



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

**REPORT**

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

24-26 November 2020

Online



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on Locusts  
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## LIST OF ACRONYMS AND ABBREVIATIONS

ASDC	Automated System of Data Collection
CBS	Cross-border survey
CCA	Caucasus and Central Asia
CCALM	Caucasus and Central Asia Locust Management System
CIT	<i>Calliptamus italicus</i> (Linnaeus 1758), Italian Locust
CLCPRO	<i>Commission for Controlling Desert Locust in the Western Region</i> – Commission de lutte contre le Criquet pèlerin dans la Région Occidentale (FAO)
CRC	Commission for Controlling Desert Locust in the Central Region (FAO)
DAL	<i>Dericorys albidula</i> , Large Saxaul Humpback Grasshopper
DCPP	Department of Chemicalization and Plant Protection (Kyrgyzstan)
DMA	<i>Dociostaurus maroccanus</i> (Thunberg 1815), Moroccan Locust
DRS	Districts of Republican Subordination (Tajikistan)
EC	Emulsifiable concentrate
ET	Economic Threshold
FAO	Food and Agriculture Organization of the United Nations
FAO-LOR	FAO Liaison Office with the Russian Federation
FD	Federal Districts (Russian Federation)
GBAO	<del>Plant Protection and Quarantine Department (Tajikistan)</del> Gorno-Badakhshan Autonomous Region (Tajikistan)
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectare
IGR	Insect Growth Regulator
JICA	Japan International Cooperation Agency
l	Liter
LMI	<i>Locusta migratoria migratoria</i> (Linnaeus 1758), Asian Migratory Locust
LV	Low Volume
MAEP	Ministry of Agriculture and Environmental Protection (Turkmenistan)
MAIL	Ministry of Agriculture, Irrigation and Livestock (Afghanistan)
MoA	Ministry of Agriculture
MT	Master-Trainers
NFA	National Food Agency (Georgia)
NSP	Plant Production and Protection Division (FAO)
NSPMD	“Locusts and Transboundary Plant Pests and Diseases” Team (FAO)
NDVI	Normalized Difference Vegetation Index

NDWI	Normalized Difference Water Index
OVH	Tractor-driven ventilator sprayers
PG	Practical Guidelines
PPE	Personal Protective Equipment
PPQD	Plant Protection and Quarantine Department, MAIL (Afghanistan)
RP	Regular Programme (FAO)
SAAS	Plant Protection and Quarantine Department, MoA (Azerbaijan)
SE-LCE	State Entity “Locust Control Expedition” (Tajikistan)
SWAC	Commission for Controlling Desert Locust in Southwest Asia (SWAC)
TCP	Technical Cooperation Programme (FAO)
TCPf	Technical Cooperation Programme Facility (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 24-26 November 2020. 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, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Uzbekistan (all but Armenia, which nevertheless shared information by email). Participants also included Representatives from Japan International Cooperation Agency (JICA) and from United States Agency for International Development (USAID) as well as from FAO-Headquarters and decentralized offices. In addition, the workshop was attended by a number of observers from CCA countries, Iran and Chinese research institutions. The list of participants is provided in Annex I.
3. The TW was opened by Mr Jingyuan Xia, Director of the FAO Plant Production and Protection Division (NSP). After having welcomed the participants, he indicated that despite serious obstacles due to the COVID-19 pandemics, FAO continued to work hard to achieve Strategic Development Goals of the United Nations, in particular to preserve food security and alleviate hunger. In this respect, the FAO “Programme to improve national and regional locust management in CCA” has been implemented since October 2011 to the benefit of the ten CCA countries in order to limit threat or damage to crops and rangelands from locusts and thus safeguarding food security and livelihoods of rural population, in the respect of human health and the environment. In all these countries, potentially 20 million people who live in locust-infested areas can indeed be affected by locusts. The Programme is implemented by FAO thanks to the current generous support of USAID and JICA. Additional support had been also received from Turkey a few years ago. Beside the COVID-19 pandemics, the year 2020 was marked by a huge upsurge of the Desert Locust in East Africa and Southwest Asia - in some countries like Kenya and Uganda, for the first time in 70 years. It was triggered by cyclones, which brought unusually heavy rains, an evidence of the climate change impact. FAO has mobilized funding (so far USD 203 million, including USD 10 million from the Russian Federation) and has provided governments of affected countries with expertise, support and resources. Almost 2.2 million hectares (ha) were treated to control the Desert Locust in 10 countries in 2020, protecting over 24 million people from starvation. In addition to the Desert Locust situation, FAO follows up closely locust developments all over the world. In 2020, there were serious outbreaks of South American Locust in Argentina and Bolivia, Yellow-Spined Bamboo Locust in Southeast Asia and African Migratory Locust in Southern African countries such as Angola, Botswana, Namibia, Zambia and Zimbabwe. This last species – the Migratory Locust (LMI) – is getting more and more economically important worldwide. The Asian Migratory Locust is also a very important pest in CCA, particularly in Kazakhstan, Russia, Uzbekistan and, to a limited extent, in Azerbaijan and Turkmenistan. Due to climate change, it can produce a second generation per year, which is now happening more often - for example, in Russia in 2020. In addition, CCA harbours two other important locust species, the Moroccan Locust (DMA) and the Italian Locust (CIT). Over the past ten years, a total of 35 million hectares per year have been infested and about 4.4 million hectares treated annually against locust pests. This has no equivalent in the world. All three locusts are transboundary pests and international cooperation is key to their effective management, together with promoting prevention, keeping on strengthening capacities and supporting pesticide risk reduction. With respect to international cooperation, FAO Desert Locust management relies on three regional commissions, ensuring the continuity of monitoring over the borders, besides ensuring continuous trainings on a large range of topics. This experience is most valuable for CCA, which faces similar problems but does not have an institutional body to ensure regional cooperation, promote the locust control preventive strategy and thus deal with locust issues in a sustainable way. This is the biggest challenge for the Locust Programme in CCA. Last but not least, FAO pays much attention to innovations. For

example, drones are actively incorporated now in Desert Locust monitoring. FAO also makes the best locust management practices available to affected countries. As an example, China developed an elaborate system of locust monitoring using handheld devices and satellite information and it increasingly uses biopesticides for locust control. The experience gained by Chinese experts is worth being shared with CCA countries. In conclusion, Mr Xia wished all participants a fruitful exchange and a productive forum during the TW.

4. Mr Shoki Al Dobai, Team Leader of the FAO Locusts and Transboundary Plant Pests and Diseases Team (NSPMD) joined in welcoming all participants. He said that while the annual TW have been organized since 2009, it was the first time that it is held virtually, due to travel restrictions. Even if there is no equivalent to face-to-face meetings, a positive aspect of this virtual meeting is that it allows a greater number of people to attend. He indicated that the objective of this TW is to discuss issues related to locust management in CCA and more specifically: the lessons learnt from the 2020 national anti-locust campaigns and the preparations of the next one; the implementation of the Programme in 2020 and work plan for 2021; the latest developments regarding the Automated System of Data Collection (ASDC) and the Geographic Information System (GIS) entitled "Caucasus and Central Asia Locust Management System" (CCALM); risk reduction associated with locust control operations; as well as new projects and resource mobilization. While 2020 was a very particular year, requiring sometimes to find alternative solutions to implement activities, Mr Al Dobai indicated that the year ended with a very good news for the Programme, which is the approval and operational start of a large project funded by JICA to the benefit of six Central Asian countries, of a five-year duration. Additional emergency funds could also be recently mobilized thanks to the FAO Technical Cooperation Programme (TCP) for three CCA countries, Georgia, Kyrgyzstan and Tajikistan, to help them facing outbreaks and the 2020 or 2021 campaigns. Hopefully, resources will also be mobilized soon to cover the envisaged activities in Caucasus countries over the next few years and to make locust control safer, in particular with an increased use of biopesticides. After all these successful years of cooperation and Programme implementation, it is also time to seek for a long-term solution for sustainable regional cooperation; in fact, 2021 will be an anniversary year: the Programme will turn ten years! Mr Al Dobai expressed again gratitude for the funding partners, JICA and USAID, and also thanked the FAO NSPMD Colleagues who organized the TW and FAO-Tajikistan for the support given with respect to the interpretation. Last, he wished an excellent workshop to all participants.

## **OFFICERS OF THE SESSION**

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

## **AGENDA**

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

## **COMMEMORATION**

7. The assembly observed a minute of silence in commemoration of two colleagues and friends who had sadly passed away this year: Mr Otar Skhvitaridze, from Georgia, and Mr Usarbek Mustafakulov, from Tajikistan.

## SESSION 1: NATIONAL 2020 LOCUST CAMPAIGNS AND FORECASTS FOR 2021

### National locust campaigns in 2020, forecasts for 2021 and preparation of the next campaigns (Item 4)

8. The Delegates from CCA countries reported on the locust situation and anti-locust campaign in 2020. 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 2020 in CCA

Country	Area (in hectares)		
	Surveyed	Infested/Above Economic Threshold (ET)	Treated
<b>Afghanistan</b>	80 000	80 000	90 584
<b>Armenia</b>	80 000	500	500
<b>Azerbaijan</b>	125 021	49 634	32 391
<b>Georgia</b>	290 500	84 500	80 352
<b>Kazakhstan</b>	37 434 300	515 900	514 900
<b>Kyrgyzstan</b>	93 833	70 672	70 672
<b>Russian Federation</b>	10 599 790	1 302 630/467 740	480 390
<b>Tajikistan</b>	448 531	113 359	113 359
<b>Turkmenistan</b>	223 340	75 493	75 493
<b>Uzbekistan</b>	1 007 800	537 200	528 700
<b>Total</b>	50 383 115	2 829 888	1 987 431

9. The Delegate from Afghanistan said that the level of the DMA infestation in 2020 was higher than forecasted. Before the start of the campaign, specialists from the Plant Protection and Quarantine Department (PPQD) of the Ministry of Agriculture, Irrigation and Livestock (MAIL) provided training for scouts and operators and ensured public awareness. Anti-locust campaign started on 26 March in Baghlan province in the northeast and ended in June in Ghor province in the west. Though the forecast for 2020 was to treat 60 000 ha, in total 90 584 ha were treated in 13 provinces. The largest areas were treated in Kunduz (37 906 ha) and in Baghlan (19 592 ha) provinces. Insecticides used included two pyrethroids, deltamethrin in Ultra-Low Volume (ULV) and lambda-cyhalothrin in ULV and in emulsifiable concentrate (EC) formulations, as well as Insect Growth Regulators (IGRs). Spraying was implemented by ground teams using hand-held, back-pack and vehicle-mounted sprayers. Rural communities were involved in mechanical control operations such as digging trenches and collecting hoppers with cloth. The Delegate noted the activity of natural enemies such as Bombyliid flies and birds, especially Rose-coloured starlings. The main obstacle to locust management in Afghanistan is the continuing civil war, which prevents access to some important locust-infested areas because of security concerns; as a result, monitoring and control activities in such areas are limited. Also, in 2020 several transborder DMA swarm flights occurred. Last, safe disposal of empty pesticide containers was indicated as a big problem. The Delegate then formulated several recommendations, appealing for FAO assistance, related to: the introduction of biopesticides based on *Metarhizium acridum* into operational practice; the delivery

of training on the developed GIS on locusts in CCA; the development of medical check-up and availability of emergency kits in case of poisoning during the campaign; and the disposal of obsolete stocks of pesticides, which is a serious issue in Afghanistan as in most CCA countries. The Delegate concluded by indicating that for 2021, the forecast is to treat 70 000 ha in Afghanistan.

10. According to the presentation transmitted by the Ministry of Economics from Armenia, locusts are included in the list of particularly dangerous (but not quarantine) pests. There are two locust species in the country, CIT and DMA, CIT being the most important economic pest. In all ten regions of the country, locust monitoring is implemented on a regular basis; in 2020 it covered 80 000 ha. Based on the result of this monitoring, CIT infestations were found in two regions, Ararat and Vajk, and treatments with pyrethroid insecticide (active ingredient cypermethrin) were applied to 460 ha in Ararat and 40 ha in Vajk, for a total of 500 ha. It is planned to conduct locust monitoring on 80 000 ha in 2021 in Armenia.
11. The Delegate from Azerbaijan informed that all three locust pests (CIT, DMA and LMI) are present in the country. The main historic DMA and CIT breeding areas are located in Djeiranchel steppe, Kudri, Eldar and Mil plains and Adjinnour steppe covering in total over one million hectares. In 2020, an area of 125 021 ha was surveyed against locusts, out of which 49 634 ha were infested. DMA hatching started on 9 April in Kudri plain, on 19 April in Djeiranchel steppe and on 22 April in Eldar steppe. On 8 June a limited LMI infestation was located in wetlands near the Caspian Sea. Before the start of anti-locust campaign, thorough preparatory activities took place including vehicle repair, sprayer repair and calibration, identification of ecologically sensitive areas, pesticide and personal protective equipment (PPE) procurement, medical check-ups and public awareness raising. Vehicles and sprayers used during 2020 anti-locust campaign include 51 tractors for boom and ventilator sprayers, 22 pickup trucks for ULV and low-volume (LV) sprayers and two ten-tons water tank lorries. Insecticides used included pyrethroids cypermethrin (EC, 2 487 I) and alpha-cypermethrin (ULV, 26 600 I) as well as Insect Growth Regulator (IGR) diflubenzuron and neonicotinoid imidacloprid. Anti-locust treatments started on 22 April against DMA, in mid-May against CIT and on 8 June against LMI. The treated area included 19 625 ha against CIT, 11 443 ha against DMA and 1 323 ha against LMI, for a total of 32 391 ha. It is unusual that the areas treated against CIT exceeded those treated against DMA. The Delegate reported that significant percentage of locust surveys and treatments in 2020 was covered by ASDC. Several recommendations and wishes were formulated, included: to further improve the use of ASDC; to continue carrying out joint/cross-border surveys; to receive additional training courses, in particular in survey and on pesticide risk reduction, from FAO. For 2021, it is planned to conduct anti-locust treatments on 40 000 ha.
12. The Delegate from Georgia explained that locust management is implemented by personnel from the Plant Protection Department of the National Food Agency (NFA) of the Ministry of Environment Protection and Agriculture. There are two locust species, CIT and DMA. CIT is the main economic pest while DMA produced an outbreak in 2009 and since then remained in low numbers until 2020 when its densities exceeded the economic threshold (ET) in some areas. Locust monitoring covered 290 500 ha in 2020. CIT hatching started on 8 May. The total locust-infested and treated areas exceeded 80 thousand hectares, which is 2.5 time increase compared to 2019. More specifically, infested area with densities exceeding ET was 84 500 ha including 82 500 ha CIT and 2 000 ha DMA. Treatments, which started on 19 May and finished on 31 August, covered 80 352 ha; this is the highest treated area in the last 12 years. CIT treated areas were located mostly in Eastern Georgia in Kakheti, Kvemo Kartli, Shida Kartli, Samtskhe Javakheti and Mtskheta Mtianeti. Treatments against DMA took place in Kakheti. The main insecticides used were pyrethroid deltamethrin (EC, 75% of treated area) and organophosphate chlorpyrifos (ULV, 25% of treated area). Treatments were done with vehicle-mounted ULV Micron AU8115 sprayers (six units), as well as several models of LV sprayers such as Scout 34-s 400 (two units), Tifone (four units) and MMT Hunter as well as tractor sprayer Wind 640FLX (two units). Since 2015, all anti-locust treatments in Georgia are made by ground. The Delegate indicated that ASDC, an

effective system, has been used although more support would be needed in terms of training. He then mentioned main obstacles and problems during the 2020 campaign. As everywhere else, it was significantly impeded by COVID-19. Because of the pandemics, planned joint/cross-border surveys did not take place, which hampered locust monitoring near borders with neighbouring states. Unusually large infested areas required hiring additional staff, who needed training. Means of transportation (vehicles) could not cover all infested territory. Many treatments were done in fallows, crops, orchards and pastures, where less toxic insecticides should be used, so insecticide spectrum should be widened to address all possible treatment situations. Replacement for organophosphate insecticides used against late hopper instars and adults is urgently needed. The Delegate indicated that due to global warming, locusts significantly expanded their habitats in the recent years, and many breeding areas now threaten nearby crops. The Delegate indicated by presenting the forecast for 2021 (60 000 ha to be treated) and detailed budget for the next year's anti-locust campaign. He concluded by mentioning the now traditional exchanges with the neighboring countries and by thanking FAO, thanks to whom the Programme existed, including Ms A. Monard, the former NSPMD Team Leader, and the other team members.

