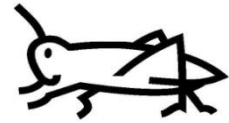




LOCUST BULLETIN No. 46



FAO - Plant Production and Protection Division (AGP)

15 September 2016

Situation level: THREAT in Russia

Situation level: CAUTION in Kazakhstan and Uzbekistan (Migratory Locust, LMI)

Situation level: CALM elsewhere

General Situation during August 2016 Forecast until mid-October 2016

Moroccan Locust (DMA) egg-laying continued or was coming to an end in northern Central Asian (CA) countries and in Azerbaijan. Italian Locust (CIT) fledging continued in Armenia and Russia while egg-laying was in progress in Tajikistan and Kazakhstan and came to an end in Georgia. Asian Migratory Locust (LMI) mating and egg-laying started in Kazakhstan, while fledging continued until mid-August in Russia. In Uzbekistan, LMI swarms formed and new hatching started. In August, more than 480 000 ha were treated mostly against LMI.

Caucasus. DMA egg-laying was coming to an end in Azerbaijan, where almost 16 600 ha were treated. CIT egg-laying was completed in Georgia but has not started yet in Armenia. No other control operations were carried out and no further locust development is expected this year.

Central Asia. DMA egg-laying continued in Kazakhstan and Russia. CIT mating and egg-laying were in progress in Tajikistan and Kazakhstan, while CIT fledging continued until mid-August in Russia. As far as LMI is concerned, hoppers were still present in

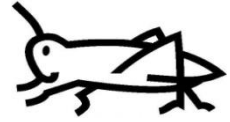
some parts of Kazakhstan while mating and egg-laying started in others, fledging continued until mid-August in Russia and new hatching started—and more is expected- in western Uzbekistan where adults from earlier hatching formed swarms. Almost 464 000 ha were treated against locust pests in August (26% of the area treated in July) and in two countries only, Kazakhstan and Russia, of which more than 70% against LMI. During the forecast period, control operations will come to an end in these two countries and egg-beds/pods surveys will continue or start.

Weather and Ecological Conditions in August 2016

Warm and dry weather prevailed in Caucasus and Central Asia.

In Caucasus, the weather was warm to hot and dry. In Armenia, the weather was mostly warm and dry with temperatures ranging from 10 to 38°C in lowlands, 9 to 35°C at foothills and 7 to 30°C in the mountainous areas. Natural vegetation had a medium cover and was drying out. Harvest of grain, fruit and vegetable continued and pre-sowing of winter crops started under suitable conditions.

In Azerbaijan, the weather was very hot. Daily temperature increased up to 44/45°C with peaks of



42/47°C. No rain fell. Natural vegetation was dry in all traditional locust habitats. In areas where locust surveys were carried out, crops were ripening. Overall, these weather conditions were suitable for DMA massive egg - laying.

In Georgia, temperatures ranged from 14.4 to 39.1°C and only little rain fell, amounting 0.6 mm. Natural vegetation was dry with a medium to high density. Sunflower, sorghum, grapes and melon harvest was in progress.

In **Central Asia**, the weather was generally warm and dry throughout the region.

In Kazakhstan, the weather was variable but relatively warm and dry. In the South, the weather was variable with sunny and cloudy days and some rains (amounting 4.0 to 26.2 mm). The average daily temperature was of 24.7°C with minimum of 9.2°C at night and maximum of 44°C. Relative humidity ranged from 20 to 98%. South - easterly and north-westerly winds prevailed at a speed of 1-13 m/s and up to 20 m/s in gusts. In the East, the weather was unstable with little rain amounting 5.6 mm. The average daily temperature was of 17.9°C with minimum of 6°C and maximum of 36°C. The average humidity was of 62.1%. North-westerly and easterly winds prevailed at a speed of 1-10 m/s and up to 15 m/s in gusts. In the West, the weather was sunny with little rain (amounting 1.6 to 16.3 mm). The average daily temperature was of 28°C with minimum of 12.2°C and maximum of 45°C. The related humidity ranged from 25 to 82%. The wind direction was erratic with prevailing south-easterly, easterly and north-easterly winds at a speed of 1-5 m/s. In the North, the weather was moderately hot with sunny days and little rain (from 0.5 to 34.4 mm). The average temperature was of 20.53°C with minimum dropping to 5°C and maximum of 36°C. Relative humidity ranged from 28 to 90%. North-westerly, south-westerly and north-easterly winds prevailed at a speed of 1-7 m/s reaching up to 19.1 m/s in gusts.

