Food and Agriculture Organization
of the United Nations

Food Chain Crisis
Early Warning Bulletin

Forecasting threats to the food chain affecting food security in countries and regions

No. 24
July-September 2017

NOTE TO THE READER

The purpose of the FCC (Food Chain Crisis) Early Warning Bulletin is to inform FAO and other international organizations, countries, scientific experts, and decision makers on the forecast of threats to animal and plant health and food safety having a potential high impact on food and nutrition security for the three months ahead. These threats are transboundary animal and plant pests and diseases including forest pests and aquatic diseases, and food safety threats.

The bulletin contains official and unofficial information from various sources collected and analyzed by FAO experts.

The FCC Early Warning Bulletin is a product of collaboration between the Intelligence and Coordination Unit of the Food Chain Crisis Management Framework (FCC-ICU), the FAO Emergency Prevention System (EMPRES) for transboundary animal and plant pests and diseases and food safety threats, the FAO Global Early Warning System for transboundary animal diseases, including zoonoses (GLEWS), and the Global Information and Early Warning System (GIEWS). FCC-ICU coordinates and produces the bulletin.

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FCC FORECASTING METHODOLOGY

Transboundary animal and plant pests and diseases, including forest pests and aquatic diseases, and food safety threats are raising public awareness due to their potential high impact on food security, human health, livelihoods, and trade. These threats have highlighted the need to predict such threats in a comprehensive and integrated manner, oriented at the whole food chain. Predicting threats will allow timelier implementation of preventive and control measures, and thus will reduce their impact and limit their geographic spread.

FAO Food Chain Crisis-Intelligence and Coordination Unit (FCC-ICU) has developed an integrated forecasting approach to assess the likelihood of occurrence of threats to the food chain (FCC threat) for the upcoming three months. Based on this approach and upon availability of FAO data, a number of forecast events are presented at country level. Data are collected, analyzed, and further presented in a table format in the quarterly FCC Early Warning Bulletin (see country table, page 13).

The **Likelihood of occurrence of a FCC threat** in a country is defined according to the result of the assessment of two main epidemiological parameters:

- Parameter 1: **likelihood of introduction** of the threat from another country and its further **spread** within the country (calculated as shown in Table 1), and
- Parameter 2: **likelihood of its re-emergence (amplification)** within the country, in case a threat is already present in the country.

Based on a conservative approach, the likelihood of occurrence of the threat will be considered equal to the higher level of the two parameters.

TABLE 1: **Crossing table of likelihood of introduction and likelihood of spread (Parameter 1)**

		Level of likelihood of spread			
		0	1	2	3
Level of likelihood of introduction	0	0	0	0	0
	1	1	1	1	2
	2	1	1	2	2
	3	2	2	2	3

The likelihood of occurrence, the likelihood of introduction, the likelihood of spread, and the likelihood of re-emergence of a FCC threat can be rated as Nil, Low, Moderate, or High, as shown in Table 2.

TABLE 2: **FCC Likelihood scale**

Likelihood	Definition
Nil (0)	Very unlikely
Low (1)	Unlikely
Moderate (2)	Likely
High (3)	Highly likely

HIGHLIGHTS

- **Fall Armyworm, *Spodoptera frugiperda*, continues to be of high concern in Africa particularly on maize.** The pest was detected for the first time in Africa in early 2016 and has been reported so far in Central, Eastern, Western and Southern Africa. During the July-September 2017 period, the pest is expected to spread to areas where the crop growing season is in progress such as in Western and part of Eastern and Central Africa. This pest is a moth native to tropical and subtropical regions of the Americas that feeds on more than 80 plant species and can cause significant damage and yield losses on cultivated cereals such as maize, rice, sorghum, as well as legumes and vegetable crops and cotton, if not properly managed.

  For the time being, the modality of introduction to Africa, its spread, the presence of different strains, and its bio-ecology in Africa are still speculative. However, now that the Fall Armyworm is established on the continent it is almost certain that its presence is irreversible given favourable climatic conditions, its large host range, and a limited range of natural enemies or predators to keep it under check.