13. The Delegate from Kazakhstan started by explaining the structure of locust management, which is ensured by the State Enterprise "Committee of State Inspection in Agroindustrial Complex" of the Ministry of Agriculture. The Committee has territorial divisions in each oblast and district of Kazakhstan. Locusts belong to especially dangerous pests whose management is budgeted centrally (USD 2.4 million in 2020) while grasshoppers are managed from regional budgets (USD 1.3 million in 2020). Locust monitoring is ensured by the Republican methodical Center of phytosanitary diagnostics and forecasts, Ministry of Agriculture. Its personnel include 1 113 permanent and 437 seasonal staff. The Center is equipped with 570 vehicles, 530 GPS navigators and 802 tablet computers. In 2020, 37 434 300 ha were surveyed for three locust species, CIT, DMA and LMI, out of which 515 900 ha were infested with densities above ET. Of this area, CIT infested 286 900 ha in 12 oblasts with the largest infested areas in West Kazakhstan and Almaty. DMA was present in the two southern oblasts and infested 60 900 ha in Turkestan and 6 800 ha in Zhambyl, for a total of 67 700 ha. LMI infestations were found in seven oblasts covering 161 300 ha in total including the largest infestations in Almaty and Kyzylorda. Thus, the total treated area in 2020 was 514 900 ha, which is lower than in 2019 (567 600 ha). Traditional cross-border surveys with Russia, Uzbekistan and China did not take place in 2020 because of COVID-19 except for Pavlodar oblast (on 33 500 ha near the border with Russia and no locust infestation found); the Delegate nevertheless thanked Colleagues from neighbouring countries for the fruitful cooperation and active exchange of information. The whole infested area (514 900 ha) was treated including 285 900 ha against CIT, 161 300 ha against LMI and 67 700 ha against DMA. Ten Antonov-2 aircraft, 11 Ultra-Light Aircraft, 119 tractor-driven boom sprayers and nine Aerosol Generators were involved in the treatments. In addition, 196 800 ha were treated against non-swarming grasshoppers. Insecticides used include neonicotinoids, IGRs, pyrethroids, organophosphates and biopesticides. Biological efficacy of treatments varied from 80 to 92 percent. According to the forecast for 2021, infestations of CIT (384 700 ha) and DMA (114 110 ha) will increase while infestation of LMI (142 100 ha) will decrease. The total infested area in 2021 is forecasted at 640 900 ha.
14. The Delegate from Kyrgyzstan reported that anti-locust activities in the country are managed by the Department of Chemicalization and Plant Protection (DCPP) of the Ministry of Agriculture, Food Industry and Melioration (MOAFIM). Before the start of the campaign, public awareness was raised by mass media interviews and publications. In total, 58 interviews and 600 consultations were made and 724 people were informed including beekeepers, stock growers and farmers. DMA hatching in 2020 started on 7 April (in Jalalabad oblast), which is five days later than in 2019. CIT hatching started on 19 May 2020 (in Tchuy oblast), which is nine days later than in 2019. Locust surveys covered 93 833 ha out of which 70 672 ha were treated with pesticides including on 41 980 ha (59.4 percent) against CIT (with densities 3-40 individuals per square meter) and on 28

692 ha (40.6 percent) against DMA (with densities 5-20 individuals per square meter). As in the past years, in many places CIT and DMA infestations were mixed. In April-May, the weather was unstable, with abundant rains, temperature drops and freezes, which negatively impacted hopper development and reduced infested areas. Furthermore, because of COVID-19, significant budget resources planned for anti-locust campaign were re-routed for sanitary measures. As a result, both survey and control activities were not implemented to full extent as planned. In five oblasts, treated areas decreased by 20 to 86 percent compared to 2019 and only in a single oblast, Batken, the area treated in 2020 (16 675 ha) showed a three-times increase compared to 2019 (3 800 ha). All infested territories (70 672 ha) were treated with the largest area in Naryn oblast against CIT (29 300 ha). Treatments were implemented from 28 April to 26 August by DCPD sprayers, vehicle-mounted Micron AU8115 ULV sprayers (ten units, 66 292 ha or 94 percent) and tractor-driven ventilator sprayers (four units, 4 380 ha or six percent). Most treatments were applied to third and fourth instar hopper populations. Because of the proximity of some infestations to crop areas and mixed CIT-DMA populations, some areas had to be treated two or three times. Insecticides used included pyrethroids lambda-cyhalothrin EC (70 percent) and alpha-cypermethrin EC (17.4 percent) as well as pyrethroid deltamethrin ULV (6.3 percent) and organophosphate chlorpyrifos ULV (6.3 percent). Chlorpyrifos, followed by Deltamethrin, showed the highest efficiency. In total, 22 755 liters of insecticides were used. Biological efficacy ranged from 85 to 98 percent. The most economical means of spraying was vehicle-mounted ULV AU8115 sprayer (USD 1.18/ha), which treats between 100 and 400 ha per day. Regarding the bilateral cooperation, the Delegate informed that on 24-29 April, a cross-border survey between Kyrgyzstan (Batken) and Tajikistan (Sughd) took place; it was very useful for coordination of anti-locust activities along the border between the two countries. Based on the egg-pod survey in autumn, and taking into consideration undertreated areas in 2020, it is forecasted that in 2021, 70 000 ha will be treated against locusts, out of which about 2/3 against CIT and 1/3 against DMA. Finally, the Delegate also praised FAO continuing assistance to Kyrgyzstan on locust issues, including the start of the new emergency TCP project in May 2020.

15. The Delegate from the Russian Federation informed that locust management is ensured by the Federal State Budgetary Enterprise "Russian Agricultural Center". He characterized distribution and ecology of each of the three locust species, CIT, DMA and LMI. In 2020, locust survey was conducted on 10 599 790 ha out of which 1 302 630 ha were infested including 467 740 ha above ET (against 361 860 ha in 2019). Largest infested areas were in Siberian Federal District (FD) (mostly grasshoppers), North Caucasus and South FD (mostly locusts). Special attention was given to locust infested areas near borders with neighboring countries in Dagestan, Kalmykia, Astrakhan and Volgograd where 19 000 ha were surveyed along borders and immediate control measures applied where necessary. Over 460 000 ha were surveyed along the Russian-Kazakhstan border in 12 oblasts and 85 reports resulting from these surveys were sent to Kazakh colleagues, which were thanked for the close cooperation. During locust surveys, the FAO-developed ASDC was used on 261 000 ha in Saratov, Volgograd, Orenburg and Stavropol, mostly with smartphones. Anti-locust treatments were conducted on 480 390 ha (against 371 050 ha in 2019, representing a 29 percent increase) using 46 different insecticides sprayed by 673 sprayers including 37 aircraft. The bulk of the treatments (>82 percent) was done with neonicotinoid imidacloprid (biological efficacy 76-93 percent), followed by pyrethroids lambda-cyhalothrin and alpha-cypermethrin. The Delegate shared information on an unusual event, late-season (end of October) LMI hatching in Krasnodar region. This is evidence of second annual generation, which is attributed to climate warming. The infested area (50 ha) was treated with pesticides. The Delegate concluded by explaining that according to the detected population dynamics trends for all three species, an increase of infested areas is anticipated in main locust regions in 2021, with treatments forecasted on 589 330 ha (a 23 percent increase compared to 2020). To deal with this situation, a strategic supply of the neonicotinoid imidacloprid is made.

16. The Delegate from Tajikistan provided a detailed and well-illustrated presentation of 2020 anti-locust campaign. Locust management is implemented by State Entity “Locust Control Expedition” (SE-LCE), which has territorial divisions in Khatlon, Sughd, Districts of Republican Subordination (DRS) and Gorno-Badakhshan Autonomous Oblast (GBO). Before the start of the campaign, a thorough preparatory work has been done including public awareness raising, sprayer repair and calibration, means of transportation repair, procurement of fuel, lubricants and pesticides and medical check-ups of personnel. In 2020, locust surveys were planned on 395 464 ha but were actually implemented on 448 531 ha out of which 102 668 ha were infested. Chemical treatments were implemented on 113 359 ha (very close to area treated in 2019), including 91 856 ha (81 percent) against DMA, 14 313 ha (13 percent) against CIT and 7 190 ha (six percent) against grasshoppers. The largest area (62 217 ha – against DMA) was treated in Khatlon oblast, followed by Sughd oblast (39 103 ha – against DMA, CIT and grasshoppers), DRS (11 610 ha –against DMA) and GBO (429 ha –against DMA). Compared to 2020, areas treated against DMA slightly increased while those treated against CIT and grasshoppers slightly decreased. All treatments were done from the ground. In terms of sprayer types, tractor-driven sprayers treated 31 percent, vehicle-mounted sprayers treated 29 percent, motorized knapsack sprayers treated 24 percent and hand-held sprayers treated 16 percent of the total area. The Delegate added that 36 percent of all treatments was done with the spraying equipment procured by FAO. Analyzing the benefits of anti-locust control campaign, the Delegate informed that the 2020 treatments allowed to protect different crops for the amount of approximately USD 53 million. In terms of insecticides, the following three products were used: pyrethroids lambda-cyhalothrin (14 953.1 l) and alpha-cypermethrin (10 295.5 l) and mixture of organophosphate chlorpyrifos and pyrethroid cypermethrin (7 911 l), all in Emulsifiable Concentrate (EC) formulations. Seventy-two percent of all insecticides were procured against SE-LCE budget while remaining 28 percent – with local administrative authorities’ funds. Besides the insecticides, local administration partially covered fuel, lubricants, means of transportation and meals for field staff. In total, 1 000 staff were involved in operations including 350 personnel from SE-LCE and 650 personnel from local administrations. With regard to problems, COVID-19 significantly affected all survey and control operations. In several areas of Khatlon and Sughd oblasts with complicated relief, swarm flights occurred from neighboring countries, which required immediate attention and additional treatments against egg-laying adults. SE-LCE also experienced shortage of insecticides, fuel, lubricants, means of transportation and field equipment. According to the forecast, it is planned to treat 115 359 ha in 2021. The Delegate concluded that the budget allocated to SE-LCE for the next year is USD 386 000, which is insufficient to adequately address the future locust infestations.
17. The Delegate from Turkmenistan informed about locust monitoring and management ensured by specialists from Ministry of Agriculture and Environmental Protection (MAEP). There are 11 pest species of acridids in Turkmenistan out of which five are of high economic importance: DMA, CIT, *Calliptamus barbarus*, Large Saxaul Humpback Grasshopper *Dericorys albidula* (DAL) and *Diexis varentzovi*. The Plant Protection Service of MAEP conducted survey on 223 340 ha out of which 75 493 ha were infested in Ahal (30 800 ha), Mary (18 044 ha), Balkan (11 890 ha), Lebap (5 783 ha) and Dashoguz (5 476 ha) velayats (oblasts). DAL presents a growing problem seriously damaging saxaul (*Haloxylon* spp.) forests; its infestations are found in all five velayats, including in areas bordering Uzbekistan, where this large grasshopper is also an economic pest. In 2020, 29 980 ha were treated against DAL and another saxaul pest, *Diexis varentzovi*, which amounted to 40 percent of all treatments. The remaining 60 percent were treated against DMA, CIT and *Calliptamus barbarus*. Insecticides used include pyrethroid alpha-cypermethrin and neonicotinoid imidacloprid, both in EC formulations. Treatments were done with tractor-driven ventilator sprayers (OVH), knapsack sprayers (Rover 767) and vehicle-mounted Micron AU8115 sprayers. Before the beginning of the campaign, very high attention was paid to public awareness through meetings, mass media and extension publications. The Delegate mentioned some needs, which should be addressed. They include: (1) more thorough and extensive survey of LMI breeding areas; (2) increased survey territory in order to adequately cover all main locust breeding areas on

pastures; (3) assessment of insecticide impact on human health and environment; and (4) strengthening capacities of plant protection staff in velayats on locust bioecology. In 2021, it is planned to survey 200 000 ha; all monitoring and control activities will be funded by state budget.

