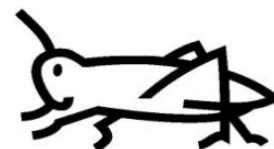




## LOCUST BULLETIN No. 62



FAO - Plant Production and Protection Division (AGP)

15 June 2019

**Situation level: CAUTION in Kyrgyzstan (DMA), Tajikistan (DMA) and Uzbekistan (DMA, CIT and LMI)**

**Situation level: CALM everywhere for the three locust pests**

### General situation during May 2019

#### Forecast until mid-July 2019

Moroccan Locust (DMA) hopper development was in progress in Kazakhstan and the Russian Federation while it was coming to an end in Azerbaijan, Georgia as well as in southern Central Asian (CA) countries where fledging, mating and egg-laying started. During the forecast period, DMA breeding will become widespread in all countries and the species will start disappearing in southern CA. Italian Locust (CIT) hatching occurred and hopper development was in progress in all countries except Afghanistan, where it was not reported as a pest. Migratory Locust (LMI) hatching started in Uzbekistan and Kazakhstan. For both CIT and LMI, fledging will start during the forecast period. In total, 524 342 ha were treated in CCA countries since the beginning of the 2019 campaign. This is only 36% of the area treated in the same period in 2018.

**Caucasus.** DMA hopper development continued in Azerbaijan and probably in Georgia. Adults started scattered flights and mating in late May. CIT hopper development was in progress in Azerbaijan while hatching has not yet started in Armenia. A total of 32 625 ha were treated in May in Azerbaijan.

**Central Asia.** DMA hopper development was coming to an end, fledging occurred and mating and egg-laying started in southern Central Asian countries (Afghanistan, Tajikistan, Turkmenistan and Uzbekistan). DMA hopper development was in progress in Kazakhstan and Russia. CIT hopper development was in progress in all countries,

except in Afghanistan where the species was not reported. LMI hatching started in late May in Kazakhstan and Uzbekistan where young hoppers were observed. In May, almost 401 934 ha were treated, which is less than a half of the area treated in May 2018

### Weather and Ecological Conditions in May 2019

**Warmer than usual weather generally prevailed and rain fell locally but the natural vegetation was drying out or dry, except in Kyrgyzstan.**

In **Caucasus**, warm weather prevailed. Despite precipitation, natural vegetation was drying out or dry in Azerbaijan and Georgia.

In Armenia, during May, daily temperatures ranged from 15 to 20°C in lowlands (from 5 to 10°C at night) and from 10 to 15°C at foothills (from 5 to 7°C at night). In the Ararat valley, daily temperatures increased to 25°C at the end of the month. Precipitation varied from very light to heavy depending on the geographic area.

In Azerbaijan, the weather was hot and suitable for hopper development in May. In Kudiri plains, daily temperatures ranged from 19 to 30°C while in Jeyranchel steppe they ranged from 21 to 28°C, reaching a maximum of 32-33°C. No precipitation was recorded. Air humidity ranged from 78 to 88% in the beginning of the month decreasing to 37-57% by its end. Natural vegetation cover completely dried out in traditional locust habitats. Cultivated crops were mostly at the maturity stage; winter cereals were ripe and harvesting was in progress while cotton plantings were at seedling stage.

In **Central Asia**, the weather was highly variable throughout the region.

In Afghanistan, during last two weeks of May, moderate to heavy rainfall occurred throughout the country causing local floods, which damaged agricultural and residential areas. Average daily temperatures were significantly lower than in May 2018. Winter wheat was harvested in eastern provinces and its harvesting continues in northern and southern provinces. In Badakhshan (northeast) and Ghor (west) provinces wheat is in grain filling stage.