In Kyrgyzstan, the weather was warm, with temperatures slightly above the norm. In the South,

average monthly temperature was of 23/25°C, i.e. within the norm, ranging from 11/16°C to 17/22°C during the night and from 25/30°C to 32/37°C during the day; at foothills, temperatures were of 12/17°C at night and ranged from 19/24°C to 27/32°C during the day. The monthly precipitation was within the norm, amounting 4 -14 mm in the plains and 14-31 mm at foothills. Relative humidity was of 45-50%. In the North, average temperature was of 23/25°C, 1 to 2°C above the norm. Temperatures ranged from 11/16°C to 17/22°C at night and from 25/30°C to 32/37°C during the day. The monthly rainfall amounted 10-14 mm and was above normal. The vegetation was dry with a low cover and a height of 2-4 cm.

In the Russian Federation, the weather was mostly hot and dry. In southern regions of the Central Federal District (FD), the weather was mostly dry with variable temperatures. The average daily temperature was of 23/25°C, with maximum up to 36°C; rains, sometimes torrential, fell unevenly. In North Caucasus and South FDs, the weather remained hot with some rainfalls of variable intensity, amounting 49 mm; the average temperature was of 21.6°C with maximum up to 41.6°C. In the Ural FD, the weather was exceptionally hot with temperatures of 30/38°C, exceeding the norm by 7/9°C; rains were rare, localized and of variable intensity. In the Volga FD, the average temperature was of 24/28°C, exceeding the norm by 5/7°C; rains did not exceed 10 mm in most areas. In the Siberian FD, moderately warm weather persisted with average temperatures of 17/20°C; rain amounts ranged from 5-15 to 40-60 mm. In the Far Eastern FD, weather conditions were highly unstable with temperatures ranging from 16/22°C at night to 22/33°C during the day; rains of variable intensity fell throughout the area.

In Tajikistan, the weather was warm and dry. During the 1st decade of August, the average temperatures ranged from 23.4 at night to 35°C during the day; there

was no significant rain. During the 2nd decade, the average temperature ranged from 20.5 at night to 34.2°C; and during the 3rd decade, from 19.4 to 32.7°C with no rain. Winds of variable directions had a speed of 2-3 m/s, reaching sometimes 4-6 m/s.

For Uzbekistan, no information was available.

Area treated in August 2016

Azerbaijan	16 592 ha
Kazakhstan	325 500 ha (against LMI only)
Russia	138 274 ha

Locust Situation and Forecast

(see also summary on page 1)

CAUCASUS

Armenia

• SITUATION

During surveys carried out in August, grasshoppers and Italian Locust (CIT) at a density ranging from 1 to 3 adults/ m² were observed on 33 277 ha. No control operations were carried out.

• FORECAST

CIT egg-laying followed by natural disappearance will occur by the end of September. No further development is therefore expected this year. It is anticipated that at least 3 500 ha will be infested by CIT in 2017 and that Moroccan Locust (DMA) could arrive from neighboring countries.

Azerbaijan

• SITUATION

In August, ground surveys concerning the Moroccan Locust (DMA) were carried out on almost 693 000 ha in Eldar steppes, in the west, and Padar plain, in the southeast. In these two areas, DMA mating and egg-laying were in progress under highly suitable conditions and came to an end, followed by natural disappearance of adults having escaped control operations. A total of 16 592 ha were treated.

• FORECAST

DMA egg-laying will eventually come to an end and adults will disappear. Egg-pod surveys will be carried out from September.

Georgia

• SITUATION

During surveys carried out on 123 000 ha in August, it was observed that CIT egg-laying came to an end. According to updated figures, a total of 23 615 ha were treated during the 2016 locust campaign against DMA and CIT, of which 17 115 ha in Kakheti and 6 500 ha in Kvemo Kartli.

• FORECAST

No further locust or anti-locust activity is expected this year. According to the 2016 CIT situation, a normal situation is anticipated for 2017, which should be under control.

CENTRAL ASIA

Afghanistan

• SITUATION

In August, activities concerned mapping of the areas infested in 2016 and planning for the next campaign.

• FORECAST

No further development is expected this year. As mentioned in the previous bulletin, it is anticipated that the locust situation will be serious in 2017.