18. The Delegate from Uzbekistan explained that locust monitoring and control activities are implemented by the staff of Joint Stock Company “Uzagrohimkhimoya” (“Uzbek Agrochemical Authority”), which was established in 2016. Its 14 territorial divisions, which are called “Locust and Mulberry Pyralid Control Service” and are located in each oblast, the Republic of Karakalpakstan and city of Tashkent, are in charge of locust management. Uzbekistan harbors 150 species of acridids out of which the most economically important are CIT, DMA, LMI as well as DAL, *Calliptamus turanicus*, *Dociostaurus kraussi* and several other non-swarming species. In 2020, hatching of DMA started on 18-20 March in the south. In total, over one million hectares were surveyed against locusts and grasshoppers (1 007 800 ha exactly) out of which 537 200 ha were infested. Largest infested areas were in Kashkadarya (112 700 ha), Jizzak (109 900 ha), Karakalpakstan (108 300 ha) and Surkhandarya (93 800 ha). The treated area was of 528 700 ha with largest treatments in the same four regions. A total of 727 staff were involved in the campaign. In terms of target species, 59 percent of all treatments (312 100 ha) were done against DMA, 19 percent (99 900 ha) against CIT, ten percent (52 900 ha) against DAL, two percent (8 200 ha) against LMI and ten percent (55 500 ha) against non-swarming grasshoppers. Overall, 15 insecticide formulations of four active ingredients (a total of 58 031 liters) were used, namely: pyrethroids lambda-cyhalothrin (on 224 168 ha or 42 percent) and alpha-cypermethrin (on 195 765 ha or 37 percent), neonicotinoid imidacloprid (on 84 477 ha or 16 percent) and phenyl-pyrazole fipronil (on 24 293 ha or 5 percent). All insecticides used were in EC formulation. In terms of spraying platforms, the largest proportion of treatments was sprayed with vehicle-mounted ULV sprayers (35 units, 246 500 ha), followed by tractor-driven ventilator sprayers (175 units, 173 400 ha), Ultra-Light Aircraft (seven units, 73 100 ha) and motorized knapsack sprayers (347 units, 35 700 ha). Before the start of the campaign, public awareness was raised in each region through meetings with stakeholders and interviews in mass media. In 2021, a seven-percent decline is expected in areas subject to anti-locust treatments, which are forecasted at 492 900 ha.
19. In the short discussion which followed the countries’ presentations and in reply to a question from the USAID Representative, delegates from several countries emphasized the importance of joint/ cross-border surveys for effective coordination of anti-locust activities and information exchange. In 2020, because of COVID-19, the planned joint and transborder surveys could not be implemented but this activity should be planned for 2021 and beyond. The Georgian Delegates strongly stressed how such joint field work is important to adequately manage locusts and, in this regard, that regional cooperation needs to be ensured beyond persons (who can change over the years). The Delegate from Uzbekistan indicated how, in the recent years, the new cooperation had allowed to conduct timely control operations in border areas. The Delegates from Turkmenistan and Uzbekistan also underscored the increased importance of DAL, as an emerging pest of desert forests and drew attention of colleagues to this problem. The Delegates from Afghanistan and Tajikistan talked about the need to survey DMA-infested areas along their common border even though it is not possible to organize a transborder survey there because of safety concerns. The Observer from Iran inquired about the DMA situation in its breeding areas in Turkmenistan, near the Iranian border; the Delegate from Turkmenistan replied that DMA infestations are low near the border with Iran. The Delegates also expressed sincere appreciation to FAO, which had created such a tradition of collaborative work, and reiterated the willingness to continue such joint/cross-border surveys.



**Table 2.** Forecasted treated areas for 2021 in CCA countries

Country	Area (in ha) - subject to control operations
Afghanistan	70 000
Armenia	Non available
Azerbaijan	40 000
Georgia	60 000
Kazakhstan	640 850
Kyrgyzstan	70 000
Russian Federation	589 330
Tajikistan	115 359
Turkmenistan	200 000 (survey)
Uzbekistan	492 900
Total	2 278 439

## **SESSION 2: PROGRAMME IMPLEMENTATION AND CAPACITY STRENGTHENING IN 2020**

### **Overview on Programme implementation in 2020 and funding situation (Item 4)**

20. Ms Marion Chiris, FAO Locust Programme Officer, NSPMD, provided an overview of the implementation of the CCA locust Programme during Year 9, from 1st October 2019 to 30 September 2020, against the available funding sources: During Year 9, the available funding for improving locust management in CCA included: the USAID project (GCP/GLO/963/USA); the TCP Facility project to the benefit of Kazakhstan (TCP/KAZ/3701/C1); the newly-approved TCP emergency project to the benefit of Kyrgyzstan (TCP/KYR/3801); and the FAO Regular Programme (RP). The main achievements for Year 9, under the different Programme results, were summarized as described below.
21. Under Result 1 of the Programme, “Regional cooperation developed”, national and regional monthly bulletins were prepared respectively by countries (all but Turkmenistan) and FAO in 2020, for the eleventh consecutive year. In addition, the annual TW was held in November 2019 in Tashkent, Uzbekistan. This was possible thanks to the FAO RP, despite limited funds availability. On the positive side, FAO could ensure continuity in the Programme implementation, making a bridge between projects’ availability; however, this showed once again the need for an institutional mechanism ensuring long-term sustainable regional cooperation, not depending on external projects for key activities.
22. Under Result 2, “ National capacities strengthened”, 95 Locust Experts from three countries benefitted from two national training sessions (Kazakhstan, November 2019, and Azerbaijan, September 2020) and five briefing sessions (Kyrgyzstan, June-August 2020) on locust monitoring and control, thanks to the USAID and TCP projects. Overall, less training sessions were organized in 2020 compared to the previous years, due to both project funds’ availability and COVID-19 related travel restrictions. However, training started to be delivered remotely, which proved to be a valid alternative option until the sanitary situation is back to normal. The briefing sessions in

Kyrgyzstan were delivered by the previously trained Master-Trainers (against the previous Japan/JICA funded project), which further confirmed, if need be, the benefits of such Training-of-Trainers. In addition, under this result, Practical Guidelines on the three locust pests in CCA were officially published in 2020, in Russian (while the English version should follow in the next months). This is the second volume of the envisaged set of practical guidelines on locusts in CCA.

23. Concerning Result 3, “Locust issues better anticipated”, Year 9 saw the organization of the first Workshop on Locust Data Analysis, Forecast and Reporting in CCA, held in November 2019 in Tashkent, Uzbekistan, with the ten countries, thanks to USAID project. Such specialized regional workshop should become annual, with the objectives to support and develop data collection and validation using ASDC as well as CCALM maintenance and operational use in addition to facilitating network creation, experience exchange and problem solving. Based on the recommendations formulated during the Workshop, ASDC and CCALM functionalities were improved in 2020. ASDC updated version (1.9) was made available and the system was used by eight out of the ten countries (against seven in 2019), with variable progresses. A very important achievement and breakthrough in 2020 was made by Azerbaijan, with almost full coverage of locust survey and control operations using ASDC. CCALM interface was also now available in five additional languages (Azeri, Dari, Georgian, Kyrgyz and Uzbek) besides English and Russian.
24. Under Result 4, “Response mechanisms to locust outbreaks improved”, pesticides were delivered to Kyrgyzstan (10 000 l in EC formulation, in August), with additional quantity under delivery (6 590 l in ULV formulation), in the framework of the emergency TCP. Steps were also taken by NSPMD towards the possible identification of new pesticides for locust control, both for Desert Locust and other locust pests, included collecting new data on efficacy and environmental/health effects of insecticides intended for locust and grasshopper control and inviting manufacturers to conduct trials. Regarding more specifically CCA, a webinar on FAO procedures and requirements for the supply of chemical and biological pesticides for locust control worldwide was organized in August 2020 for suppliers in Russia and the wider Eurasian region (by FAO-Russia with NSPMD support). Translation into Russian of three FAO guidelines for trials with pesticides, barrier treatments with Insect Growth Regulators (IGRs) and biopesticides was in process for a wider access by manufacturers in the region.
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 of locust control by supporting the Human Health and Environmental Monitoring Teams in Azerbaijan and Georgia (for the second year) and in Kyrgyzstan (for the fifth year), including with the procurement of Cholinesterase kits for both countries (thanks to USAID and TCP/KYR projects). In addition, pesticide residue analyses of vegetation samples were carried out in Georgia (against the USAID project), with the objective to compare the results of the analyses with maximum residue limits established by the European Union (EU) and/or the Codex Alimentarius, used as a basis for dietary risk assessment. Last, additional Practical Guidelines on pesticide risk reduction for locust control in CCA (200 copies) were delivered to Kyrgyzstan (TCP/KYR).
26. Under Result 6, “Public information and awareness increased”, the FAO Website “Locust Watch in CCA” was regularly updated and a Webinar on the development of the current Locust situation globally, in Caucasus and Central Asia and the Russian Federation (organized by FAO-Russia) was held on 23 June 2020.
27. The following was then indicated with respect to Programme management and Resource mobilization:
  - Since some activities could not be implemented against Project GCP/GLO/963/USA due to COVID-19 travel restrictions in 2020, a no-cost project extension for one year, until 30 September 2021, was requested and approved by the donor. Should travel restrictions

remain in place in 2021, alternative solutions will be identified to implement those activities.

- On resource mobilization, crucial steps were taken during Year 9 in view of the start of the new Japan/JICA project (GCP/INT/384/JICA) to the benefit of six Central Asian countries, of USD 7.5 million and five-year duration. As of the end of September 2020, three out of the six beneficiary countries -Afghanistan, Kyrgyzstan and Uzbekistan- had signed the project while the transfer of funds from the donor to FAO was in process, this being the last step for the project to become operational. The start of this project is an extremely good and important news, allowing to cover major aspects of locust management in Central Asia in the next five years.
- As both Kyrgyzstan and Tajikistan as well as Georgia were facing relatively high locust infestations together with budget reductions in the context of the national response to the COVID-19 pandemics, three national emergency TCP projects were also developed in 2020, following receipt of official requests of assistance. Projects TCP/KYR/3801 and TCP/TAJ/3806, of USD 250 000 each, were respectively approved in May and September 2020 while TCP/GEO/3801 was in development at the end of the reporting period (September 2020). Their objective was to support locust management during the 2020 and/or 2021 campaigns and to reduce the extent of locust infestations and related threats at the national level and for the neighboring countries.
- Last, efforts for resource mobilization were pursued as project(s) covering the Caucasian countries as well as specific topics is/are also needed in the coming years; exchanges with potential resource partners took place.

28. The FAO Locust Programme Officer indicated that during Year 9 (2020 locust campaign), the worldwide COVID-19 pandemics affected the locust campaigns to various extents, for different reasons including: internal movement restrictions; staff illness; and because funds initially allocated for locust control were sometimes re-routed by the Governments to face the pandemics. In fact, it is in this context that the above-mentioned emergency TCP projects were approved. With respect to the Programme, the following activities had to be cancelled/postponed due to the pandemics: under Result 1, advocacy round-trip visits on long-term institutional mechanism for sustainable regional cooperation, scheduled in CCA countries from March to September 2020 (on USAID project); under Result 3, two of the three envisaged trainings on locust monitoring and information management, including ASDC and CCALM, i.e. Azerbaijan (USAID project) and Russian Federation (country's own funds and FAO RP), both scheduled in April 2020; and under Result 3, the joint/cross-border survey in Caucasus, scheduled in May 2020, with experts from Armenia, Azerbaijan, Georgia and the Russian Federation (USAID project). In addition, delivery of equipment was delayed under the TCP project for Kyrgyzstan.

29. Based on the above, a number of recommendations were made for the following year. Considering the particular context of the worldwide COVID-19 pandemics, and related travel restrictions, it was indicated that flexibility would be required from all stakeholders and all efforts should be made to reach expected outputs under the Programme and various projects, either by adapting activities (i.e. for instance through adoption of different modalities, such as online events) or by adjusting the timeframe (postponement of some activities if needed, which is especially possible for the JICA project which has a five-year duration). It was also recommended that the JICA project be signed as soon as possible by countries that have not done it yet, Kazakhstan, Tajikistan and Turkmenistan, and in this respect, it was reminded that activities can be implemented and equipment delivered only in countries having signed the project document, as per FAO rules. In addition, efforts should continue for resources mobilization, especially to the benefit of Caucasian countries and in some specific areas such as biopesticides use. Then, at the 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: (i) towards sustainable regional cooperation (in particular thanks to a long-term institutional mechanism); (ii) towards implementation of an effective locust preventive control strategy; and (iii) towards further increase of knowledge and best practices for locust improved management.

30. Afterwards, the FAO Locust Programme Officer briefly presented the funding situation of the Programme. As of early 2020, a total of USD 8.8 million had been made available (chronologically thanks to USAID, JICA and Turkey in addition to FAO own funds). At the end of 2020, three additional projects had been approved, including the large project funded by JICA for Central Asia and the two national FAO (TCP) emergency projects for Kyrgyzstan and Tajikistan, with a third national TCP under development for Georgia. As a result, in addition to the contribution of the FAO Regular Programme, a total of twelve projects (five regional and seven national ones) had been implemented since the Programme's launch or were about to start, for a new grand total of USD 17.5 million (see Annex III).
31. Last it was indicated that the tentative expenditures for Year 9 of the Programme, from 1 October 2019 to 30 September 2020, were of USD 371 601. Annex IV presents them by Programme Result and activity, for each of the funding sources available during Year 9: the USAID project (USD 152 623), the TCP Facility for Kazakhstan (USD 7 102, before its completion in December 2019), the new emergency project TCP/KYR/3801 (USD 156 942, from its start in May 2020) and the FAO Regular Programme (USD 54 934).

## **National capacities development in 2020 (Item 5)**

### Training sessions (Item 5.1)

32. During Year 9 of the Programme, from 1<sup>st</sup> October 2019 to 30 September 2020, a total of 95 Locust staff benefitted from seven training sessions on several topics related to locust management in late 2019/2020<sup>1</sup>

- **Training on locust monitoring and information management, including ASDC and CCALM, November 2019, Kazakhstan**

33. The Delegate from Kazakhstan reported about the training on locust monitoring and information management, including ASDC and CCALM, which took place on 18-22 November 2019 in Nur-Sultan. It was delivered by Mr A. Latchininsky, FAO Agricultural Officer/Locust Management and Ms N. Muratova, FAO International Consultant, GIS Expert, to the benefit of 23 Kazakh Locust Experts, including 20 Experts from "Republican Methodical Centre of Phytosanitary Diagnostics and Forecasts" and of the State Inspection Committee in the Agricultural Sector of the Ministry of Agriculture (MoA), as well as three specialists of Seifullin's Kazakh Agrotechnical University. The Delegate informed that Kazakh experts had high education and ranged from 24 to 64 years old. The training focused on the practical guidelines on three types of locusts in CCA, lifecycles, climate change, improvement of locust control in CA, use of ASDC during survey and control. Practical exercise was not possible in the field in November, so exercises with tablets and filling out the FAO Locust Survey and Spray Monitoring Forms were carried out in the meeting room. The Delegate highlighted that an issue is the absence of Internet connection in some areas. He suggested the possibility of using ASDC for other types of pests. In fact, he explained that GIS technology is used

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<sup>1</sup> This excludes the online ToT Refresher Course delivered to the benefit of Kyrgyzstan in October 2020: although result achieved were presented during this Technical Workshop, this training falls under Year 10 of the Programme.

in Kazakhstan and this information is accessible to agricultural producers to assess the situation in their specific field. The Delegate concluded by informing that participants received certificates and thanked the trainers for the sharing of knowledge and for introducing ASDC.