In Kazakhstan, the weather was highly variable and cooler than usual, which slowed down locust development. In the South, the weather was unstable, with clear and cloudy days, light showers (from 2 to 39 mm) and gusty winds. The average daily temperature ranged from 8 to 25.5°C with minimum of 4°C (at night) and maximum of 36°C. In the East, the weather was unstable with cloudy days, heavy rains (68 mm) and sharp temperature fluctuations. The average daily temperature was of 11.1°C with minimum of -4°C and maximum of 27°C. In the West, the weather was variable with sunny, cloudy and windy days and light rains (from 0.6 to 29 mm). The average daily temperature ranged from 2°C to 30°C, with minimum of -2.8°C and maximum of 35°C. In the North, the weather was very unstable with gusty winds and light rains (from 0.5 to 26 mm). The average daily temperature ranged from -2.1°C to 20°C, with minimum as low as -7°C and maximum of 30°C.

In Kyrgyzstan, the weather was warm with temperatures and precipitations generally close to multiannual norm. In the south, average daily temperatures ranged from 17° to 19°C in the plains and from 14°C to 16°C at foothills. More specifically, temperatures ranged from 6/11°C to 12/17°C at night and from 19/24°C to 26/31°C during the day in the plains and from 4/9°C to 10/15°C at night and 15/20°C to 23/28°C during the day at foothills. In Naryn average daily temperatures ranged from 11°C to 13°C (4/9°C to 10/15°C at night and 15/20°C to 23/28°C during the day). Rain amount was below the norm. Natural vegetation (grasses and *Artemisia* spp. mixed with ephemerals) was green with a 6-10cm height and a dense cover.

In the Russian Federation, the weather was variable, with temperatures and precipitations generally close to the norm. In southern regions of the Central Federal District (FD), the average monthly temperatures ranged from 12.4° to 17.8°C and rainfall ranged from 37 to 66 mm. In the South FD, average temperatures ranged from 16.9° to 19.9°C and rainfall ranged from 40 to 59 mm. In North Caucasus FD, average temperatures ranged from 16° to 19.1°C and rain



amounted to 76 mm. In Volga FD, average temperatures ranged from 14.5° to 18.8°C and rain amounted to only 7.4 mm, which is well below the norm. In the Ural FD, average temperatures ranged from 12.7° to 15.8°C and rainfall ranged from 8.1 to 33 mm. In the Siberian FD, average temperatures ranged from 8.2° to 13.5°C and rainfall ranged from 6.9 to 22 mm, which is below the norm. In the Far East FD, average temperatures ranged from 4.5° to 13°C and rain amounted to 48 mm.

In Tajikistan, the weather in May was warm with light rains occurring mostly at night. It provided favorable conditions for locust development. In Khatlon average temperatures ranged from 18°C at night to 27°C during the day. In Sughd, average temperatures ranged from 14°C at night to 26°C during the day, reaching 29°C at the end of the month. Rains fell from 11 to 16 May in Districts of Republican Subordination (DRS) and from 23 to 27 May in Sughd. Usual agricultural works continued in cotton plantations. In southern Khatlon, harvesting of onions, apricots, sweet cherries, melons and apples was in progress; winter wheat harvesting also started in the southern regions. According to meteorological forecast, June should be hot with temperatures at least 5°C higher than in May.

In Uzbekistan, after a cool and wet April, relatively high temperatures were observed in May, ranging from 24 to 38°C, which accelerated locust development. Ephemeral vegetation in the foothills started to dry out. In traditional Moroccan Locust (DMA) breeding areas, vegetation density was 35-45 stems/m<sup>2</sup> and height of 8-12 cm

## Area treated in May 2019

Afghanistan	13 216 ha
Azerbaijan	32 625 ha
Kazakhstan	28 100 ha
Kyrgyzstan	24 520 ha
Russia	37 240 ha
Tajikistan	57 433 ha
Uzbekistan	208 800 ha

# Locust Situation and Forecast

(see also summary on page 1)

## CAUCASUS

### Armenia

#### • SITUATION

The situation was calm in May and no monitoring was carried out as hatching of the Italian Locust (CIT) has not started yet.

