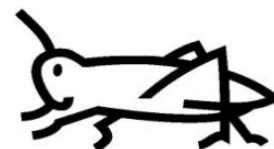




LOCUST BULLETIN No. 63



FAO - Plant Production and Protection Division (AGP)

15 July 2019

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

Situation level: CALM everywhere or for the other locust pests

General situation during June 2019

Forecast until mid-August 2019

Hot and dry weather accelerated Moroccan Locust (DMA) development and late-instar hoppers and adults prevailed in its populations. In the southern areas of Central Asia (CA) its life cycle came to an end while swarm flights, mating and egg-laying continued elsewhere. During the forecast period, DMA egg-laying will subside and adults will die off everywhere. Italian Locust (CIT) and Migratory Locust (LMI) hopper development was in progress in all countries except Afghanistan and fledging occurred at the end of the month. For both CIT and LMI, mating and egg-laying will take place during forecast period. In total, about one million ha were treated in CCA countries in June and about 1.6 million ha since the beginning of the 2019 campaign. This is less than a half of the area treated in the same period in 2018. The largest declines in infested and treated areas took place in Kazakhstan and Russia.

Caucasus. DMA hopper development continued in **Azerbaijan** and probably in **Georgia**. Adults were mating and egg-laying through June. CIT hopper development was in progress in Azerbaijan and started in **Armenia**. A total of about 35 000 ha were treated in May in Azerbaijan and Georgia (which is more than in 2018) and no treatments took place in Armenia.

Central Asia. DMA life cycle completed in southern CA countries (**Afghanistan, Tajikistan, Turkmenistan and Uzbekistan**) while swarm flights, mating and egg-laying continued in **Kazakhstan** and **Russia**. CIT and LMI hopper

development was in progress in all countries except Afghanistan and fledging occurred at the end of the month. Mating and egg-laying of these species will take place during the forecast period. In June, about one million ha were treated, which is significantly lower than the area treated in June 2018, mostly because of sharp decline of infestations in Kazakhstan and Russia. In other CA countries, infestations were at similar to 2018 levels (Tajikistan, Turkmenistan and Uzbekistan), slightly higher (Afghanistan) or slightly lower (Kyrgyzstan).

Weather and Ecological Conditions in June 2019

Hotter than usual weather with lower than usual precipitations generally prevailed and the natural vegetation dried out in most of the traditional locust breeding areas.

In **Caucasus**, hot weather prevailed and natural vegetation dried out.

In Armenia, during most of June, daily temperatures exceeded the norm and ranged from 32 to 37°C (from 18 to 25°C at night). In the end of the month, temperatures decreased to normal (from 25 to 32°C during the day and from 10 to 18°C at night). Precipitation was lower than usual.

In Azerbaijan, the weather was hot and dry with average daily temperatures ranging from 24 to 38°C (maximum 42°C), which is above normal. As a result, natural vegetation in steppes has dried out completely and locusts started to invade cultivated fields (mays, sunflower, cucurbits). In June, grain crops were harvested and cotton plants were flowering.

In Georgia, weather was generally warmer than usual, with average temperature of 36°C during the day and 10°C at night, with lower than usual precipitation.

In **Central Asia**, the weather was generally hot and dry, except for Kazakhstan, where moderate to heavy rains occurred in the East and in the North, and the Russian Federation, where rainfall exceeded the norm in the Ural, Siberian and Far Eastern Federal Districts (FD).

In Afghanistan, above normal temperatures prevailed throughout the country, with highest temperatures recorded in eastern, southern and northern provinces. Winter wheat was harvested in most provinces except for Badakhshan (northeast), Ghor and Faryab (west) provinces where it is still in vegetative stage.

In Kazakhstan, the weather was variable. In the South, the weather was unstable, with hot and cloudy days, light to moderate rainfall (from 3 to 65 mm) and gusty winds up to 28 m/s. The average daily temperature were slightly higher than usual ranging from 13 to 33°C with minimum of 9°C (at night) and maximum of 43°C. In the East, the weather was unstable with cloudy days, very heavy rains (161 mm) and sharp temperature fluctuations. The average daily temperature was of 16.9°C with minimum of 6°C and maximum of 32°C, which is close to the norm. In the West, the weather was mostly sunny and windy, with moderate rains (from 5 to 28.6 mm). The average daily temperature ranged from 12°C to 35.5°C, with minimum of 7.1°C and maximum of 40°C, which is close to the norm. In the North, the weather was very unstable and cooler than usual, with heavy rains (from 19.4 to 81.4 mm). The average daily temperature ranged from -7°C to 27.5°C, with minimum as low as 0°C and maximum of 35°C.