34. The Agricultural Officer/Locust management and the GIS Expert thanked the Republican Methodical Centre and FAO-Kazakhstan for the organization of the training. The GIS Expert stressed that, thanks to the training, translation into Kazak of the FAO Locust Survey and Spray Monitoring Forms was improved. In addition, specialists that participated in the training had the opportunity to learn about control operations, as they are usually carried out by a different service of MoA. She noted high interest of the audience in using ASDC; In particular, youths installed it on their mobile phones and quickly learned on how to use it. She concluded by affirming that the system should work very well in Kazakhstan. The Agricultural Officer/Locust management further stressed how critical it is to move on with the introduction of ASDC and CCALM and that it needs to be done gradually in such a big country. It was the first time that a training on these systems was organized in Kazakhstan, which was possible thanks to a TCP Facility project, along with the delivery of 20 tablets, the latter on USAID project (a number of Kazakh specialists should also have participated in the regional training organized by Russia in Orenburg in early 2020 but it was postponed due to COVID-19). The Agricultural Officer prized the presence of Professor Azhbenov from the University, who gave very positive inputs to the training thanks to his experience and knowledge. He reminded that similarly, in a previous training in Azerbaijan, University students and professors had participated, which was very useful for all. Regarding a comment made on the coverage of the system on other pests, he explained that the concerned FAO Team, NSPMD, is engaged in transboundary plant pests and diseases.

- **Training-of-Trainers on locust management (ToT), Kyrgyzstan (TCP/KYR/3801)**

(a) Briefing sessions on locust spraying and pesticide risk reduction, June-August 2020

35. The Delegate from Kyrgyzstan presented the five briefing sessions on locust spraying and pesticide risk reduction, which were delivered by Kyrgyz Master-Trainers (MT) to 50 spraying staff/local manpower, from June to August 2020, in all locust-infested areas: Jalal-Abad, Osh, Batken, Talas and Naryn regions<sup>2</sup>. Five Master Trainers were involved, who had been trained by FAO in the previous years. Out of them, three specialists were women and the average age was 32 years old. Three MTs conducted each session in turn. Main topics delivered included locust monitoring, biology, survey methods, sprayer calibration, application and cleaning, PPE equipment, Human Health and Environmental monitoring issues, management of empty containers, ASDC and awareness rising. Practical work was conducted, as well as joint-survey with local representative authorities. Sanitary regulations were respected during the training, considering the peak of COVID-19 in June/July 2020. Participants expressed appreciation for the briefings held in Kyrgyz . These sessions were organized in the framework of the TCP emergency project for Kyrgyzstan.

(b) Online Refreshing course on locust monitoring and information management, including ASDC and CCALM, as well as on pesticide risk reduction, October 2020 (for Master Trainers) – *falling under Year 10 of the Programme*

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<sup>2</sup> Dates and location: (1) 14-16 June 2020, Aksy and Nookan districts of Jalal-Abad region; (2) 26-28 June 2020, Nookat and Aravan districts of Osh region; (3) 10-12 July 2020, Leylek and Batken districts of Batken region; (4) 22-24 July 2020, Manas and Kara-Buura districts of Talas region; and (5) 4-6 August 2020, At-Bashy and Ak-Talinsky districts of Naryn region.

36. The Delegate from Kyrgyzstan also presented the Refreshing session on locust monitoring and information management, including ASDC and CCALM, as well as on pesticide risk reduction, which was delivered remotely to the benefit of seven Master-Trainers by the Agricultural Officer/Locust Management and the GIS Expert, on 5 and on 26-30 October 2020. It was organized as part of the ToT, in the context of the TCP Emergency project<sup>3</sup>. The training was conducted in Russian, supported by online presentations and interaction with participants (questions and answers). Seven young, but already experienced specialists attended the training, employed by the Central office, including two women from DCP. The age of participants varied from 25 to 43 years old. Participants were very satisfied as the training content met their expectations. They received the material on flash drives and certificates. In reply to a question by the GIS expert considering that this was the first training delivered online, the Delegate added that it had allowed further dissemination of knowledge among local experts, with tangible results, i.e. concerned experts and departments working with ASDC on a daily basis. ASDC experts (three people) registered a number of entries using mobile phones in addition to tablets. He stated that they plan to work in 2021 using mobile phones as the application installed and that results will be soon visible. He estimated that gradually there would be 100 per cent coverage in the country.
37. The GIS Expert indicated that DCP staff is very active, willing to improve their knowledge, and that a strength is limited staff rotation. The Agricultural Officer/Locust management commented that this was not a usual training, being the first time that it was delivered remotely. He was glad that it had produced positive results although virtual training cannot replace personal interactions. He informed that the training was initially scheduled at the beginning of October, just after the national elections and it had to be suspended and postponed due to political instability. In the end, the training was successful, participants were very interested. He thanked in particular the FAO project assistant in the Kyrgyz office for the prompt support in provision of materials and USB flash drives, on which not only training materials but also available FAO books/guidelines on locusts were uploaded for further dissemination of knowledge. He concluded by indicating that similar online Refresher Courses would be proposed to each CCA country in late 2020/early 2021 (as part of the Workplan for Year 10).
- **Remote session on ASDC and CCALM, Azerbaijan, September 2020**
38. The Delegate from Azerbaijan presented the online Refreshing Course on ASDC and CCALM delivered by the GIS Expert (USAID project). The Course was organized in two parts. On 11 September (half-a-day), it was delivered to 20 national locust experts (18 from different districts and two heads of office) from the State Agency for Agrarian Services (SAAS), MoA. It was deemed as very useful in addressing several problems met while using ASDC during the 2020 locust campaign, in particular filling the FAO Locust Survey and Spray Monitoring Forms. The second session was held on 18 September (half-a-day) to the benefit of two specialists from SAAS, who are the CCALM Authorized Operators from Azerbaijan. It allowed discussing the in-depth use of CCALM, in particular checking and displaying data. The Delegate informed that the number of entries made for 2020 (more than 3000) was much higher compared to the previous year. Recommendations for 2021 included regular training, increased number of tablets and further remote technical assistance.
39. The GIS Expert thanked the State Agency and FAO-Azerbaijan for having organized the training remotely, including simultaneous Russian/Azeri interpretation for the first session (the second was

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<sup>3</sup> In November 2020, the ToT was in the process of being completed by two ongoing national sessions delivered by Master-Trainers to the benefit of national staff.

held in English and in Russian). She informed that the first session was crucial to solve a number of practical issues encountered by experts in the field. The second session was also very useful for CCALM use and management. Last, she congratulated the experts from Azerbaijan who showed very high quality work on ASDC: reports were precise and covered almost fully all survey and control operations, with support from the management for the wide use of the system. The FAO Agricultural Officer/Locust management reminded that ASDC/CCALM is one of the main achievements of the Programme. It had been developed based on the FAO experience against Desert Locust where the so-called eLocust system includes more than 30 countries. It is paramount, for the whole CCA region, that each country introduces this new system. This is important for donors too, that check on the use of funds and results achieved, ASDC being a good sign that their support makes the difference. He stressed that Azerbaijan is now in a leading position with regard to ASDC use.

#### Practical Guidelines on the three locust pests in CCA (Item 5.2)

40. The Agricultural Officer (Locust Management) made a presentation devoted to the “Practical Guidelines on Three Locust Pests in CCA”: Biology, Ecology, Behaviour,” which were published in September 2020 and are available on the FAO “Locust Watch in CCA” website at: <http://www.fao.org/3/cb0879ru/cb0879ru.pdf> . These Practical Guidelines (PG) contain detailed information on morphology, biology, ecology and behavior of the Italian Locust, the Moroccan locust and the Asian Migratory Locust. This comprehensive (70 pp., 50 figs.) and at the same time accessible material is intended primarily for locust and plant protection experts in CCA as well as for scientists, students and a wide range of readers. The PG are available in Russian while the English version will be published in the coming months. They are the second volume of a set of Practical Guidelines published in the framework of the FAO Locust Programme in CCA, the other being on locust control and pesticides risk reduction

#### Equipment delivered in 2020 to strengthen operational capacities (Item 5.3)

41. The FAO International Consultant, Operations Expert, presented an update on the locust equipment procured during Year 9 of the Programme, from 1 October 2019 to 31 October 2020, with the aim to strengthen national operational capacities. Over this period, four countries -Georgia, Kazakhstan, Kyrgyzstan and Turkmenistan- and two different funding sources, project GCP/GLO/963/USA and TCP/KYR/3801 were involved.
42. Under Programme Result 3 "Locust issues and disasters better anticipated and mitigated", Activity 3.3. "Develop monitoring and analysing systems", the following was delivered with a view to support introduction of ASDC:
  - Five tablets and four entomological kits to the four trainees from MAEP, Turkmenistan, who participated in the regional FAO Training on locust monitoring and information management, including ASDC and CCALM, organized in Uzbekistan in September 2019 (GCP/GLO/963/USA project). As the country had not signed the project, an internal waiver had to be requested within FAO before proceeding with the shipment, with the assistance of the FAO office in Uzbekistan. The goods reached the final recipient in September 2020.
  - A total of 20 tablets were procured (GCP/GLO/963/USA project) to be used by national experts during the FAO Training on locust monitoring and information management, including ASDC and CCALM, organized in November 2019 in Nur-Sultan (under project TCP/KAZ/3701). Also in this case, following internal clearance and with the assistance by

the FAO office in Kazakhstan, tablets are in the process of being officially transferred to the MoA for further operational use.

43. Under Programme Result 4 "Improved response mechanisms to locust outbreaks", Activity 4.1.1 "Strengthen operational capacities (control equipment)":
  - A total of 10 000 litres (l) of pesticide in EC formulation (Alpha-Cypermethrin 100 g. a.i./litre and Lambda-Cyhalothrin 50 g. a.i./litre – 5 000 l. each) was delivered to Kyrgyzstan in August 2020, after analysis by an accredited laboratory (located in Georgia). Additional 6 590 l of pesticide in ULV formulation (Chlorpyrifos 240 g. a.i./litre) is expected to be delivered as soon as possible (TCP/KYR/3801) taking into account the impact of the global COVID-19 pandemic, in particular the delays related to transportation/logistics (including of the shipment of pesticide samples to the accredited laboratory in Georgia)
44. Under Programme Result 5 "Impact on human health and the environment mitigated and monitored", Activity 5.1.2 and 5.2.2:
  - A total of 60 PPE kits are being procured for field operators in Kyrgyzstan to be used during the 2021 locust control campaign, along with the pesticides (TCP/KYR/3801).
  - Cholinesterase kits for the Human Health and Environmental Monitoring Teams: two AChE Erythrocyte Cholinesterase Assay kits (reagents) delivered to Georgia in June 2020 (GCP/GLO/963/USA project); as well as one Test-mate ChE Cholinesterase Test System and two reagents to Kyrgyzstan in October 2020 (TCP/KYR/3801).

### **SESSION 3: DEVELOPING MONITORING AND ANALYSING SYSTEMS**

#### **Developments of ASDC and CCALM in 2020 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2021 (Item 6)**

45. The FAO International Consultant, GIS Expert, reported on ASDC, which 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 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. To support ASDC use, FAO has delivered, since 2014, 191 tablets to CCA countries as well as training/refresher courses on ASDC&CCALM use to the benefit of all countries, to various extents. During the 2019 TW on Locusts in CCA in Tashkent, Uzbekistan, most delegates reiterated their interest as well as the need for further technical or operational support.
46. During Programme Year 8 (late 2019/2020), 95 experts from Azerbaijan, Kazakhstan and Kyrgyzstan were trained or refreshed on ASDC (see Item 5.1) and recommendations for improving ASDC were formulated at this occasion, concerning the Kazakh version and some fields of the Locust Survey and Spray Monitoring Forms (details available in Working Paper 6). In addition, it was indicated that a new version of ASDC with additional functionalities for displaying cartographic information was available on play.google.com in beta testing mode.
47. During the 2020 locust campaign, a total of 4 285 reports, made by 100 ASDC users, were recorded from eight CCA countries (see details in Working Paper 6), i.e. Georgia and the Russian Federation (two of the three initial pilot countries for ASDC testing) as well as Afghanistan, Armenia, Azerbaijan, Kyrgyzstan and Tajikistan (the five countries which started using ASDC in 2017) and Uzbekistan (that started in 2020). Some countries made excellent progress in 2020, in particular



Azerbaijan that significantly increased the number of reports made this year and almost fully covered survey and control operations with ASDC. The reason of the absence of ASDC reports from Turkmenistan is that the system has not been tested yet at the national level. Following the Workshop on data management and analysis, forecast and reporting (referred to as GIS Workshop) held in November 2019, and in connection with the development by Kazakhstan of its own electronic locust database, it was decided that field data collected by this country would be transmitted from that database to CCALM as a start.

48. With the overall objective that all or most CCA countries use ASDC in the coming years, together with CCALM, a number of specific recommendations were formulated for the 2021 national locust campaigns, as follows:

- To countries: (a) continue to use ASDC as widely as possible during locust surveys and control operations, test CCALM and to issue GIS products (even in case of absence of specific external funding sources); (b) Insert the filling of Locust Survey and Spray Monitoring Forms as an integral part of the Locust Experts' duties - plant protection managers should also encourage this wide use.
- Specifically to the MT and advanced ASDC users in all countries: (a) continue supporting national staff on ASDC use (during refresher courses on national budget and/or on on-the-job basis); (b) test in the field the new beta-version of ASDC with additional functionalities for displaying cartographic information (available on play.google.com in beta testing mode).
- To FAO: a) organize a ToT on locust management, including ASDC use, for all or most CCA countries; (b) if possible, support coaching formula (depending on each country's situation), taking advantage of the experience gained by the CCA countries which have mastered ASDC; (c) contribute to the availability of sufficient number of tablets to in-need countries - if possible, procure the same models together with heavy duty case for the tablet; (d) provide remote technical assistance to countries for any challenge or difficulty met; (e) ensure continuous improvements of ASDC in liaison with CCALM.
- To the Russian Federation: support ASDC use by national Experts by inserting the filled-in paper Forms in the web-computer application or available tablets and mobile phones in the Republics of Kalmykia, Dagestan and Chechen as well as Astrakhan oblast (in addition to four oblasts, namely Saratov, Orenburg, Volgograd oblasts and Stavropol Territory, where it is already used).