#### • FORECAST

*Limited Italian Locust (CIT) infestations only are expected mainly in Ararat and Artashat regions. Small-scale hatching and hopper development will take place during the forecast period.*

### Azerbaijan

#### • SITUATION

DMA late instar hopppers and young adults were present in Kudiri plains where swarm flights, mating and egg-laying were observed in the late May. In Jeyranchel steppe, mass DMA hatching was observed in mid-May, and by the end of the month populations were represented by late-instar hopppers. In late May, high densities of CIT were found in Samukhi district of Jeyranchel steppe. Control operations using two pyrethroids (active ingredients cypermethrin and alphacypermethrin) targeted bands of second and third instar DMA and, to a lesser extent, CIT hopppers. They were carried out in Kudiri plains, Jeyranchel, Garasu, Padarchel and Kharamin steppes with Ultra-Low Volume (ULV) vehicle-mounted Micron AU8115 and conventional tractor ventilator sprayers on a total of 28 900 ha, with almost half of this area (14 128 ha) in Imishli district in Kudiri plains.

#### • FORECAST

*Hotter than usual weather will boost mating and egg-laying of DMA in Kudiri plains where they will continue through June. In other areas, DMA fledging is expected in mid- to late June, followed by CIT fledging in July in Jayranchel steppe.*

### Georgia

#### • SITUATION

No report was received. Based on last year situation and results of the joint survey on 7-10 May in Kakheti region close to the border with Azerbaijan, DMA hoppper development continued through May while CIT populations were represented mostly by young hopppers.



## FORECAST

*DMA mating and egg-laying will take place by the end of June. CIT hoppper development will continue and fledging occur; breeding could start before the end of the forecast period. Control operations against CIT will continue in June.*

## CENTRAL ASIA

### Afghanistan

#### • SITUATION

Survey and control operations continued in May against DMA populations. In May, DMA was present as 1<sup>st</sup> to 3<sup>rd</sup> instar hopppers in western provinces (Ghor and Herat) while in other areas fledging occurred, followed by mating and egg-laying (Badghis, Baghlan, Balkh, Faryab, Samangan and Takhar). From 5 to 30 May, a total of 13 216 ha were treated against DMA and grasshopper infestations in eight provinces, with the largest area (7 568 ha) treated in Baghlan. Pesticides used are pyrethroids and an Insect Growth Regulator, both in ULV and Emulsifiable Concentrate (EC) formulations. In two provinces, Sar-i-Pul and Jowzjan, anti-locust treatments were not implemented because of security problems.

#### • FORECAST

*DMA fledging, which started in May in some infested provinces, will become widespread during the 1<sup>st</sup> half of June in all concerned areas while mating followed by egg-laying should begin during the same period. It is expected that drying vegetation, which will result in locust movements towards cultivated areas, and insecurity, which will hamper control operations, may result in some crop damage. Anti-locust campaign is expected to finish in mid-June in most provinces except Ghor, where it will continue till the end of the month.*

### Kazakhstan

#### • SITUATION

DMA hoppper surveys continued in May in Turkestan and Zhambyl. They were carried out on 1 693 900 ha of which only 22 600 ha (1.3%) were infested, including 7 100 ha above the economical threshold (ET). A total of 7 100 ha were treated, including 4 900 ha in Turkestan and 2 200 ha in Zhambyl. Evidently, DMA numbers dramatically declined compared to 2018 as the species entered the recession phase of its population dynamics.



CIT egg-bed surveys were carried out on 201 500 ha throughout the country. Egg-pods were found on 46 600 ha (23.1%). The number of eggs per pod varied from 5 to 45. From 0.1 to 50 % of the CIT egg-pods were damaged. CIT hopper surveys started and concerned 1 161 000 ha, of which 85 500 ha (7.3%) were infested including 21 000 ha (1.8%) above ET. As of 31 May, 1<sup>st</sup> to 3<sup>rd</sup> instar hoppers were present in the South and 1<sup>st</sup> and 2<sup>nd</sup> instar hoppers in the North. The most infested provinces were West-Kazakhstan (8 500 ha infested above ET), Aktobe (6 100 ha) and Almaty (4 000 ha). A total of 21 000 ha were treated.