Kazakhstan

• SITUATION

DMA egg-bed surveys were carried out on 11 600 ha; egg-pods were found on 4 500 ha (39 %) of which 3 000 ha in Zhambyl, 69 200 ha and 1 500 ha in South - Kazakhstan. The following densities were reported: density of up to 1 egg-pod/m² on 500 ha, from 2 to 5 egg-pods/m² on 1 890 ha, from 6 to 10 egg - pods/m² on 1 710 ha and exceeding 10 egg - pods/m² on 370 ha. The percentage of damaged egg-pods varied from 1 to 8.



CIT mating and egg-laying surveys were carried out on 13 332 500 ha, of which 1 878 300 ha (14 %) were found infested including 878 100 ha at a density up to 5 adults/m², 689 700 ha at a density of 6-10 adults/m² and 310 500 ha at a density exceeding 10 adults/m². The distribution of the infested areas was as follows: 433 900 ha in the south (Almaty, 224 800 ha; Kyzylorda, 125 700 ha; Zhambyl, 69 200 ha and South - Kazakhstan, 14 200 ha); 682 200 ha in the west (Aktobe, 442 000 ha; West-Kazakhstan, 224 700 ha and Atyrau, 15 500 ha); 196 800 ha in Karagandy, in the central part; 399 600 ha in the north (Kostanay, 308 800 ha; Akmola, 85 900 ha and North-Kazakhstan, 4 900 ha); and 165 800 ha in the northeast (Pavlodar, 115 500 ha and East-Kazakhstan, 50 300). No control operations were carried out.

Asian Migratory Locust (LMI) hopper surveys continued in August, covering 3 705 400 ha of which 550 500 ha were found infested, including 325 500 ha at a density above Economic Threshold (ET) as follows: 241 300 ha in the south (Kyzylorda, 90 900 ha; Almaty, 93 200 ha; Zhambyl, 40 400 ha and South-Kazakhstan, 16 800 ha), 32 400 ha in the west (West-Kazakhstan, 24 500 ha and Atyrau, 7 900 ha), 17 200 ha in East- Kazakhstan and 34 600 ha in Kostanay, in the north. LMI mating and egg-laying surveys were also carried out on 2 643 600 ha, of which 416 300 ha were found infested including 138 600 ha at a density up to 500 adults/ha, 1 185 600 ha at a density of up to 1 000 adults/ha and 92 100 ha at a density exceeding 1 000 adults/ha.

In August, a total of 325 500 ha were treated against LMI hopper infestations

• **FORECAST**

During the forecast period, CIT and LMI natural disappearance will occur.

Kyrgyzstan

• **SITUATION**

Neither survey nor control operations were carried out in August.

• **FORECAST**

DMA and CIT egg-pod surveys will take place in September and October. Their results will be used to do forecast for the 2017 locust season.

Russian Federation

• **SITUATION**

During surveys carried out in August, CIT, DMA and LMI hoppers or adults in gregarious phase were found on 688 050 ha (a bit more than in July), including 367 860 ha of CIT and LMI hopper infestations above ET, i.e. six percent more than in July. DMA egg-laying, which started from mid-July, continued in August. CIT and LMI fledging started in late July and continued until mid-August. As a whole, locust adults settled an area of 331 580 ha; grasshoppers were also present on more than 1, 88 million ha, including 318 250 ha above ET. The average locust density was of: 0.5-4 hoppers/m² and 0.4-1 adult/m² in the Central FD; 30.8 hoppers/m² and 14.2-300 adults/m² in the Southern FD; 40.3 hoppers/m² and 75.6 adults/m² in the North Caucasus FD; 1.9-40 hoppers/m² and 1.2-10 adults/m² in the Volga FD; 2.27-200 hoppers/m² and 3-50 adult/m² in the Ural FD; 4.8-315 hoppers/m² and 3-70 adults/m² in the Siberian FD; and 4.7-48 hoppers/m² and 4.5-20 adults/m² in the Far East FD. A total of 138 274 ha were treated against locusts, i.e. almost 43% less than in July.

• **FORECAST**

CIT and LMI egg-laying will continue in September followed by natural disappearance. In parallel, natural disappearance of grasshoppers will continue.