In Kyrgyzstan, the weather was warm with temperatures and precipitations generally close to or below the multiannual norm. In the South, average daily temperatures were close to the norm ranging from 22° to 24°C in the plains and from 18° C to 20°C at foothills. Maximum daily temperatures reached 36°C in the plains and 32°C at foothills. In Naryn average daily temperatures were close to the norm ranging from 14°C to 16°C (6/11°C at night and 22/27°C during the day). Rain amount was below the norm. Natural vegetation (grasses and *Artemisia* spp. mixed with ephemerals) was drying or dried out with 3 to 7 cm of height and medium density.

In the Russian Federation, the weather was generally warmer than usual. In the Central Federal District (FD), the average monthly temperatures were above the norm ranging from 17.3° to 31.9°C. Rainfall was above the norm ranging from 25 to 93 mm. In the South FD, average temperatures



ranged from 25.2° to 37.7°C, which is significantly above the norm. Rainfall was close to the norm ranging from 17 to 79 mm. In North Caucasus FD, average temperatures ranged from 22.1° to 32.2°C and rain amounted to 43 mm, both parameters close to the norm. In Volga FD, average temperatures ranged from 17.5° to 33°C and rain amounted to only 4.8 mm, which is well below the norm. In the Ural FD, average temperatures ranged from 14.8° to 29.9°C and rainfall amounted to 80.3 mm, both parameters above the norm. In the Siberian FD, average temperatures ranged from 15.5° to 28.6°C and rainfall ranged from 22 to 95 mm, which is above the norm. In the Far East FD, average temperatures ranged from 8.9° to 28.1°C and rainfall ranged from 47 to 99 mm, above the norm.

In Tajikistan, the weather in June was 3 to 5°C warmer than in 2018, with light scattered rains. Usual agricultural works continued in cotton plantations. In southern Khatlon, harvesting of onions, potatoes, apricots, sweet cherries, melons and cucurbits was in progress; winter wheat harvesting finished in the South and started in the North. According to meteorological forecast, July should be very hot with daily temperatures of 40-41°C.

In Uzbekistan, June weather was very hot and dry, with temperatures ranging from 34 to 40°C. Ephemeral vegetation in the foothills completely dried out. In traditional Moroccan Locust (DMA) breeding areas, dried vegetation density was 20-30 stems/m² and height of 3-5 cm.

Area treated in June 2019

| | |
|--------------|-----------------------|
| Afghanistan | 41 629 ha |
| Azerbaijan | 15 390 ha |
| Georgia | 19 597 ha |
| Kazakhstan | 434 701 ha |
| Kyrgyzstan | 30 837 ha |
| Russia | 214 990 ha |
| Tajikistan | 45 612 ha |
| Turkmenistan | 139 033 ha (May+June) |
| Uzbekistan | 204 000 ha |

Locust Situation and Forecast

(see also summary on page 1)

CAUCASUS

Armenia

• SITUATION

Locust monitoring was conducted in June on 40 000 ha. Infestations of Italian locust (CIT) with density ranging from 3 to 7 hoppers/m² were found on 1 310 ha in two regions, Ararat and Vajots Dzor. No chemical treatments were applied yet.

• FORECAST

CIT hopper development will take place during the forecast period in limited areas, followed by fledging by the end of July. These small-scale infestations will be controlled with ground insecticide treatments.

Azerbaijan

• SITUATION

Hot and dry weather was favourable for locust development. In most areas DMA finished its hopper development and fledged. In Kudiri plains, mass egg-laying occurred in late June while in Jeyranchel steppe DMA populations were presented by late-instar hoppers by the end of the month. Also, in early June, mass hatching of CIT took place in Jeyranchel steppe. In Samukhi district, on forested lands managed by the Ministry of Ecology and Natural Resources, DMA populations were mixed with CIT and even LMI (the latter is unusual and the origin of this LMI infestation is not clear). The drying out of the natural vegetation caused hopper bands to move towards cultivated fields; however, because of targeted and timely control operations, crop damages were minimal. In general, DMA infestations remained at the same level as in 2018. Control operations using two pyrethroids (active ingredients cypermethrin and alpha-cypermethrin) targeted hopper bands of different instars of DMA, CIT and LMI and, to a lesser extent, groups of DMA adults to protect crops. 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 15 390 ha, with largest areas treated in Kudiri plains and Jeyranchel steppe.