LMI egg-bed surveys were carried out on 64 200 ha; egg-pods were found on 5 900 ha (9.2 %). The number of eggs per pod varied from 36 to 110. From 5 to 30% of the LMI egg-pods were damaged. LMI hopper surveys also started, covering 163 300 ha. First and 2<sup>nd</sup> instar hoppers were found on 1 500 ha but below ET. Therefore, no control operations were carried out against that locust pest.

A total of 28 100 ha were treated against CIT and DMA, which is less than 5% of the area treated in Kazakhstan in the same period a year ago..

#### • FORECAST

DMA mating and egg-laying are expected during the 1<sup>st</sup> and 2<sup>nd</sup> decades of June in Turkestan and during the 2<sup>nd</sup> and 3<sup>rd</sup> decades of June in Zhambyl.

CIT hopper development will continue in June with presence of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> instar hoppers in most provinces as well as fledging in southern and western provinces. LMI hopper development will continue and fledging will occur in the South and the West while hatching will start and be followed by hopper development up to 4<sup>th</sup> instar in the North.

#### Kyrgyzstan

##### • SITUATION

DMA surveys were conducted on 27 002 ha of which 22 950 ha (85.0%) were infested at an average density of 5–19 individuals/m<sup>2</sup>. DMA hoppers were of 4<sup>th</sup> and 5<sup>th</sup> instars. At the end of the month, adults prevailed, which formed flying groups and started mating. A total of 22 370 ha were treated by seven vehicle-mounted Micron AU8115 sprayers including 11 170 ha in Jalal-Abad, 7 700 ha in Osh and 3 500 ha in Batken. Pesticides used were three pyrethroids and one organophosphate in EC and ULV formulations.

CIT hopper surveys were carried out in Naryn on 10 455 ha of which 8 005 ha (76.6%) were infested at an average density of 9–60 hoppers/m<sup>2</sup>. CIT hoppers were of 2<sup>nd</sup> to 4<sup>th</sup>

instars. Control operations were carried out on 2 150 ha by three vehicle-mounted Micron AU8115 sprayers using three pyrethroids and one organophosphate in EC and ULV formulations

#### • FORECAST

DMA mating and egg-laying will generalize in June and control operations against that pest should be completed by the end of the month in Jalal-Abad, Osh and Batken. CIT hopper development will continue in Naryn and Chui. CIT control operations should cover up to 30 000 ha

#### Russian Federation

##### • SITUATION

Spring egg-pod surveys came to an end while hopper surveys started. Locust hoppers were found on 117 950 ha, including 82 760 ha (70.2%) above the economic threshold (ET); in addition, grasshopper nymphs were found on 154 510 ha, including 2 150 ha (1.4%) over ET. In the Central FD, locust hoppers infested 50 ha with densities ranging from 2.1 to 4 hoppers/m<sup>2</sup>. Grasshopper nymphs were present on 5 670 ha at densities between 0.98 and 3 hoppers/m<sup>2</sup>. In the South FD, locust hoppers were observed on 26 100 ha at densities ranging from 26 to 470 hoppers/m<sup>2</sup>. Grasshopper nymphs were also found on 24 590 ha at densities ranging from 0.56 to 4 hoppers/m<sup>2</sup>. In North Caucasus FD, locust hopper populations were recorded on 88 690 ha at densities of 12–200 hoppers/m<sup>2</sup>; nymphs of grasshoppers were found on 72 700 ha at densities of 2.34–18 hoppers/m<sup>2</sup>. In the Volga FD, locust hoppers were observed on 3 100 ha at densities of 0.56–2 hoppers/m<sup>2</sup>; nymphs of grasshoppers were found on 8 570 ha at densities of 0.44–7 hoppers/m<sup>2</sup>. In the Ural FD, no locust hoppers were found but grasshopper nymphs were recorded on 16 720 ha at densities of 2.75–5.50 hoppers/m<sup>2</sup>. In the Siberian FD, no locust hoppers were observed but grasshopper nymphs were present on 24 120 ha at densities of 2.05–26 hoppers/m<sup>2</sup>. In the Far East FD, no locust hoppers were observed but grasshopper nymphs were found on 2 140 ha at densities of 0.93–4.30 hoppers/m<sup>2</sup>. A total of 37 240 ha were treated in South and North Caucasus FDs, including 11 000 ha by air. The largest treated areas were in Stavropol (15 430 ha), Rostov (5 520 ha), Dagestan (4 680 ha) and Chechnya (2 420 ha).