49. During the discussions, the Delegate from Afghanistan informed that the current insecurity situation did not allow using tablets and GPS in some provinces; consequently, Locust Experts continued to use FAO Paper forms in the field and CCALM Web-interface in the office. He expressed the intension to test CCALM in Dari. The Delegate from Kyrgyzstan underlined that financial difficulties met in 2020, have limited field surveys and ASDC use. He mentioned the low snow cover in 2020 and, in this connection, the reduced locust infested areas in Jalal-Abad oblast and he asked about the possibility to introduce snow information as satellite product or meteorological data in CCALM. The Delegate from Georgia expressed concern about the need to use ASDC for all locust observations and indicated that training was required for the new Locust Experts. The Delegate from Tajikistan explained that due to financial difficulties and to the lack of mobile Internet, ASDC use has decreased in Khatlon and other regions. The Delegate from Azerbaijan underlined the importance of ASDC. Upon request from the GIS Expert, he shared the country's successful experience in ensuring almost full coverage of survey and control operations with ASDC. MTs trained the local specialists and made four-five missions in the field to support the experts responsible for using ASDC. MTs were always reachable for technical assistance in case of difficulties met during ASDC operational use. All these actions produced a good result.

## Development of CCALM in 2020 (progress made, issues encountered lesson learnt and recommendations) and next step for 2021 (Item 7)

50. The FAO International Consultant, GIS Expert, reported on CCALM and reminded that basic (data import, query, display, output) and advanced (summary, analysis, forecast) functions of the system are accessible since 2017 to all countries on [ccalm.org](http://ccalm.org) (previously locust.kz). The system was developed in line with FAO technical standards by the Institute of Space Technique and Technologies, Almaty, Kazakhstan. The GIS Expert underlined that the effective functioning of CCALM depends on ubiquitous ASDC use by all CCA countries.
51. The GIS Expert presented all progresses made in 2020 with respect to the recommendations formulated during Workshop on Locust Data Analysis, Forecast and Reporting in CCA, held in November 2019 in Uzbekistan, for CCALM improvements (details in Working Paper for Item 7). Such progresses were as follows: (1) With the introduction of five national languages, CCALM is now available in seven languages (Farsi, Azeri, Georgian, Kyrgyz and Uzbek in addition to English and Russian) and forms can be filled through the WEB interface in all these languages; (2) The 2018-2019 locust data (areas infested by locusts; areas infested by locusts exceeding ET; and treated areas) were added to CCALM database for the *first* administrative level (provinces, oblasts or regions) of Afghanistan, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation and Tajikistan and for the *second* administrative level (districts) for the Russian Federation (2000-2019) as well as for Kyrgyzstan and Tajikistan (2019); (3) Other cartographic materials (Yandex map, Wikimedia maps) were introduced into CCALM and the possibility of downloading local cartographic substrates was given; (4) Water mask satellite product (as Normalized Difference Water Index -NDWI) was introduced into CCALM in addition to soil temperature and Normalized Difference Vegetation Index (NDVI) imageries; (5) With respect to Kazakhstan, 1 907 records from 2019 locust surveys were manually imported into CCALM from the database of State Institution «Republican Methodological Center for Phytosanitary Diagnostics and Forecasts»; (6) Regarding the Russian Federation, a module for automatic transfer of locust data from national database was developed and 5 869 records were imported including 447 records for 2019 and 5 422 for 2020. The GIS Expert demonstrated some of the above products to the participants during the TW. She also reported that the main constraint met this year was the sanitary situation of Covid-19 with related travel restrictions.
52. Then, the GIS Expert suggested that the following activities be carried out in 2021 (some having been postponed from 2020), as follows:
- Delivery of online Refresher Courses, covering also ASDC and CCALM use, for all countries including in Orenburg, Russian Federation;
  - Organization of the second specialized GIS Workshop on data verification, analysis, forecast and reporting -thanks to ASDC and CCALM management and use, including QGIS in early 2021, to the benefit of information officers nominated by each country (terms of reference to be developed to that end);
  - Translation of updated ASDC and CCALM manuals into national languages;
  - Translation of CCALM interface into Armenian, Kazakh, Tajik and Turkmen (it was requested to the concerned countries and is awaited for introduction into CCALM);
  - Introduction of locust historical data at the first administrative level from Uzbekistan (2000-2020) and Turkmenistan (2018- 2020), also requested to countries
53. The GIS Expert also recommended the following to FAO and countries' technical experts:
- Ensure advocacy for high-level support of introduction and/or wide use of ASDC and CCALM at the national levels;

- Test CCALM in the national languages; implement the recommendations formulated during the 2019 GIS Workshop (and those which will result from the 2021 one), subject to availability of funds and any other relevant factor;
  - Link the management and use of ASDC/CCALM systems to the discussion on long-term regional cooperation.
54. During the discussions, the Delegate from the Russian Federation suggested to expand data collection during locust survey like in ASDC and also such information could be collected for spray monitoring. The Delegate from Uzbekistan underlined some difficulties with ASDC and CCALM use as it is a new instrument and requested a Refreshing course for national Locust Experts. He also promised to transmit shortly the locust historical data to be inserted into CCALM. The Delegate from Kyrgyzstan indicated that in 2021, all efforts would be made to further increase the use of ASDC and CCALM. The USAID Representative highlighted the impressive progresses made regarding the development and use of the locust GIS by CCA countries in comparison with 2016 and wished success in this very important activity for food security in this region. In conclusion, the GIS Expert emphasized that, during the 2020 locust campaign, Azerbaijan demonstrated an excellent example for ASDC and CCALM introduction and its wide use in plant protection service. She 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 (from paper Locust Survey and Spray Monitoring Forms previously filled in the field). It is important to introduce and use ASDC and CCALM in all CCA countries, especially in connection with the universal tendency of the use of electronic records in any state services, including plant protection services.

#### **SESSION 4: RISK REDUCTION FOR HUMAN HEALTH AND THE ENVIRONMENT**

##### **Monitoring impact of locust control operations (Item 8)**

##### Human Health and Environment Monitoring Teams' work in Azerbaijan, Georgia (incl. pesticide residue analysis), Kyrgyzstan and Tajikistan, May-August 2020

55. The Agricultural Officer/Locust Management introduced the item, indicating that the creation of Human Health and Environment Monitoring Teams in four CCA countries had been a key achievement of the Locust Programme in CCA. The Delegates from Azerbaijan, Georgia, Kyrgyzstan and Tajikistan then reported on the work of their respective teams during the 2020 locust campaign.
56. The Delegate from Azerbaijan explained that the Team, which was created in 2020, contained three staff specializing in plant protection, spraying technology and hygiene/sanitation. The Team used the FAO Practical Guidelines on pesticide risk reduction for locust control in CCA published in 2019. The Team conducted four field missions aiming at: (1) monitoring the filling of the FAO spray monitoring forms, specifically the part related to human health and environment, and pesticide use passports; (2) checking if any incidents occurred during the campaign; (3) checking ecologically sensitive zones; (4) identifying impact of control operations on non-target organisms; and (5) addressing the empty container management. The missions took place in Kudrin plains on 8-13 May, 22-27 May in Eldar steppe, 2-7 June in Djejranchel and 10-15 June in Adjinour. No incidents or significant impact on non-target organisms were detected. The Team made the following recommendations: (1) all personnel involved in the campaign should use PPE correctly; (2) medical checks for all staff should be done before and after the campaign; (3) every operator should fill out pesticide use passport at the end of each working day; and (4) empty pesticide containers should be rinsed three times and punctured after use. It was also indicated that the

Team should include more staff and benefit from additional training and that there was high interest for the introduction of biopesticides.

57. The Delegate from Georgia reported that the Team, which was created in 2019, consisted of three NFA members. At the start of May, a training was delivered to 20 spraying staff on the correct use and maintenance of sprayers as well as on pesticide handling, spraying, transportation and storage. Information on treatments was also provided to local populations, including farmers, livestock herders, beekeepers and local administrations, including through mass-media and hotlines. Three field missions were conducted in Kakheti, Kvemo Kartli and Mtskheta-Mtianeti on 13-31 May, 10 June-1 July and 15-29 July. During the missions, the Teams observed the correct usage of PPE by operators, checked the filling out of the pesticide use passports (20 units were issued) and monitored operators' health and impact on non-target organisms. The Form was filled as much as possible although it was not always possible. Several operators experienced symptoms of intoxication after contact with insecticides, particularly organophosphates. Blood tests revealed the Cholinesterase inhibition below the allowed level, and the operators were removed from work based on the Team's decision. The intoxication symptoms were over in a couple of days, so no serious health incidents happened. Monitoring of non-target impact did not reveal any negative consequences of spraying for non-target fauna. With regard to empty container management, the Team monitored their return and storage at central facility. In total, 990 metal 20-l drums from chlorpyrifos and 2 331 plastic 15-L containers from deltamethrin were centrally stored. The Team made the following conclusions/recommendations: (1) NFA does not possess pesticide storage facilities in locust regions, this creates risks for human health; (2) In some cases, PPE (gloves, overalls) was not optimal for locust control; (3) new staff hired because of big locust outbreak need to be properly trained on all aspects of pesticide risk reduction, including the use of PPE; (4) every operator should regularly fill out pesticide use passport – which was not always done in 2020; (5) maintaining untreated buffer zones and timely informing herders and beekeepers should be continued in the future in order to ensure a minimum environmental risk of control operations; (6) pesticides used for locust control should include less toxic alternatives, such as IGRs, in the future.
58. The Delegate from Kyrgyzstan reported that the Team, which is operational since 2016, included seven specialists from DCPD and conducted five field missions during the period from 16 June till 12 August in ten districts of Jalal-Abad, Osh, Batken, Naryn and Talass oblasts. Four Team members participated in each mission. The objectives of the missions were the following: (1) briefing regional DCPD staff and raising awareness among local populations on pesticide risk reduction (in total 724 people were reached); (2) conducting medical checks including blood tests of operators; (3) introducing pesticide use passports for every Micron AU8115 driver; (4) monitoring PPE use; (5) monitoring empty pesticide containers (4,551 plastic 5-l containers); and (6) environmental monitoring of non-target impacts on 8,650 ha. The Team concluded that there were no incidents threatening human health or negative impacts on the environment during the anti-locust campaign. The Team made a recommendation to introduce equipment for pressing the plastic drums, as a means to safely dispose of empty pesticide containers. It was also indicated that the work of the Team need to be done during each locust campaign.
59. The Delegate from Tajikistan reported that the Human Health and Environment Monitoring Team, created in 2015, consisted of six persons including one doctor and five locust control specialists. The Team made two set of missions during the 2020 campaign. The first set took place in Khatlon on 13-19 March, in DRS on 10-12 April and in Sughd on 10-16 May; the second set took place in Khatlon on 20-22 June, in DRS on 5-7 July and in Sughd on 15-19 July. The missions allowed monitoring the Cholinesterase blood level of operators as well as checking Micron AU8115 sprayer calibration, insecticide mixing, droplet deposit and wind speed assessment during spraying. Blood tests revealed that there were no inhibition of Cholinesterase level below 30 percent among the operators. Environmental monitoring showed some cases of non-target insect mortality (ground beetles, darkling beetles etc.) after anti-locust treatments. The Teams also conducted briefings for

spray operators on the correct use of PPE, sprayer calibration and other aspects of pesticide risk reduction. The main recommendation was to continue the work of the monitoring Team in the future on a regular basis.

60. The Agricultural Officer/Locust Management concluded by praising the work of the Teams to monitor and prevent negative impact of locust control on human health and the environment, indicating that it is also a learning by doing process. This very important work needs to be extended to additional countries.

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

61. The Delegates reported on the progress in pesticide use, spraying technologies and risk reduction to human health and the environment. The Delegate from Afghanistan said that in terms of less toxic insecticides, IGR diflubenzuron is being used in the country lately. He mentioned that in 2017, a biopesticide was used on a limited area in one province and expressed interest to introduce its use at operational scale.
62. The Delegate from Azerbaijan explained that all personnel participating in anti-locust operations receives refresher training before the start of the campaign. During the campaign, personnel always wear clean PPE. General public is informed about anti-locust activities through mass media, regional and central televisions. Highly toxic insecticides are not used. In the recent years, there is tendency to increasingly use ULV technology. Monitoring of control operations was carried out by the Human Health and Environment Monitoring Team (see above Item 8).
63. The Delegate from Georgia reported that 2020 anti-locust treatments were done using two pyrethroids, deltamethrin and alpha-cypermethrin, and an organophosphate, chlorpyrifos. In terms of sprayers, six vehicle-mounted Micron AU8115 sprayers, two LV Scout 34S sprayers as well as Wind 640FLX, Tifone and MMT Hunter sprayers, as well as handheld and knapsack ULV sprayers, were used. As a problem, he mentioned the necessity to find an alternative to chlorpyrifos to treat late hopper instars, which would be more effective and less harmful for human health and the environment. Public awareness was raised through various communication channels. The work carried out by the Human Health and Environment Monitoring Team was reported separately.
64. The Delegate from Kazakhstan reported that in 2020, ten insecticides belonging to five different classes (pyrethroids, neonicotinoids, organophosphates, IGRs and biopesticides) were used against locusts. An authority for pesticide licensing and registration has been recently established, which is responsible for overall pesticide management. Trainings and refresher briefings are done for different categories of staff participating in locust control. Recently, biopesticides were introduced in anti-locust operations; for example, in 2019, a biopesticide based on azadirachtin (neem extract) was used in two regions. Fungal biopesticides (in particular, based on *Beauveria bassiana*) were also tested for locust control.
65. The Delegate from Kyrgyzstan said that no new pesticides were used against locusts in 2020. Treatments are done with tractor-driven ventilator sprayers and vehicle-mounted ULV sprayers. Monitoring of control operations was done by the specialized Human Health and Environment Monitoring Team.
66. The Delegate from Russia indicated that in 2020, locust migrations from waste lands, fallows and pastures into crop areas presented a serious problem for crop protection. He reported that 46 different chemical insecticides based on 18 active ingredients or their mixtures were used against locusts. The largest proportion of areas was treated with neonicotinoid imidacloprid followed by two pyrethroids, lambda-cyhalothrin and alpha-cypermethrin. Biopesticides were not used although two biopesticide products are registered (based on fungi *Beauveria bassiana* and

Metarhizium anisopliae.) The Delegate mentioned that because of high daily air temperatures efficacy of certain insecticides decreased and therefore numerous treatments were conducted in the evening or at night. Mass media was widely used to raise awareness of the rural populations. Special refresher courses were offered to ensure correct use and maintenance of sprayers. Empty pesticide container management is one of the important issues to which serious attention of the Russian Agricultural Center is given. Over 624 tons of empty containers were sent to recycling by a utilization company. The Delegate reported that a new boom sprayer “Rubin TD-1200,” which is capable of treating up to 700 ha per day, has been used to treat locusts in 2020; a total of 15 such sprayers were purchased.