Tajikistan

• SITUATION

As of 31st August, the summer survey of egg-laying sites covered a total area of 167 393 ha, of which 92 720 ha (more than half) in Khatlon, 44 373 ha in Sughd and 30 300 ha in the Region of Republic Subordination (RRS). Based on preliminary data, egg - beds were identified on 73 003 ha (4 000 ha less than in 2015). No control operations were carried out in August.

Based on all reports received so far from the different regions of the country, a total of 333 319 ha of sown areas, orchards, vineyards and pastures were preserved from locust damage during the 2016 campaign thanks to control operations carried out on 88 000 ha

• FORECAST

No further locust development is expected this year. In September, it is planned to continue egg-laying surveys, finalize the reports, analyze activities performed during the campaign and map all egg-laying sites.

Turkmenistan

• SITUATION

No bulletin was received for the month of August but all activities should have been completed.

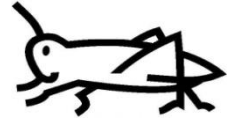
• FORECAST

No further locust development is expected this year.

Uzbekistan

• SITUATION

Around mid-August, LMI situation in the Amudarya River Delta, Karakalpakstan, was assessed during a seven-day survey. It covered 115 300 ha in four districts despite difficult survey conditions because part of the reed (estimated at 50 000 ha) was still under water due to a very high level of flooding this year. In two areas of Muynak district, scattered populations of newly-hatched and 5th instar hoppers as well as immature adults at a density of less than 1 000 locusts/ha (0.1/m²) were found on 14 300 ha. In another area of the same district, swarms of gregarious (prevailing) and *transiens* adults



were observed at a density of 5-6 imagos/m² on a total of 15 500 ha.

• FORECAST

As flood will progressively recede, more LMI hatching will occur in late August and September in the Amudarya River Delta. Monitoring should continue to identify hatching as well as egg-laying sites.

Announcements

Locust warning levels. A colour-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.

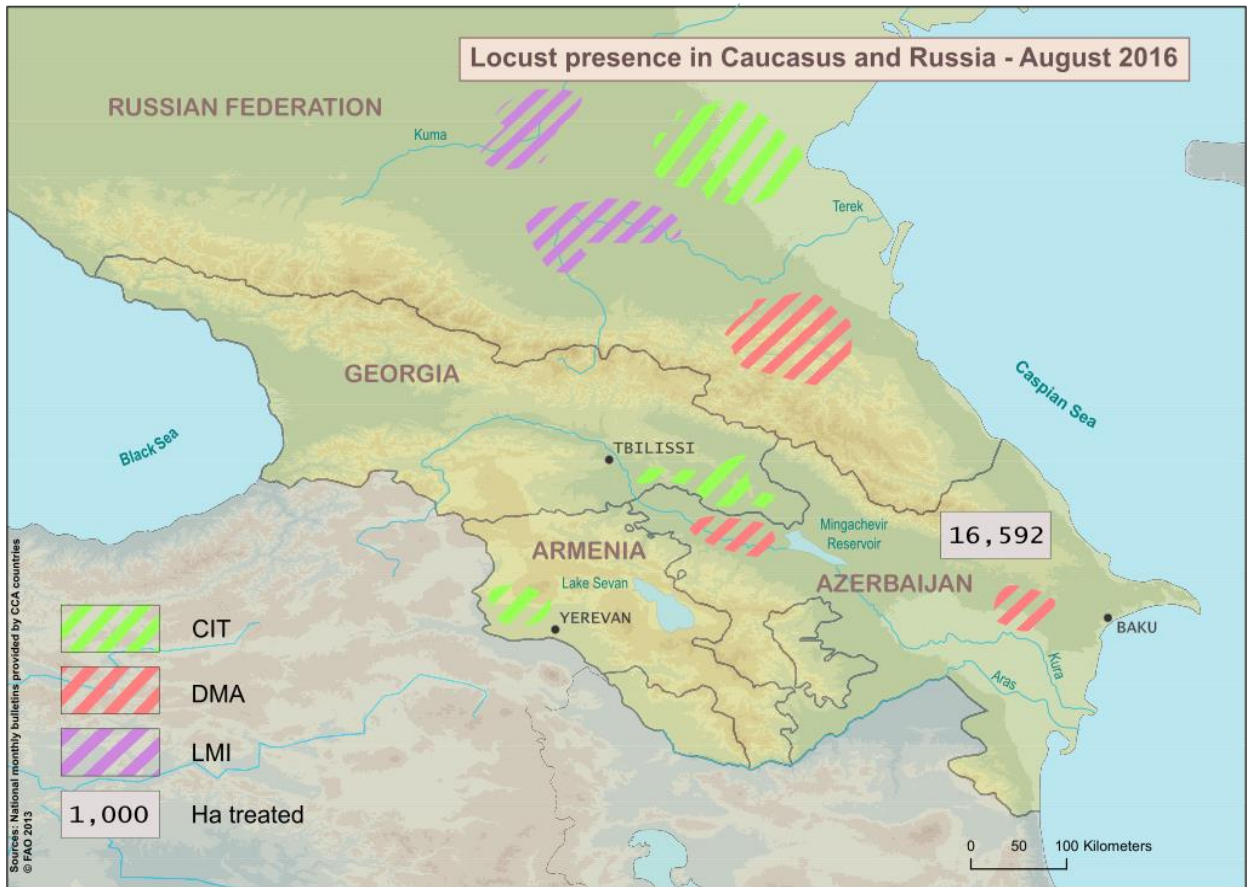
Events and activities in August 2016.