#### • FORECAST

*Locust hatching will occur in Central, Ural and Siberian FDs and hopper development will take place everywhere in June. Fledging should start in late June in the southern FDs and in July elsewhere.*

#### Tajikistan

##### • SITUATION

DMA hopper development continued in Khatlon, Sughd and Districts of Republican Subordination (DRS) and fledging started in late May. Surveys to monitor adult group movements, mating and egg-laying started. In areas bordering Uzbekistan joint efforts were implemented to control DMA populations and protect the crops.

CIT hatching started followed by its hopper development in six districts of Sughd where control operations targeted hopper concentrations. Also, grasshopper hatching occurred in Gorno-Badakhshan in early May on 310 ha.

As of June 6, a total of 57 433 ha were treated against DMA and CIT hopper populations. Pyrethroid and organophosphate insecticides (5 205 L in total) were used.

##### • FORECAST

*DMA life cycle will come to an end during the forecast period. CIT and grasshopper nymphal development will continue with fledging occurring prior to the end of the forecast period.*

#### Turkmenistan

##### • SITUATION

No report was received. In view of the situation in the neighbouring countries, DMA fledging should have occurred and mating and egg-laying be in progress.

##### • FORECAST

*DMA life cycle should come to an end at the beginning of the forecast period.*

#### Uzbekistan

##### • SITUATION

With temperatures increasing in May, DMA hopper development accelerated and between 10 and 16 May fledging took place in the southern provinces. Swarm flights started there on 20 May. In the central provinces (Navoyi, Jizzak and Samarkand), DMA late instar hoppers prevail with densities ranging from 12 to 20 individuals/m<sup>2</sup>.

CIT hatching started in early May in central provinces and on 20 May in Karakalpakstan. LMI hatching also started on 20 May in the Aral Sea zone.

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In May, control operations were carried out on 208 800 ha. Overall, since the beginning of the 2019 locust campaign, 258 000 ha have been treated, including 200 000 ha against DMA (mostly in the South), 35 000 ha against CIT (in Karakalpakstan, Tashkent and Fergana), 18 000 ha against *Calliptamus turanicus* (in Navoyi) and 5 000 ha against LMI (in Karakalpakstan). Pesticides used are pyrethroids and imidacloprid.

##### • FORECAST

*DMA mating and egg-laying will generalize in June and control operations against that locust pest will come to an end while they will probably intensify against CIT hoppers and probably start against LMI. Because of high spring flooding in the Aral Sea zone, late-season hatching of LMI cannot be excluded.*

## Announcements

**Locust warning levels.** A color-coded scheme indicates the seriousness of the current situation for each of the three main locust pests: green for calm, yellow for caution, orange for threat and red for danger. The scheme is applied to the Locust Watch web page dedicated to the current locust situation ("Locust situation now!") and to the regional monthly bulletin header. The levels indicate the perceived risk or threat of current locust infestations to crops and appropriate actions are suggested for each level.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send standardized information using the national monthly bulletin template. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks and upsurges, updates should be sent at least once/week. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to [CCA@Bulletins@fao.org](mailto:CCA@Bulletins@fao.org). Monthly information received by the 5<sup>th</sup> of each month will be included in the CCA Locust Bulletin to be issued by mid-month; otherwise, it will not appear until the next bulletin. Reports should be sent even if no locusts were found or if no surveys were conducted.