67. The Delegate from Tajikistan started by presenting the spraying platforms currently used in the country and their performance rates. Tractor-driven ventilator sprayers OVH-600, TOS-600 and TOS-2000 can treat 18 – 20 ha per day; knapsack Micron AU8000 sprayer can treat up to 5 ha per day; handheld Micro-Ulva+ sprayer can treat up to 2 ha per day while vehicle-mounted Micron AU8115 sprayer can treat 35 – 40 ha per day. Anti-locust treatments were done using alpha-cypermethrin (39 % of the total area) and lambda-cyhalothrin (37 %) against hoppers and a mixture of chlorpyrifos and cypermethrin (24 %) against adults. Biopesticides were not used; the Delegate underlined the necessity to continue research on the use of efficient biopesticides. He explained that complicated relief in many DMA breeding areas presented serious difficulties for timely and efficient control operations. Also, on several occasions, it was necessary to control large migrating swarms. Beside Covid-19, difficulties during the 2020 campaign included lack of pesticides, fuel and lubricants, water tank lorries, mini-buses, field camping equipment and PPE. The Delegate emphasized that all efforts were made to reduce risks from pesticide use to human health and the environment. To this end, SE-LCE conducted three trainings/briefings to 33 pesticide operators. Public awareness about the impending control operations was raised through numerous communication channels. Empty plastic pesticide containers are collected and centrally assembled to transmit to a utilization facility in Dushanbe; all sprayers and PPE are properly maintained and cleaned. Efficacy and side-effects of anti-locust treatments were closely monitored, no incidents were noticed or reported by rural populations.
68. The Delegate from Turkmenistan informed that in the country, anti-locust treatments target local hotspots. To this end, a database of such hotspot is created and maintained. The purpose is to treat the infestations as early as possible (ideally – to accomplish the campaign by the third decade of May) in order to prevent the spread of adults into crop areas. She said that nature protection is an important aspect during planning and execution of the campaign. In terms of pesticide used, treatments are done with pyrethroids and neonicotinoids; no organophosphates or biopesticides are used. Seventeen vehicle-mounted Micron AU8115 sprayers, 15 tractor-driven ventilator OVH sprayers and 31 knapsack sprayers were used during the 2020 campaign. Rural populations were timely informed about the control activities.
69. The Delegate from Uzbekistan reported that 2020 anti-locust treatments were done using two pyrethroids, alpha-cypermethrin and lambda-cyhalothrin, a neonicotinoid imidacloprid and a phenyl-pyrazole fipronil insecticides. Before the campaign all staff involved undergo medical checks. Rural populations are informed through mass media. Empty containers are properly cleaned and assembled centrally. Two biopesticides, both based on Metarhizium acridum, are registered but not operationally used; he expressed a wish that FAO would facilitate the biopesticides introduction into locust control, in particular, in the zone of ecological disaster near the Aral Sea in Karakalpakstan.

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

70. The Agricultural Officer / Locust Management reported on data collection for the Pesticide Referee Group (PRG) and trials with new pesticides. He explained that the PRG is an independent body gathering experts that advises FAO on the efficacy, as well as health and environmental risks of insecticides used in locust control. 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 last PRG meeting was held in Tunisia in 2014 and its report can be accessed on FAO Locust Watch website: <http://www.fao.org/3/a-bu337e.pdf>. 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. In June 2020, an informal virtual meeting of the PRG was organized by FAO aiming at reactivating the group. As a follow-up, national organizations responsible for locust management and research centers and pesticide manufacturers, were invited to contact FAO to: (1) Submit new data on efficacy and environmental/health effects of insecticides intended for locust and grasshopper control; (2) Propose to conduct trials with new pesticides for locust control with a particular emphasis on new, lower risk compounds. On 11 November, a follow-up virtual meeting took place with PRG Secretariat. Based on the information received to date, it was decided to set tentative dates for the next PRG meeting for 9-11 February 2021.

71. Regarding FAO guidelines for conducting trials for locust control, the following three documents are available: (1) Guidelines for IGR Barrier Trials; (2) Guidelines for Metarhizium Trials against Desert Locust; and Guidelines for Pesticide Trials against Desert Locust Hoppers. They are available in English (and French) at: <http://www.fao.org/ag/locusts/en/publicat/gl/index.html> . Recently, the Guidelines were translated into Russian (translation presently under review). The Guidelines will be dispatched as soon as finalized.
72. Furthermore, the Agricultural Officer/Locust Management informed about a Webinar on FAO procedures and requirements for the supply of chemical and biological pesticides for locust control worldwide held on 6 August 2020 for suppliers in Russia and the wider Eurasian region. The Webinar, which attracted over 50 participants from several CCA countries, was organized by the FAO Liaison Office with the Russian Federation (FAO-LOR) with the participation of the Russian Agricultural Center of the Ministry of Agriculture. The keynote speaker was the Agricultural Officer/Locust Management, NSPMD, who delivered a presentation entitled “FAO’s technical requirements for the procurement of locust control agents.” One of the outcomes of the webinar was the proposal to conduct comparative trials of several locust biopesticides manufactured in Russia in 2021, which is under discussion by interested stakeholders.

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

### **New projects and resource mobilization (Item 11)**

73. The Locust Programme Officer, NSPMD, indicated that the FAO Locust Programme in CCA is implemented on the basis of 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 an overall structure for supporting and improving locust management. During Year 9, four new projects were approved, bringing the total budget of the Programme to USD 17,5 million.
74. The “Project for Improvement of Locust Management (Phase 2)” (GCP/INT/384/JICA) was approved by JICA to the benefit of Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, with a budget of USD 7.5 million and a five-year duration. This development project is a second phase with respect to former project GCP/INT/238/JPN implemented to the benefit of Afghanistan, Kyrgyzstan and Tajikistan (December 2015-June 2019). It was indicated that the project, which contents had been defined together with the six beneficiary countries, was approved in February 2020, signed by JICA and FAO on 28 July 2020 (with some delay in the context of COVID-19), and so far signed by three countries, Afghanistan, Kyrgyzstan and Uzbekistan. Funds were received on project account on 2nd November, allowing the project to start. This project is a

major contribution to the overall Locust Programme in CCA. It is fully in line with the Programme, with which it shares the same objectives, the same expected outcome, the same six expected outputs while it focuses on Central Asia – for which it covers most of the activities envisaged for the coming five years. The project would be launched during the forthcoming first Project Steering Committee (PSC), on 1st December 2021.

75. The three national TCP projects on “Preparedness and emergency response to locust infestations” to the benefit of Kyrgyzstan (TCP/KYR/3801), Tajikistan (TCP/TAJ/3806) and Georgia (TCP/GEO/3801), were presented jointly. These emergency projects, of USD 250 000 and one-year duration each, were developed in response to official letters from the respective Ministries of Agriculture considering the relatively high infestations (especially in Georgia as compared to the previous years), in the context of the spread of COVID-19 and related reduction of governmental financial support. The TCP were thus approved to support the operational capacities of the services in charge of locust management for conducting locust survey, control and pesticide risk reduction, as well as to further strengthen their human capacities. It appears indeed crucial that the required survey and control operations would take place as needed considering the consequences of undertreating, which can be disastrous and may cause food insecurity and crisis in Kyrgyzstan as well as in the entire Central Asia region. The TCP for Kyrgyzstan was approved and signed in May 2020 and it was then extended up to December 2021 to fully cover also the 2021 locust campaign. The TCP for Tajikistan was approved in September 2020 and signed in November, allowing project start; it was indicated that a concept note was under development by FAO-Tajikistan to mobilize additional funds, in particular for equipment. The TCP for Georgia was approved after the reporting period (i.e. in November 2020). These projects are or will be implemented in a consistent way and in synergy with all other projects and activities that are part of the overall Locust Programme in CCA.
76. The Locust Programme Officer then indicated that additional resource mobilization is required, in particular for the Caucasian countries. Indeed, while all Central Asian countries are covered by the newly-approved JICA project, resources are also needed for supporting locust preventive control strategy and disaster risk reduction in Caucasus, based on early warning and early response in the respect of best practices, over the next few years. This is becoming even more important as Georgia has been facing high locust infestations in 2020, with the largest treated area in many years, with related risks for the neighboring countries. In this overall context, preliminary exchanges took place with USAID.
77. Specific topics also require additional support, among which are the biopesticides considering that overall, CCA countries treat annually the largest area worldwide, with 2 to 6 million ha controlled per year (on average, 4.9 million ha), which means handling and spraying huge quantities of chemical pesticides. Exchanges with potential partners thus also concerned the promotion of biopesticides. Notes/proposals were prepared both for USAID, with a view to support operational research, as well as under the FAO-Yanbao Fund for Agriculture Talents (China), to promote training and operational use in locust control. Under the FAO-Yanbao Fund for Agriculture Talents, improvement of analyzing and forecasting tools developed within the Programme are also considered, through an exchange with Chinese experts relying on their expertise on Migratory Locust. These exchanges were very preliminary steps, which do not involve any commitment from any stakeholder.
78. A few other aspects also require some support under the Programme, in particular, printing of monographs on each of the three locust pests present in CCA, post-graduate studies and applied research. The table in Annex V provides an overview, for each activity of the Programme Roadmap, of those which are funded and of those for which additional resources are sought. It was reminded that joint efforts from FAO and countries are needed for resource mobilization and that CCA countries can act both as beneficiaries but also as donors.



## Programme of work during 2021 (Item 12)

79. Presenting the annual Workplan for Year 10, from 1<sup>st</sup> October 2020 to 30 September 2021, the Locust Programme Officer indicated that there are six available funding sources, as follows:

- Project GCP/GLO/963/USA to the benefit of all CCA countries (completion on 30 September 2021, following one-year no-cost extension to implement three remaining activities).
- Project GCP/INT/384/JICA, to the benefit of Central Asian countries (from November 2020, with first PSC on 1st December 2020).
- TCP/KYR/3801 for Kyrgyzstan (completion on 31 December 2021).
- TCP/TAJ/3806 for Tajikistan (completion on 27 September 2021).
- TCP/GEO/3801 for Georgia (start/completion pending signature date by the national authorities).
- FAO Regular Programme (RP) - contribution subject to confirmation of available funds, to complement other funding sources.

80. The Workplan was discussed on this basis. Except for a few activities, whose dates had to be agreed upon with all CCA countries, the workplan does not include the JICA project (which will be addressed during the PSC scheduled for 1<sup>st</sup> December 2020). Overall, it was indicated that alternative solutions (Plan B) should also be identified for the activities involving international travels, should COVID-19 travel restrictions remain.

81. The Workplan thus includes the below activities for Year 10 - with tentative periods or dates indicated when available as well as funding sources:

- **Under Result 1**

- Activity 1.1. Regional exchanges to manage locust situations
  - Activity 1.1.1. National and regional monthly bulletins during the locust campaign [RP]
  - Activity 1.1.2. Annual Technical Workshop held online on 24-26 November 2020 [RP]
- Activity 1.2. Joint survey in Georgia, involving Caucasian countries and Russian Federation during Spring 2021; alternatively, late summer survey, if feasible [USAID]
- Activity 1.3. Best long-term solution for sustainable regional cooperation: round-trip visits to the CCA countries for advocacy purposes, at dates to be determined; alternatively, online meetings to be organized [USAID]

- **Under Result 2**

- Activity 2.1. Training-of-Trainers/Training on locust monitoring and information management, including ASDC and CCALM, and pesticide risk reduction to be held online to the benefit of all CCA countries, as follows:
  - Kyrgyzstan: 5 and 26-30 October 2020 - followed by two national sessions in November 2020 [TCP/KYR] and briefing sessions in spring 2021 [JICA]
  - Georgia: 7-11 December 2021 – to be followed by national/briefing session(s) [TCP/GEO]

- Afghanistan: 18-22 January 2021 – to be followed by briefing sessions [JICA]
- Turkmenistan: 1 - 5 February 2021 [JICA]
- Tajikistan: 15-19 February 2021 – to be followed by national/briefing session(s) [TCP/TAJ]
- Kazakhstan: 1 - 5 March 2021 [JICA]
- Russia: 29 March-2 April – in Orenburg or online [RP]
- Azerbaijan: 12-16 April 2021 – to be followed by national session(s) [USAID]
- Uzbekistan: August/September 2021 [JICA]
- Armenia: to be determined [USAID]
- Activity 2.2. Background documentation:
  - Finalization and limited printing of Monograph on Moroccan Locust [RP]
  - Practical Guidelines on Locust in CCA (two volumes) for Kyrgyzstan, Georgia and Tajikistan [TCP/KYR, TCP/GEO, TCP/TAJ] as well as for Armenia and Azerbaijan [RP and USAID – subject to funds' availability]
- **Under Result 3**
  - Activity 3.1. Strengthen human and operational capacities for locust monitoring
    - Activity 3.1.1. Support field survey operations in Kyrgyzstan, Georgia and Tajikistan [TCP/KYR, TCP/GEO, TCP/TAJ]
    - Activity 3.1.2. Deliver office equipment to Georgia [TCP/GEO]
  - Activity 3.2. Develop monitoring and analyzing systems [USAID]
    - Activity 3.2.1. Deliver tablets for ASDC use to Azerbaijan and Georgia [USAID – subject to funds' availability] and Tajikistan [TCP/TAJ].
- **Under Result 4**
  - Activity 4.1. Strengthen human and operational capacities for locust control
    - Activity 4.1.1. Support field control operations in Kyrgyzstan, Georgia and Tajikistan [TCP/KYR, TCP/GEO, TCP/TAJ]
    - Activity 4.1.2. Deliver control equipment to Kyrgyzstan, Georgia and Tajikistan [TCP/KYR, TCP/GEO, TCP/TAJ]
- **Under Result 5:**
  - Activity 5.1. Mitigate impact of locust control on human health and the environment
    - Activity 5.1.1. Deliver Personal Protective Equipment to Kyrgyzstan, Georgia and Tajikistan [TCP/KYR, TCP/GEO, TCP/TAJ]
  - Activity 5.2. Monitor impact of locust control on human health and the environment
    - Activity 5.2.2. Technical and operational support to the Human Health and Environmental Monitoring Teams in Azerbaijan and Georgia, throughout the campaigns [USAID and TCP/GEO]

- Activity 5.2.3. Deliver Human Health and Environmental Monitoring Equipment to Georgia [*TCP/GEO*]
- Activity 5.2.4. Pesticide residue analysis in Georgia [*TCP/GEO*]
- **Other:**
  - Final financial allocation for the supervision, coordination and implementation of the Programme and for standard reporting and evaluation costs [*all projects*].
  - Technical Support Services and standard reporting and evaluation costs [*all projects*]