- **Fellowships on locust management:** arrangements ongoing with the selected hosting Institutions in Kazakhstan and Uzbekistan for two Master's degrees, respectively on locust control tactics and strategies and on biological control (start with academic year 2016/17).
- **Locust Geographical Information System (GIS) in CCA:**
 - Basic functions of the database (data import, query, display and output) under test;
 - E-Committee on locust GIS (advance functions: data analysis and forecast): relevant information still being received from CCA Forecasting experts and first Skype meetings postponed to following month.
- **Joint or cross-border surveys:** joint survey between Tajikistan and Uzbekistan carried out on 3-5 August 2016 in Uzbekistan (Tashkent, Djizak and Syrdarya regions), with the participation of seven experts (three from Tajikistan and four from Uzbekistan).
- **Asian Migratory Locust assessment in Aral Sea area, Uzbekistan:** technical assistance for field survey provided and on-the-job training on locust monitoring delivered by Mr A. Latchininsky, FAO International consultant, Senior Locust Expert, on 8-18 August 2016 in Karakalpakstan, western Uzbekistan.
- **Human Health and Environmental issues in Tajikistan:** last monitoring mission carried out on 30 August – 5 September in Sughd region.
- **Procurement of locust survey and control equipment:** process ongoing in the framework of project GCP/INT/238/JPN to the benefit of Afghanistan, Kyrgyzstan and Tajikistan.
- **Annual regional Technical Workshop on Locusts in CCA, 14-18 November 2016, Astana, Kazakhstan:** following official confirmation by Kazakhstan, invitation letters dispatched by FAO.



Forthcoming events and activities in September 2016.

- **Fellowships on locust management:** arrangements ongoing with the selected hosting Institutions in Kazakhstan and Uzbekistan.
- **Training-of-trainers on locust management - National sessions on locust spraying and pesticide risk reduction, Kyrgyzstan and Tajikistan:**
 - Kyrgyzstan: national sessions to be delivered on 26-30 September 2016 by the Kyrgyz Master-Trainers in presence of a coach, Spraying Expert;
 - Tajikistan: three national sessions to be delivered in October 2016 in Dushanbe, Khatlon and Sughd by the Tajik Master-Trainers in presence of a coach, Spraying Expert.
- **Locust GIS in CCA:** Skype meetings of the E-Committee on locust GIS (advanced functions: data analysis and forecast) to be organized with CCA Forecasting experts.
- **Human Health and Environmental issues:**
 - Human Health and Environmental Teams in Kyrgyzstan and Tajikistan: end-of-campaign report expected by mid-October;
 - Report on Management of empty pesticide containers used for locust control in Caucasus and Central Asia (CCA) to be shared with CCA Experts for comments.
- **Procurement of locust survey and control equipment:** process ongoing in the framework of project GCP/INT/238/JPN to the benefit of Afghanistan, Kyrgyzstan and Tajikistan.
- **Annual regional Technical Workshop on Locusts in CCA, 14-18 November 2016, Astana, Kazakhstan:** nominations expected from countries by the end of September 2016.



The maps presenting the areas treated in 2014 and 2015 in CCA and the forecast for 2016 can be found at:
http://www.fao.org/ag/locusts-CCA/common/ecg/1188/en/CCA_Locust_Workshop_2015_Report_FINAL_EN.pdf