## **Events and activities in May 2019**

- **Training-of-Trainers on locust management:**
  - National session on locust spraying and pesticide risk reduction, including the “Automatic System for Data Collection” (ASDC), delivered by the Georgian Master-Trainers to the benefit of 16 Plant Protection/locust Experts, on 15-18 May 2019 in Kakheti, Georgia.
  - National sessions on locust management delivered by the Azeri Master-Trainers to the benefit of 15 Plant Protection/Locust Experts, on 30-31 May 2019 in Saatli, Azerbaijan.
  - National session on locust management delivered by the Armenian Master-Trainers to the benefit of 12 Experts, in May in Yerevan, Armenia.
- **Practical Guidelines on pesticide risk reduction for locust control in CCA:** four language versions (English, Kyrgyz, Russian and Tajik) cleared by the FAO internal quality check. Last version, in Dari, under finalization.
- **Joint survey in Caucasus**, involving 12 Plant Protection/Locust Experts (three Armenian, two Azeri, four Georgian and three Russian), carried out on 7-10 May 2019 in Kakheti, Georgia.
- **Cross-Border survey between Tajikistan and Uzbekistan** (against their own funds) took place on 5-8 May 2019 on 30 000 ha allowing to develop a joint strategy to control locusts near the border.
- **Procurement of locust survey and control equipment:** process finalized for last remaining items under project GCP/INT/238/JPN and ongoing under project GCP/GLO/963/USA.
- **Human Health and Environmental aspects:**
  - Remote technical assistance to be provided in early May to the Azeri Human Health and Environmental Monitoring Team in view of the start of the field monitoring missions;
  - Development of an integral system for health and environmental monitoring of locust control operations in Georgia, including on-the-job training on monitoring techniques, scheduled on 29 May- 8 June 2019 during the visit of the FAO International Consultant, Environmental Expert.
- **Technical assistance to Kazakhstan**, mission

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conducted on 4-16 May 2019 by the FAO Agricultural Officer/Locust Management with the aim to review and assess the methodology for survey and control activities against the Moroccan Locust in Turkestan and Zhambyl oblasts.

- **Visit to Turkmenistan** by the FAO Agricultural Expert/Locust Management postponed from May to June 2019 due to visa issues. The mission aims to support the country participation in the locust Programme in CCA and related projects.
- **Report of evaluation of project GCP/INT/238/JPN** shared with all stakeholders for comments.
- **New website “Locust Watch in CCA”** published at: <http://www.fao.org/locusts-cca/en/>

## **Forthcoming events and activities in June 2019**

- **Training-of-Trainers on locust management:**
  - National sessions on locust management scheduled to the benefit of 15 experts respectively in Tovuz, Shaki and Shamakhi districts, Azerbaijan.
  - National sessions on locust management scheduled to the benefit of Russian locust/Plant Protection Experts in June in the Russian Federation (Stavropol Territory, Volgograd Region and Orenburg Region), against their own funds.
- **Practical Guidelines on pesticide risk reduction for locust control in CCA:** hard copies printed and dispatched to Afghanistan, Kyrgyzstan and Tajikistan; and web versions made available on website “Locust Watch in CCA”.
- **Procurement of locust survey and control equipment:** process ongoing under project GCP/GLO/963/USA.
- **Human Health and Environmental aspects:**
  - Azerbaijan: last three missions of the Human Health and Environmental Monitoring Team scheduled on 29 May to 3 June in Hajigabul, on 7-12 June in Jeyranchel, Eldar plains and on 14-19 June 2019 in Ajinohur, Azerbaijan.
  - Georgia: Development of an integral system for health and environmental monitoring of locust control

operations in Georgia: Action Plan to be shared by the Human Health and Environmental Monitoring Team in Georgia in view of the start of the field monitoring missions.

- **Visit to Turkmenistan** planned on 24-28 June 2019 by the FAO Agricultural Officer/Locust Management, following visa release by national authorities.