• FORECAST

DMA fledging followed by egg-laying will occur throughout the country. Scattered populations of CIT and LMI, which will escape control, will fledge and breed in July-August in

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Jeyranchel steppe. Control operations are over in Kudiri plains but will continue in Jeyranchel steppe. Also, monitoring of crop fields will continue in order to prevent losses by applying small-scale and targeted crop protection anti-locust treatments where necessary.

Georgia

• SITUATION

In June, CIT populations were represented by late-instar hoppers and immature adults. After the drying out of natural vegetation and harvesting of cereals, CIT hopper bands were recorded attacking sunflower, vineyards, vegetables, cucurbits and other cultivated crops. Chemical treatments targeting CIT hopper bands were applied to 19 597 ha, which exceeds the areas treated in 2018. Treatments used two pyrethroids (alfa-cypermethrin and deltamethrin) and one organophosphate (chlorpyrifos) applied by vehicle-mounted Scout and Micron AU 8115 sprayers. The largest areas were treated in Kakheti (8 858 ha) and Kvemo Kartli (7 699 ha) regions.

FORECAST

CIT will finish its hopper development in July, fledge and start mating. Egg-laying will take place at the end of the forecast period.

CENTRAL ASIA

Afghanistan

• SITUATION

In the northern and northeastern provinces (Baghlan, Kunduz, Takhar, Samangan, Balkh), DMA completed its annual cycle while in the southwestern provinces (Ghor and Herat), mating and egg-laying continued through June. Anti-locust campaign ended in the north but still continued in Ghor, Faryab and Badakhshan. In the latter province, DMA swarms were recorded arriving from an insecure area (Shiva desert). From the beginning of the campaign on 25 March, 53 264 ha were treated against DMA and 1 581 ha against grasshoppers, which is slightly higher than in 2018. Largest areas were treated in Baghlan (12 704 ha), Balkh (10 500 ha), Takhar (9 500 ha) and Kunduz (8 244 ha). Pesticides used were pyrethroids (deltamethrin and lambda-cyhalothrin) and an Insect Growth Regulator (diflubenzuron), both ULV and

Emulsifiable Concentrate (EC) formulations, with a total volume of 14 795 liters). Treatments were applied with hand-held and vehicle-mounted sprayers.

- **FORECAST**

DMA annual cycle completed in most areas except Ghor, Faryab and Badakhshan where it will complete in July. Small-scale control operations will take place in these three provinces.

Kazakhstan

- **SITUATION**

DMA hopper surveys continued in June in Turkestan and Zhambyl. They were carried out on 1 716 300 ha of which only 7 302 ha were infested with densities above the economical threshold (ET). A total of 7 302 ha were treated, including 4 977 ha in Turkestan and 2 325 ha in Zhambyl. During mating and egg-laying, surveys were conducted on 928 040 ha out of which 129 400 ha were infested, including with densities exceeding 5/m² on 68 853 ha.

CIT hopper surveys covered 9 256 400 ha, of which 789 200 ha (8.5%) were infested including 330 500 ha (3.6%) above ET, which were treated. In June, all hopper instars and adults were present in populations. The most infested provinces were West-Kazakhstan (105 400 ha infested above ET), Aktobe (48 900 ha) and Almaty (48 100 ha).

LMI hopper surveys covered 2 323 800 ha out of which 204 300 ha (8.8%) were infested including 125 000 ha (5.3%) above ET, which were treated. All hopper instars were present in populations in June. The largest infested areas were found in Kyzylorda (72 600 ha) and Almaty (40 200 ha).

The total area of anti-locust treatments since the beginning of 2019 campaign amounted to 462 802 ha, which is about a half of the area treated by the same time in 2018.

- **FORECAST**

DMA will complete its annual cycle with eggs remaining in the soil until next spring, when hatching is expected at a larger scale compared to 2019.

CIT hopper development will continue in July followed by fledging and mating. LMI hopper development will continue and fledging will occur in North and East while mating and egg-laying will take place in the South and West.

Kyrgyzstan

- **SITUATION**

DMA surveys were completed in June with 850 ha surveyed and 500 ha infested with average density from 5 to



19 individuals/m². Populations were represented by 5th instar hoppers and adults. In mid-June, mass egg-laying occurred. Chemical treatments were completed against this species in June, they were done by one vehicle-mounted Micron AU8115 sprayer and concerned 2 250 ha.

