006**	**93,057**	**77,673**	**250,000**	**178,019**	**250,000**	**203,834**	**2,208,657**	**1,566,287**	**17,000**	**45,500**

*JICA project: the tentative budget of USD 2 208 657, still included a number of activities that were postponed to subsequent years , as decided during the first Project Steering Committee (i.e. annual TW in presence, country-to-country visits, Training-of-Trainers and development of national systems for human health and environmental monitoring - in italic in the above table).

Annex V – Tentative budget for Programme Year 11 (1st October 2021 – 30 September 2022)

Res. & Act.	Description - Activities envisaged for Year 11 and tentative budget (1 Oct. 2021 - 30 Sept. 2022)	TOTAL BUDGET (USD) YEAR 11 (1 Oct. 2021- 30 Sept. 2022)	AVAILABLE FUNDS FOR YEAR 11 (USD)					
			TCP/KYR/3801 TCPe project	TCP/TAJ/3806 TCPe project	TCP/GEO/3801 TCPe project	GCP/INT/384/JCA JICA project*	GCP/GLO/917/USA USAID project	FAO Regular Programme (RP)
		Budget Year 11	Budget Year 11	Budget Year 11	Budget Year 11	Budget Year 11	Budget Year 11	Budget Year 11
R1 - Regional cooperation further developed		**308,514**	**3,902**	**1,828**	**784**	**283,000**	**19,000**	**0**
1.1. Facilitate regional exchanges to manage locust situations		**32,000**	**0**	**0**	**0**	**26,000**	**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		8,000				8,000		
1.2. Support joint or cross-border surveys (CBS)		**68,000**				**55,000**	**13,000**	
1.3. Organize country-to-country visits within the region		**5,000**				**5,000**		
1.4. Identify the best long-term solution for sustainable regional cooperation		**5,000**				**5,000**		
1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme		**198,514**	3,902	1,828	784	192,000		
R2 - National capacities further strengthened		**455,932**	**3,194**	**5,171**	**0**	**309,000**	**128,567**	**10,000**
2.1. Extend Training-of-Trainers (ToT) on locust management to all CCA countries		**387,567**	**0**	**0**	**0**	**269,000**	**118,567**	**0**
2.1.1. Regional sessions/Refresher course (for Master Trainers)		248,000				158,000	90,000	
2.1.2. National sessions (for staff)		115,567				87,000	28,567	
2.1.3. Briefing sessions (for staff/ local manpower)		24,000				24,000		
2.2. Make available background documentation (Guidelines, monographs, etc.)		**68,365**	**3,194**	**5,171**	**0**	**40,000**	**10,000**	**10,000**
a	Biblio & Material to be made available (e-committee)	0						
b	Monographs	20,000				40,000	10,000	10,000
c	Guidelines	48,365	3,194	5,171				
2.3 Organize exposure visits on locust management outside CCA		**0**						
2.4. Support post-graduate education/fellowships		**0**						
2.4. Support applied research		**0**						
R3 - Locust issues and disasters better anticipated and mitigated		**895,655**	**4,320**	**0**	**10,000**	**734,000**	**147,335**	**0**
3.1. Strengthen human and operational capacities for locust monitoring		**676,655**	**4,320**	**0**	**10,000**	**530,000**	**132,335**	**0**
3.1.1. Human capacities on survey		14,320	4,320		10,000			
3.1.2. Operational capacities (survey equipment)		662,335				530,000	132,335	
3.2 Develop monitoring and analyzing systems		**213,000**	**0**	**0**	**0**	**198,000**	**15,000**	**0**
3.2.1. ASDC		54,000				39,000	15,000	
3.2.2. CCALM: support for use at the national level (GIS introduction and trainings)		100,000				100,000		
3.2.3. CCALM: support for use at the regional level (GIS management and improvement		59,000				59,000		
3.4. Enhance preparedness for risk reduction through national contingency plans (at lea		**6,000**				**6,000**		

Res. & Act.	Description - Activities envisaged for Year 11 (1 Oct. 2021 - 30 Sept. 2022)	TOTAL BUDGET (USD) YEAR 11 (1 Oct. 2021- 30 Sept. 2022)	AVAILABLE FUNDS FOR YEAR 11 (USD)					
			TCP/KYR/3801 TCPe project	TCP/TAJ/3806 TCPe project	TCP/GEO/3801 TCPe project	GCP/INT/384/JCA JICA project*	GCP/GLO/917/USA USAID project	FAO Regular Programme (RP)
R4- Improved response mechanisms to locust outbreaks		**791,770**	**0**	**53,650**	**10,000**	**486,000**	**242,120**	**0**
4.1. Strengthen human and operational capacities for locust control		**751,650**	**0**	**53,650**	**10,000**	**460,000**	**228,000**	**0**
4.1.1. Human capacities on control		10,000			10,000			
4.1.2. Operational capacities (control equipment)		741,650		53,650		460,000	228,000	
4.2. Promote less harmful pesticides and alternatives to conventional pesticides		**40,120**	**0**	**0**	**0**	**26,000**	**14,120**	**0**
4.2.1 E-Committee on pesticides		16,120				9,000	7,120	
4.2.2. Promotion of the ULV technology		24,000				17,000	7,000	
4.2.3. Alternatives to conventional chemical pesticides: video tutorial on Insect Growth		0						
4.2.4. Alternatives to conventional chemical pesticides: field trial/ demonstration on biopesticides use		0						
R5 - Impact on human health and the environment mitigated and monitored		**216,500**	**0**	**0**	**1,500**	**185,000**	**30,000**	**0**
5.1. Mitigate impact of locust control operations on human health and the environmen		**29,500**	**0**	**0**	**1,500**	**28,000**	**0**	**0**
5.1.1. Personal protective equipment (PPE) delivery		4,500			1,500	3,000		
5.1.2. Pesticides and empty containers management: pilot activity on empty containers		25,000				25,000		
5.1.3. Extension material for staff		0						
5.2. Monitor impact of locust control operations on human health and the environment		**187,000**	**0**	**0**	**0**	**157,000**	**30,000**	**0**
5.2.1. Human capacities and national systems for health and environmental		60,000				60,000		
5.2.2. Human Health and Environmental Monitoring Teams		87,000				57,000	30,000	
5.2.3. Health and environment monitoring equipment		40,000				40,000		
5.2.4. Pesticide residue analysis and impact assessment		0						
R6 - Public information and awareness increased		**11,411**	**0**	**0**	**0**	**11,411**	**0**	**0**
6.1.Develop awareness among local populations		**8,000**				**8,000**		
6.2. Enhance visibility of locust issues to promote regional cooperation		**3,411**				**3,411**		
Other		**72,702**	**2,700**	**17,778**	**20,040**	**0**	**32,184**	**0**
Reporting and Evaluation		8,150	2,700	2,750	2,700	0		
TSS		64,552		15,028	17,340	0	32,184	
Sub-total		**2,752,485**	**14,117**	**78,427**	**42,324**	**2,008,411**	**599,206**	**10,000**
Support cost		194,578	1,266	6,937	3,842	140,589	41,944	
Total		**2,947,063**	**15,383**	**85,364**	**46,166**	**2,149,000**	**641,150**	**10,000**

*JICA project: to be confirmed at second Project Steering Committee

Annex VI – Results of online poll on Programme main achievements over first ten year and expectations for the future