**Table 3.** Workplan for Year 10 of Programme implementation (2021) and related budget

Res. & Act.	Description - Activities envisaged for Year 10 (1 Oct. 2020 - 30 Sept. 2021)	TOTAL BUDGET FOR YEAR 10* (USD)	AVAILABLE FUNDS FOR YEAR 10 (USD)				
			GCP/GLO/963/USA USAID project**	TCP/KYR/3801 TCP project	TCP/TAJ/3808 TCP project	TCP/GEO/3801 TCP project	FAO Regular Programme (RP)***
<b>R1 - Regional cooperation further developed</b>		<b>44,500</b>	<b>42,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,500</b>
1.1. Facilitate regional exchanges to manage locust situations		2,500	0	0	0	0	2,500
1.1.1. Regular information sharing of standardized data: national and regional monthly		0					
1.1.2. Direct experience exchange: annual Technical Workshops in CCA		2,500					2,500
1.2. Support joint or cross-border surveys (CBS)		12,000	12,000				
1.3. Organize country-to-country visits within the region		0					
1.4. Identify the best long-term solution for sustainable regional cooperation		30,000	30,000				
1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme		0					
<b>R2 - National capacities further strengthened</b>		<b>104,527</b>	<b>15,000</b>	<b>10,400</b>	<b>30,977</b>	<b>38,650</b>	<b>9,500</b>
2.1. <i>Extend Training-of-Trainers (ToT) on locust management to all CCA countries</i>		83,007	15,000	9,000	24,357	34,650	0
2.1.1. Regional sessions/Refresher course (for Master Trainers)		15,875	3,500		3,850	8,525	
2.1.2. National sessions (for staff)		51,428	11,500	9,000	12,303	18,625	
2.1.3. Briefing sessions (for staff/ local manpower)		15,703			8,203	7,500	
2.2. Make available background documentation (Guidelines, monographs, etc.)		21,520	0	1,400	6,620	4,000	9,500
a Biblio & Material to be made available (e-committee)		0					
b Monographs		6,000					6,000
c Guidelines		15,520		1,400	6,620	4,000	3,500
2.3 Organize exposure visits on locust management outside CCA							
2.4. Support post-graduate education/fellowships							
2.4. Support applied research							
<b>R3 - Locust issues and disasters better anticipated and mitigated</b>		<b>98,350</b>	<b>13,000</b>	<b>20,000</b>	<b>25,850</b>	<b>34,500</b>	<b>5,000</b>
3.1. Strengthen human and operational capacities for locust monitoring		76,850	0	20,000	19,850	34,500	2,500
3.1.1. Human capacities on survey		55,850		20,000	19,850	13,500	2,500
3.1.2. Operational capacities (survey equipment)		21,000				21,000	
3.2 Develop monitoring and analyzing systems		21,500	13,000	0	6,000	0	2,500
3.2.1. ASDC: tablets delivered		19,000	13,000		6,000		
3.2.2. CCALM: support for use at the national level (GIS introduction and trainings)		2,500					2,500
3.2.3. CCALM: support for use at the regional level (GIS management and improvement)		0					
3.4. Enhance preparedness for risk reduction through harmonized national contingency plans (at least one pilot country)							

Res. & Act.	Description - Activities envisaged for Year 10 (1 Oct. 2020 - 30 Sept. 2021)	TOTAL BUDGET FOR YEAR 10 (USD)	AVAILABLE FUNDS FOR YEAR 10 (USD)				
			GCP/GLO/963/USA USAID project	TCP/KYR/3801 TCP project	TCP/TAJ/3808 TCP project	TCP/GEO/3801 TCP project	FAO Regular Programme (RP)
<b>R4- Improved response mechanisms to locust outbreaks</b>		<b>236,945</b>	<b>0</b>	<b>22,243</b>	<b>118,717</b>	<b>95,985</b>	<b>0</b>
4.1. Strengthen human and operational capacities for locust control		236,945	0	22,243	118,717	95,985	0
4.1.1. Human capacities on control		53,350		20,000	19,850	13,500	
4.1.2. Operational capacities (control equipment)		183,595		2,243	98,867	82,485	
4.1.3. Enhance public-private partnership		0					
4.2. Promote less harmful pesticides and alternatives to conventional pesticides		0	0	0	0	0	0
4.2.1 E-Committee on pesticides		0					
4.2.2. Promotion of the ULV technology		0					
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							
<b>R5 - Impact on human health and the environment mitigated and monitored</b>		<b>64,840</b>	<b>7,324</b>	<b>8,666</b>	<b>20,000</b>	<b>28,850</b>	<b>0</b>
5.1. Mitigate impact of locust control operations on human health and the environment		45,666	0	8,666	20,000	17,000	0
5.1.1. Personal protective equipment (PPE) delivery		45,666		8,666	20,000	17,000	
5.1.2. Pesticides and empty containers management 11/11/2020 : pilot activity on empty containers							
5.1.3. Extension material for staff		0					
5.2. Monitor impact of locust control operations on human health and the environment		19,174	7,324	0	0	11,850	0
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		15,574	7,324			8,250	
5.2.3. Health and environment monitoring equipment		3,600				3,600	
5.2.4. Pesticide residue analysis and impact assessment		0					
<b>R6 - Public information and awareness increased</b>		<b>6,923</b>	<b>0</b>	<b>1,120</b>	<b>5,803</b>	<b>0</b>	<b>0</b>
6.1. Develop awareness among local populations		4,203			4,203		
6.2. Enhance visibility of locust issues to promote regional cooperation		2,720		1,120	1,600		
<b>Other</b>		<b>105,030</b>	<b>16,100</b>	<b>20,972</b>	<b>32,298</b>	<b>35,660</b>	<b>0</b>
Supervision, coordination, management of the Programme		46,150		15,960	14,570	15,620	
Reporting and Evaluation		24,200	16,100	2,700	2,700	2,700	
TSS		34,680		2,312	15,028	17,340	
<b>Sub-total</b>		<b>661,115</b>	<b>93,424</b>	<b>83,401</b>	<b>233,645</b>	<b>233,645</b>	<b>17,000</b>
Support cost		49,982	7,616	9,656	16,355	16,355	0
<b>Total</b>		<b>711,097</b>	<b>101,040</b>	<b>93,057</b>	<b>250,000</b>	<b>250,000</b>	<b>17,000</b>

## ANY OTHER BUSINESS

### Update on Desert Locust situation in Eastern Africa and Southeast Asia

82. The Team Leader, NSPMD, made a presentation regarding the ongoing Desert Locust upsurge in Eastern Africa and FAO response. He reminded that FAO was mandated to ensure the worldwide monitoring and management of this extremely dangerous pest since the inception of the Organization. To this end, three regional commissions have been established for the Western Region (CLCPRO),<sup>4</sup> Central Region (CRC)<sup>5</sup> and Southwest Asia (SWAC).<sup>6</sup> FAO monitors the Desert Locust situation on a daily basis and issues monthly bulletins and situation updates based on the information received from the countries. Data collection system called eLocust3 was developed to ensure a smooth information flow from the field to FAO headquarters. To analyze information and develop forecasts, a special GIS named “SWARMS” was established. These instruments allowed timely prediction of the current upsurge which started in December 2019 in Eastern Africa, with the worst Desert Locust infestations since a quarter of a century in Ethiopia and Somalia and up to seventy years in the case of Kenya. This upsurge resulted from heavy rains triggered by tropical cyclones, with Desert Locust spread in two directions, the Greater Horn of Africa and Southwest Asia. The Team Leader indicated that the FAO Global Response Plan is based on three pillars: curb the spread of the locust, safeguard livelihoods and promote early recovery, and coordination and preparedness. Currently over USD 200 million have been received from numerous donors, which allowed to treat over 2 million hectares in affected countries, mostly in East Africa, in 2020. The Team Leader finished his presentation by describing the specially-designed website “Locust Hub” (<https://locust-hub-hqfao.hub.arcgis.com/>), which contains information on all aspects of the FAO global response in real time.

## CLOSING ADDRESS

83. The Agricultural Officer/Locust Management thanked all Delegates and observers for their participation in this online annual Technical Workshop. He indicated that in 2021, the Programme would turn ten years, with a lot of activities planned for this coming year against the various ongoing projects, and he thanked JICA and USAID for their related support. He mentioned that every Programme has however an end and that advantage needs to be taken of the next few years to establish a Commission on locusts in CCA, which will ensure sustainable regional cooperation. The Agricultural Officer also referred to biopesticides: although it is not a solution during outbreaks, their introduction is a major challenge for locust control as part of the locust preventive control strategy.

84. The USAID Representative indicated that he had been involved in the Programme since its development, in liaison with the FAO Officers, and that funds have been secured by USAID, allowing the Programme launch in 2011. This had been a joint effort, with FAO funds and then Turkey and JICA contributions. He said that the main objective of the Programme is that locusts will not affect food security of people. To do that, it focuses on strengthening capacities and fostering collaboration between countries. There are a lot of capacities in the region and bringing them together, as well as sharing information, make them more effective. The Programme covers many topics, with many good ideas, and the support provided over the past ten years has really

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<sup>4</sup> Commission for Controlling Desert Locust in the Western Region – *Commission de lutte contre le Criquet pèlerin dans la Région Occidentale* (CLCPRO)

<sup>5</sup> Commission for Controlling Desert Locust in the Central Region (CRC)

<sup>6</sup> Commission for Controlling Desert Locust in Southwest Asia (SWAC)

made the difference, for instance by establishing ASDC and CCALM. The Representative indicated that he was very pleased with the achievements. Of course, there were some challenges, the last one being COVID-19, but they could be by-passed with creativity; the alternative solutions explored for implementing activities within the Programme were very encouraging and made the difference on how donors analysed the situation. Beyond results, efforts also matter. The Representative referred to his friendship with the Agricultural Officer and their exchanges on the impact of climate change on locusts, mentioning that humans need to be ahead of locusts. With respect to Programme implementation, he said that over the past ten years, he had always been kept in the loop by the Locust Programme Officer, always active and reliable and good at ensuring networking. He stressed how important it is to work in a collective manner, with countries, FAO and donors, and to act in a cohesive manner to ensure that surveillance, control and management are sustainable. He could see people maintaining their interest, such as the Georgian Experts he had met during a cross-border survey a few years earlier and such as Experts from other countries and the GIS Expert, met at the 2016 Technical Workshop; this was a source of motivation and also a reason for USAID to proceed with their support. He concluded by hoping to meet all participants in person during the next year. The USAID Representative was thanked by the Agricultural Officer for the support and inspiration provided.

85. The Delegate from Uzbekistan reminded about the first regional meetings held in the early 2000's and indicating that there was a very different situation now. A lot had been achieved thanks to support from USAID, Turkey and JICA. The Delegate from Kazakhstan agreed, indicating that it was a great achievement that countries could now connect easily, i.e. just ask and share information whenever needed, and he acknowledged the efforts and role played by FAO in this regard. The Delegates of Afghanistan and Kyrgyzstan expressed their thanks to the donors, to the FAO team and to all participants. The Delegate from Georgia indicated that it had been nice to meet all, including again the USAID Representative, although he was missing the usual interactions that offered in-presence Technical Workshops. The Delegates from the other countries join in greeting all Colleagues.
86. The Observer from Iran indicated that about 200 000 ha are treated annually in his country, mostly against DMA in the north bordering with Armenia, Azerbaijan and Turkmenistan. He hoped to be able to participate actively in the annual TW and thanked all participants. The Observer from Chinese research center also thanked the organizers and participants, indicating that she had now a better understanding of efforts made in CCA to manage locusts. In terms of pesticide risk reduction, she indicated that China has a good experience in using biopesticides and that she was glad to hear the interest showed by CCA countries.
87. The FAO Experts in turn thanked all participants for their very good presentations and active participation and the GIS Expert appealed to countries to continue their efforts in using and developing new technologies. After having indicated that there were clear plans for the coming year and reminded countries to be punctual in submitting their monthly bulletins, the Agricultural Officer closed the meeting.

**ANNEXES**



## Annex I - List of participants

NAME	TITLE & AFFILIATION	TEL.	E-MAIL ADDRESS	FULL ADDRESS
<b>COUNTRIES</b>				
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## TECHNICAL WORKSHOP ON LOCUSTS IN CAUCASUS AND CENTRAL ASIA (CCA)

24-26 NOVEMBER 2020

10.00–13.00 &amp; 14.00-16.00 (Rome time, GMT +2)

(Via Zoom)

## PROVISIONAL AGENDA &amp; TIMETABLE

ITEMS	DOCUMENTS	PRESENTERS	TIMING
<b>1. Opening of the Meeting</b>	-	Xia Jingyuan, Director, Plant Production and Protection (NSP) Shoki Al Dobai, Team Leader, Locusts and Transboundary Plant Pests and Diseases (NSPMD)	<b>Tuesday 24 November</b>  10.00-10.30
<b>2. Adoption of the Agenda</b>	Provisional agenda & timetable	Alexandre Latchininsky, Agricultural Officer (Locust Management), NSPMD, & Workshop Moderator	
<b>Session 1: National 2020 locust campaigns and forecasts for 2021</b>			
<b>3. National locust campaigns in 2020, forecasts for 2021 and preparation of the next campaigns</b>	Working Paper (WP) 3 (template)	Countries' presentations: Afghanistan, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan	10.30-13.00
		Countries' presentations: Russian Federation, Armenia, Azerbaijan, Georgia	14.00-16.00



<b>Session 2: Programme implementation and capacity strengthening in 2020</b>			
<b>4. Overview on Programme implementation in 2020</b>	WP 4	Marion Chiris, Locust Programme Officer, NSPMD	<b>Wednesday 25 November 10.00-13.00</b>
<b>5. National capacities' development in 2020</b>	-	-	
5.1 Training sessions <ul style="list-style-type: none"> <li>• Training on locust monitoring and information management, including ASDC and CCALM, November 2019, Kazakhstan</li> <li>• Briefing sessions on locust spraying and pesticide risk reduction, June-August 2020, Kyrgyzstan</li> <li>• Remote Refreshing course for Master-Trainers on locust biology and monitoring as well as on pesticide risk reduction, including ASDC and CCALM, October 2019, Kyrgyzstan</li> <li>• Remote session on ASDC and CCALM, Azerbaijan, September 2020</li> </ul>	WP 5.1 (template and FAO Report)	Countries' presentations: Kazakhstan, Kyrgyzstan, Azerbaijan	
5.2 Practical Guidelines on the three locust pests in CCA	<a href="http://www.fao.org/3/cb0879ru/cb0879ru.pdf">http://www.fao.org/3/cb0879ru/cb0879ru.pdf</a>	Alexandre Latchininsky, NSPMD	
5.3 Equipment delivered in 2020 to strengthen operational capacities	WP 5.3	Greta Graviglia, International Consultant, Operations Expert	
<b>Session 3: Developing monitoring and analyzing systems</b>			
<b>6. Developments of ASDC in 2020 (situation update, issues encountered, lessons learnt and recommendations) and next steps for 2021</b>	WP 6	Nadiya Muratova, International Consultant, Geographical Information System (GIS) Expert, & countries' feedback	14.00-16.00
<b>7. Developments of CCALM in 2020 (progress made, issues encountered, lessons learnt and recommendations) and next steps for 2021</b>	WP 7	Nadiya Muratova, GIS Expert, & countries' feedback	