CIT hopper surveys were carried out in Naryn, Chui and Talass on 46 259 ha out of which 31 941 ha (69%) were infested with densities ranging from 9 to 60 individuals/m². CIT hoppers were of 4th and 5th instars in Naryn and of 5th instar in Chui and Talass. CIT infestation somewhat declined compared to the same period of 2018. Control operations were carried out on 28 287 ha by eight vehicle-mounted Micron AU8115 sprayers using two pyrethroids (lambda-cyhalothrin and deltamethrin) and one organophosphate (chlorpyrifos) in EC and ULV formulations.

- **FORECAST**

DMA egg-laying will continue and gradually subside in July with locusts completing their life-cycle. CIT will fledge followed by mating and egg-laying. CIT control operations should cover up to 10 000 ha in July in Naryn and Talass.

Russian Federation

- **SITUATION**

During hopper and adult surveys, hoppers were found to infest 345 340 ha including 232 230 ha (67%) above ET. Adults infested 50 980 ha including 42 590 ha (83.5%) above ET. The scale of locust infestations in 2019 is about 40% lower than in 2018. In addition, grasshopper nymphs infested 624 640 ha including 43 060 ha above ET. Adult grasshoppers infested 10 000 ha including 20 ha above ET. Grasshopper infestations are slightly lower than in 2018.

More specifically, in the Central FD, locust hoppers infested 50 ha at densities from 0.9 to 4 hoppers/m². Grasshopper nymphs were present on 12 570 ha at densities from 4.17 to 20 hoppers/m². Fledging started in June. In the South FD, locust hoppers were observed on 108 620 ha at densities ranging from 19.3 to 2 000 hoppers/m². Adult locust infestations were found on 16.060 ha with densities ranging from 22.60 to 220 adults/m². Grasshopper nymphs were also found on 60 610 ha at densities ranging from 1.41 to 30 hoppers/m². Adult grasshoppers infested 5.110 ha with densities between 1.05 and 5 adults/m². In early June, DMA and LMI fledging occurred. In North Caucasus FD, locust

hopper populations were recorded on 215 970 ha at densities of 11.3-200 hoppers/m². Adult locusts infested 34 920 ha with densities ranging from 9 to 40 adults/m². DMA and CIT populations consisted of late-instar hoppers and adults. Mating and egg-laying occurred. Nymphs of grasshoppers were found on 172 950 ha at densities of 6.8-75 hoppers/m². In the Volga FD, locust hoppers were observed on 11 290 ha at densities of 1.2-40 hoppers/m²; nymphs of grasshoppers were found on 97 330 ha at densities of 2.5-40 hoppers/m². Most populations consisted of mid-instar hoppers. In the Ural FD, no locust hoppers were found but grasshopper nymphs were recorded on 79 060 ha at densities of 1.9-16 hoppers/m². Hatching and hopper development continues. In the Siberian FD, locust hoppers were present on 2 470 ha at densities of 0.7-2 hoppers/m². Grasshopper nymphs infested 168 360 ha at densities of 4.9-72 hoppers/m². Adult grasshoppers infested 4 710 ha at densities of 0.9-3 adults/m². All hopper instars were present in locust and grasshopper populations. In the Far East FD, no locust hoppers were observed but grasshopper nymphs were found on 33 750 ha at densities of 2.9-14 hoppers/m².

A total of 214 990 ha were treated mostly in North Caucasus and South FDs. This is less than a half of the area treated in 2018. However, extremely high locust densities, particularly in the South FD may result in a gradual increase of the scale of locust infestations next year.

• FORECAST

DMA will complete its life cycle. CIT and LMI hopper development will complete everywhere, followed by fledging. Adults will mate and lay eggs.

Tajikistan

• SITUATION

DMA hopper development finished in Khatlon, Sughd and Districts of Republican Subordination (DRS) followed by fledging, mating and egg-laying. Swarm flights were observed in Pyanj district of Khatlon, at the border with Afghanistan and in several other areas. Because of swarm flights, some areas were repeatedly treated to prevent crop damage. In the North, in several districts of Sughd bordering with Batken province of Kyrgyzstan anti-locust treatments were conducted by both countries.

CIT continued its hopper development in Sughd.

In June, 45 612 ha were treated bringing the total area treated from the beginning of the campaign to 103 045 ha, which is very close to the area treated in 2018. The bulk of



the treatments (92 805 ha) concerned DMA while 10 240 ha were treated against CIT.

• 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 mating and egg-laying should have been in progress in June.

In total, 465 545 ha were surveyed against locusts in March-June out of which 139 033 ha were found infested and were treated, including 96 404 ha by ULV. The scale of the infestation is similar to 2018.

• FORECAST

DMA life cycle will be completed and eggs will remain in the soil until next spring.

Uzbekistan

• SITUATION

DMA adults mated and laid eggs and started to die off during June. Chemical treatments against this species finished on 20 June throughout the country. A meeting with colleagues from South Kazakhstan regarding the situation near the joint border took place on Kazakh territory on 17th May.

CIT continued its hopper development followed by fledging. By the end of June populations included mid- and late instar hoppers and adults. Treatments are in progress mostly in Karakalpakstan.

LMI continued its hopper development in the Aral Sea zone.

In June, control operations were carried out on 204 000 ha. Overall, since the beginning of the 2019 locust campaign, 462 000 ha have been treated, including 350 000 ha against DMA (mostly in the South), 45 000 ha against CIT (in Karakalpakstan, Tashkent and Fergana), 25 000 ha against *Calliptamus turanicus* (in Navoyi) and 42 000 ha against LMI (in Karakalpakstan). Pesticides used are pyrethroids

(lambda-cyhalothrin) and imidacloprid. In general, the level of locust infestations in 2019 was similar to that in 2018.

• FORECAST

DMA will finish its life cycle and eggs will remain in the soil until next spring. The scale of hatching in 2020 is expected to be similar to the one in 2019. *CIT* and *LMI* adults will mate and lay eggs. Because of high spring flooding in the Aral Sea zone, and the gradual recession of the water during the summer, 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. Monthly information received by the 5th 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 June 2019

• Training-of-Trainers on locust management:

- National sessions on locust management delivered by the Master Trainers to the benefit of 15 locust/Plant Protection Experts, respectively on 18-19 June in Tovuz, Shaki and on 24-25 June in Shamakhi districts, Azerbaijan.
- National sessions on locust management delivered by the Master Trainers, respectively on 13 June in Stavropol Territory, to the benefit of 26 locust/Plant Protection Experts, on 20 June in Orenburg Region



to the benefit of 12 experts, and, on 28 June in Volgograd Region to the benefit of 13 experts, against their own funds.

- **Practical Guidelines on pesticide risk reduction for locust control in CCA:** printing of hard-copies almost finalized; web versions in English and Russian available on FAO website "Locust Watch in CCA".
- **Procurement of locust survey and control equipment:** ongoing process under project GCP/GLO/963/USA. Delivery ongoing of last items procured under project GCP/INT/238/JPN to Afghanistan, Kyrgyzstan and Tajikistan.
- **Human Health and Environmental aspects:**
 - Azerbaijan: last three missions of the Human Health and Environmental Monitoring Team carried out, respectively, 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: first mission of the Human Health and Environmental Monitoring Team carried out on 24-30 June in Kvemo kartli, Kakheti.
- **Visit to Turkmenistan** undertaken on 24-28 June 2019 by the FAO Agricultural Officer/Locust Management, mainly to advocate for the signature of the ongoing project GCP/GLO/963/USA "Locust disaster risk reduction in Caucasus and Central Asia (CCA)" and for the envisaged locust project funded by Japan/JICA, as part of the entire Programme.
- **One-day press tour organized by FAO in Kyrgyzstan:** carried out on 25 June 2019 in Chui region where anti-locust operations were conducted, with representatives and specialists from the Ministry of Agriculture, journalists, donor and FAO representatives. The aim was to showcase the results of the recently accomplished GCP/INT/238/JPN project on locust management in Afghanistan, Kyrgyzstan and Tajikistan and to increase awareness on locust issues.

- **New staff, Locusts and Transboundary Plant Pests and Diseases Team, at FAO Headquarters:** Mr Shoki AlDobai was appointed on 1 June 2019 as Senior Agricultural Officer and Team Leader, after the retirement of Ms Annie Monard in April.



Forthcoming events and activities in July 2019

- **Practical Guidelines on pesticide risk reduction for locust control in CCA:** hard copies dispatched to Afghanistan, Kyrgyzstan and Tajikistan; and web versions made available in Dari, Kyrgyz and Tajik on website “Locust Watch in CCA”.
- **Procurement of locust survey and control equipment:** ongoing process under project GCP/GLO/963/USA. Delivery ongoing of last remaining survey equipment to Afghanistan, Kyrgyzstan and Tajikistan under project GCP/INT/238/JPN.
- **Human Health and Environmental aspects:**
 - Georgia: second mission of the Human Health and Environmental Monitoring Team scheduled in mid-July 2019 in Kakheti.