<b>Session 4: Risk reduction for human health and the environment</b>			
<b>8. Monitoring impact of locust control operations</b> - Human Health and Environment Monitoring Teams' work in Azerbaijan, Georgia (incl. pesticide residue analysis), Kyrgyzstan and Tajikistan, May-August 2020	-	Countries' presentations: Azerbaijan, Georgia, Kyrgyzstan and Tajikistan	<b>Thursday 26 November 10.00-13.00</b>
<b>9. Progress made on control operations, pesticides and biopesticides, and on safety and environmental precautions</b>	WP 9 (template)	Countries' feedback: all	
<b>10. Data collection for the Pesticides Referee Group (PRG) and trials with new pesticides</b>	WP 10	Alexandre Latchininsky, NSPMD	
<b>Session 5: Locust Programme in CCA: what is next?</b>			
<b>11. New projects and resource mobilization</b>	WP 11	Marion Chiris, NSPMD	14.00-15.00
<b>12. Programme of work during 2021</b>	WP 12	Marion Chiris, NSPMD	
<b>Closing</b>			
<b>13. Any other business</b> 1. Incl. Update on Desert Locust situation in Eastern Africa and Southeast Asia	-	Shoki Al Dobai, Team Leader, NSPMD & any other presenters	15.00-16.00
<b>14. Closure address</b>	-	Alexandre Latchininsky, NSPMD	

## Annex III - Programme funding situation (USD) as of 30 September 2020

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/KAZ/3701/C1 (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	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	Sept. 2020-Sept. 2021	FAO TCPe
<b>Total</b>	<b>16 925 113</b>			

## Annex IV - Implementation of the Programme during Year 9 (1 October 2019- 30 September 2020): budget and tentative expenditures

Res. & Act.	Description	TOTAL EXPENDITURES (USD) YEAR 9 (1 Oct. 2019- 30 Sept. 2020)		GCP/GLO/963/USA USAID project		TCP/KAZ/3701 TCPf project		TCP/KYR/3601 TCPe project		FAO Regular Programme (RP)	
		Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9
<b>R1 - Regional cooperation</b>		<b>71,000</b>	<b>34,466</b>	<b>36,000</b>	<b>216</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>35,000</b>	<b>34,250</b>
1.1. Facilitate regional exchanges to manage locust situations		<b>35,000</b>	<b>34,250</b>							<b>35,000</b>	<b>34,250</b>
1.1.1. Create/maintain regular regional information sharing of standardized data (Nat. CsIt for bulletins)		0	0								
1.1.2. Allow direct experience exchange (technical workshop)		35,000	34,250							35,000	34,250
1.2. Develop coordination, including through transboundary policy		0	0								
1.3. Identify the best long-term solution for sustainable regional cooperation		<b>36,000</b>	<b>216</b>	<b>36,000</b>	<b>216</b>						
<b>R2 - National capacities</b>		<b>29,900</b>	<b>13,827</b>	<b>0</b>	<b>186</b>	<b>0</b>	<b>0</b>	<b>29,900</b>	<b>8,641</b>	<b>0</b>	<b>5,000</b>
2.1. Training-of-Trainers (ToT) programme - locust management		<b>27,400</b>	<b>7,311</b>		<b>186</b>			<b>27,400</b>	<b>7,125</b>		
2.1.1. ToT Regional Sessions/Refresher Courses for Master-Trainers		4,900	3,867					4,900	3,867		
2.1.2. ToT National Sessions		15,000	0					15,000			
2.1.3. ToT Briefing Sessions		7,500	3,258					7,500	3,258		
2.2. Make available/accessible background documentation on locust pests		<b>2,500</b>	<b>6,516</b>					<b>2,500</b>	<b>1,516</b>		<b>5,000</b>
a Biblio & Material to be made available (e-committee)		0	0								
b Monographies		0	5,000								5,000
c Guidelines		2,500	1,516					2,500	1,516		
2.3. Allow internships and post-graduate formation		0	0								
a One-month internship		0	0								
b Fellowship: 2 or 3-year diploma for 3 students & E-committee		0	0								
2.4. Promote and support applied research		0	0								
a Two grants for applied research		0	0								
b Entomological and chemical equipment for 6 laboratories		0	0								
<b>R3 - Locust issues and disasters better anticipated and mitigated</b>		<b>146,580</b>	<b>92,926</b>	<b>117,000</b>	<b>82,562</b>	<b>5,580</b>	<b>5,364</b>	<b>20,000</b>	<b>0</b>	<b>4,000</b>	<b>5,000</b>
3.1. Improve survey operations for better field locust monitoring		<b>46,790</b>	<b>2,682</b>	<b>22,000</b>		<b>2,790</b>	<b>2,682</b>	<b>20,000</b>	<b>0</b>	<b>2,000</b>	
3.1.1. Strengthen human capacities (techn. consultations on survey)		46,790	2,682	22,000		2,790	2,682	20,000	0	2,000	
3.1.2. Strengthen operational capacities (survey equipment)		0	0								
3.2. Organize regular cross-border surveys		<b>12,000</b>	<b>0</b>	<b>12,000</b>							
3.3. Develop monitoring and analyzing systems		<b>87,790</b>	<b>90,244</b>	<b>83,000</b>	<b>82,562</b>	<b>2,790</b>	<b>2,682</b>			<b>2,000</b>	<b>5,000</b>
3.3.1. Extend use of Geographical Information System and remote sensing		49,790	48,032	45,000	40,350	2,790	2,682			2,000	5,000
3.3.2. Improve forecasting		38,000	42,213	38,000	42,213						
3.4. Enhance preparedness for risk reduction - contingency plans		0	0								

Res. & Act.	Description	TOTAL EXPENDITURES (USD) YEAR 9 (1 Oct. 2019- 30 Sept. 2020)		GCP/GLO/963/USA USAID project		TCP/KAZ/3701 TCPf project		TCP/KYR/3601 TCPe project		FAO Regular Programme (RP)	
		Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9	Budget Year 9	Expend. Year 9
<b>R4- Improved response mechanisms to locust outbreaks</b>		<b>120,000</b>	<b>94,228</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,273</b>	<b>120,000</b>	<b>91,705</b>	<b>0</b>	<b>1,250</b>
4.1. Allow early reaction and appropriate control operations		20,000	1,273			0	1,273	20,000	0		
4.1.1. Strengthen human capacities (techn. consultations on control)		20,000	1,273			0	1,273	20,000	0		
4.1.2. Strengthen operational capacities (control equipment)		0	0								
4.1.3. Enhance public-private partnership		0	0								
4.2. Promote less harmful pesticides and alternatives to conventional pesticides		100,000	92,955					100,000	91,705		1,250
4.2.1. Develop ULV formulations and related techniques		100,000	91,705					100,000	91,705		
4.2.2. Propose alternatives to conventional pesticides (demonstration)		0	0								
4.2.3. Encourage registration of more pesticides		0	1,250								1,250
<b>R5 - Impact on human health and the environment mitigated and monitored</b>		<b>46,313</b>	<b>53,636</b>	<b>18,713</b>	<b>26,440</b>	<b>0</b>	<b>0</b>	<b>27,600</b>	<b>27,196</b>	<b>0</b>	<b>0</b>
5.1. Mitigate impact of locust control operations on human health and the environment		17,000	17,000					17,000	17,000		
5.1.1. Strengthen human capacities (techn. assistance)		0	0								
5.1.2. Strengthen operational capacities (PPE)		17,000	17,000					17,000	17,000		
5.1.3. Pesticides and empty containers management		0	0								
5.1.4. Produce extension material for mitigating impact of locust treatments		0	0								
5.2. Monitor impact of locust control operations on human health and the environment		29,313	36,636	18,713	26,440			10,600	10,196		
5.2.1. Strengthen human capacities (techn. assistance)		0	0								
5.2.2. Strengthen operational capacities (Testmate, environmental material, etc.)		4,600	4,471					4,600	4,471		
5.2.3. Develop integral system for environmental and health monitoring		24,713	30,426	18,713	24,701			6,000	5,725		
5.2.4. Facilitate impact assessment & analysis of material (residue analysis)		0	1,739		1,739						
<b>R6 - Public information and awareness increased</b>		<b>1,120</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,120</b>	<b>0</b>	<b>0</b>	<b>0</b>
6.1. Develop awareness and education among local populations		0	0								
6.2. Enhance visibility of locust issues and management and of related donor activities		1,120	0					1,120	0		0
6.2.1. Prepare and implement a communication plan		0	0								
6.2.2. Website on locusts in Caucasus and Central Asia and other media/visibility		1,120	0					1,120	0		
<b>Other</b>		<b>98,074</b>	<b>64,343</b>	<b>63,049</b>	<b>32,208</b>	<b>0</b>	<b>0</b>	<b>35,025</b>	<b>22,701</b>	<b>0</b>	<b>9,434</b>
Supervision, coordination, management of the Programme/project(s)		14,985	14,795					14,985	5,361		9,434
Reporting and Evaluation		22,400	3,600	19,700	3,600			2,700	0		
TSS		60,689	45,948	43,349	28,608			17,340	17,340		
<b>Sub-total</b>		<b>512,987</b>	<b>353,426</b>	<b>234,762</b>	<b>141,612</b>	<b>5,580</b>	<b>6,637</b>	<b>233,645</b>	<b>150,243</b>	<b>39,000</b>	<b>54,934</b>
Support cost		35,675	18,174	18,900	11,010	420	465	16,355	6,699		
<b>Total</b>		<b>548,662</b>	<b>371,601</b>	<b>253,662</b>	<b>152,623</b>	<b>6,000</b>	<b>7,102</b>	<b>250,000</b>	<b>156,942</b>	<b>39,000</b>	<b>54,934</b>

## Annex V - Programme Roadmap (2021-2025): available and missing resources

OUTPUTS/Activities	Envisaged beneficiaries	Activities covered by JICA project for Central Asian countries	MISSING RESOURCES -Countries and/or activities for which resources are sought-
<b>OUTPUT 1- Regional cooperation further developed</b>			
<u>Activity 1.1.</u> 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	All CCA countries	Yes  (also other CCA countries, as “associated countries” as far as TW are concerned)	Caucasus countries for bulletins
<u>Activity 1.2.</u> Support joint or cross-border surveys (CBS)	All CCA countries	Yes	Caucasus countries (2022-2025)
<u>Activity 1.3.</u> Organize country-to-country visits within the region	CA countries	Yes	
<u>Activity 1.4.</u> Identify the best long-term solution for sustainable regional cooperation	All CCA countries	Yes	
<u>Activity 1.5.</u> Allow technical, programmatic, operational and financial project management and coordination within the whole Programme	All CCA countries	Yes	
<b>OUTPUT 2- National capacities further strengthened</b>			
<u>Activity 2.1.</u> Extend Training-of-Trainers (ToT) on locust management to all CCA countries  2.1.1. Regional sessions/Refresher courses (for Master-Trainers) 2.1.2. National sessions (for staff) 2.1.3. Briefing sessions (for staff/ local manpower)	*ToT: countries that haven’t fully benefitted from it yet: Kazakhstan, Turkmenistan and Uzbekistan *Refresher courses for Afghanistan, Kyrgyzstan and Tajikistan, Armenia, Azerbaijan, Georgia and Russian Federation	Yes	Caucasus countries
<u>Activity 2.2.</u> Make available background documentation (Practical guidelines, monographs, etc.)	All CCA countries	Partly	Caucasus countries (Practical guidelines) & all CCA countries (monographs)
<u>Activity 2.3.</u> Organize exposure visits on locust management outside CCA	Primarily Turkmenistan and Uzbekistan	Yes	
<u>Activity 2.4.</u> Support post-graduate education/fellowships	As per selection of students following calls for interest	No	CCA countries
<u>Activity 2.5.</u> Support applied research	Beneficiary(ies) and topic(s) to be defined	No	CCA countries
<b>OUTPUT 3- Locust issues and disasters better anticipated and mitigated</b>			
<u>Activity 3.1.</u> Strengthen human and operational capacities for locust monitoring  3.1.1 Human capacities on survey 3.1.2 Operational capacities (survey equipment)	Based on needs and specific requests	Yes	Caucasus countries mainly

<p><b>Activity 3.2.</b> 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)</p> <p>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)</p>	All CCA countries	Yes	Caucasus countries
<p><b>Activity 3.3.</b> Enhance preparedness for risk reduction through harmonized national contingency plans (at least one pilot country)</p>	Kyrgyzstan or Tajikistan or other interested country	Yes	
<b>OUTPUT 4- Improved response mechanisms to locust outbreaks</b>			
<p><b>Activity 4.1.</b> Strengthen human and operational capacities for locust control</p> <p>4.1.1 Human capacities on control 4.1.2 Operational capacities (control equipment)</p>	<p>4.1.1 On-the-job training for countries largely or increasingly using ULV sprayers, in particular Afghanistan, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan 4.1.2 Equipment: based on needs and specific requests</p>	Yes	<p>4.1.1 Azerbaijan, Georgia 4.1.2 Caucasus countries mainly</p>
<p><b>Activity 4.2.</b> Promote less harmful pesticides and alternatives to conventional pesticides</p> <p>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</p>	All CCA countries, incl. with field trial/ demonstration of biopesticides use in Uzbekistan	<p>Yes</p> <p>But more support is needed towards biopesticides introduction and operational use</p>	<p>4.2.1 &amp; 4.2.2 Caucasus countries 4.2.4 CCA countries <b>HIGH PRIORITY: BIOPESTICIDES</b></p>
<b>OUTPUT 5- Impact on human health and the environment mitigated and monitored</b>			
<p><b>Activity 5.1.</b> Mitigate impact of locust control operations on human health and the environment</p> <p>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</p>	<p>5.1.1 Equipment: based on needs and specific requests 5.1.2 All beneficiary countries and, for pilot activity, Kyrgyzstan 5.1.3 Extension material: all CCA countries</p>	Yes	Caucasus countries mainly
<p><b>Activity 5.2.</b> Monitor impact of locust control operations on human health and the environment</p> <p>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</p>	<p>5.2.1 Two additional beneficiary countries 5.2.2 Azerbaijan, Georgia, Kyrgyzstan and Tajikistan as well as two additional beneficiary countries 5.2.3 In CCA or outside the region</p>	<p>Yes</p> <p>(except 5.2.4)</p>	5.2.2 & 5.2.3 Azerbaijan, Georgia

OUTPUT 6- Public information and awareness increased			
<u>Activity 6.1.</u> Develop awareness among local populations	All CCA countries	Yes	Caucasus countries
<u>Activity 6.2.</u> Enhance visibility of locust issues to promote regional cooperation and improved management	All CCA countries	Yes	Caucasus countries