  Fall Armyworm cannot be feasibly eradicated but rather managed. It is a diffusely distributed pest, living in millions of plants across millions of farmers' fields, therefore it is a farmer's problem. Knowing that 99 percent of maize farmers in Africa are smallholder family farmers, solutions fitting the socio-economic and ecological realities across the continent should be sought.

- **H5N8 Highly Pathogenic Avian Influenza, a new strain of avian influenza virus, is of high concern worldwide and particularly in Africa.** This strain has been so far reported in nine countries in Eastern, Northern, Southern, and Western Africa and is likely to continue to spread across the poultry value chains in the sub-Saharan region. This strain was detected in wild and domestic poultry for the first time in Africa in November 2016, and earlier in Asia and Europe. The virus is probably transmitted and spread along wild birds' migratory routes. Highly pathogenic avian influenza is a highly contagious disease causing high mortality in poultry and resulting in severe losses in the poultry production sector with impact on poultry production, food security, livelihoods and trade. It can also potentially affect humans.

  Increased biosecurity measures, communication campaigns targeting farmers and poultry value chain actors, and restrictions on poultry movement are the most effective prevention measures of the disease.

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **OVERVIEW**

During the period July-September 2017, Food Chain Crisis (FCC) threats are expected to occur in Africa, the Americas, Asia, and Europe, where they will be either persisting within a country, or possibly spreading to neighboring countries, or will be latent and re-emerge/amplify at a certain time. The dynamic and likelihood of occurrence of transboundary plant and animal pests and diseases threats, including forest pests and aquatic diseases, depend on a number of factors or drivers. These include agro-ecological factors (e.g. intensive farming systems, deforestation, overgrazing, etc.), human behavior (e.g. cultural practices, conflicts and civil insecurity, trade, etc.), natural disasters (droughts, flooding, etc.), climate change resulting in severe and more frequent heavy rains, heat waves, El Niño-Southern Oscillation (ENSO), changes in vegetation cover and water temperature.

Main threats

Twenty-eight animal and plant pests and diseases, aquatic diseases, and forest pests and diseases were forecasted for the period July-September 2017. A total of 224 forecasts were conducted in 101 countries.

According to the forecasts, the following pests and diseases will be representing a high or moderate risk to the food chain for the period July to September 2017: African swine fever, Avian influenza, Foot-and-mouth disease, Lumpy skin disease and Sheep and goat pox for **Animal diseases including zoonosis**; Epizootic ulcerative syndrome for **Aquatic animal diseases**; Desert Locust, Italian Locust, Moroccan Locust, Yellow-Spined Bamboo Locust for **Locusts**; Banana bunchy top disease, Banana fusarium wilt disease, Cassava mosaic disease, Fall armyworm, Tomato leaf miner, Wheat rust diseases for **Plant pests and diseases**; Bark beetles, Blue gum chalcid, Boxwood blight, Boxwood moth, Bronze bug, Charcoal disease, Chestnut gall wasp, Dry cone syndrome, Pine processionary moth, Red gum lerp psyllid, Western conifer seed bug for **Forest pests and diseases**.

All pests and diseases forecasted in this bulletin are listed in the table hereafter.

TABLE 3: **FCC threats monitored and forecasted**

Animal diseases including zoonosis	Aquatic diseases	Forest pests and diseases	Plant pests and diseases	Locusts
African swine fever (ASF) Avian influenza (AI) Foot-and-mouth disease (FMD) Lumpy skin disease (LSD) Sheep and goat pox (SGP),	Acute hepatopancreatic necrosis disease (AHPND) *Enterocytozoon hepatopenaei* (EHP) Epizootic ulcerative syndrome (EUS)	Bark beetles Blue gum chalcid Boxwood blight Bronze bug Charcoal disease Chestnut gall wasp Dry cone syndrome Pine processionary moth Red gum lerp psyllid Western conifer seed bug	Banana bunchy top disease (BBTD Cassava mosaic disease (CMD) Fall armyworm (FAW) Tomato leaf miner Wheat rust	Desert Locust Italian Locust Migratory Locust Red Locust Yellow Spined Bamboo Locust

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **REGIONAL OVERVIEW**

AFRICA

In Africa, a total number of 134 FCC events have been forecasted including animal and aquatic diseases, locusts, plant pests and diseases, and forest pests and diseases. The likelihood of occurrence varies from Nil to High. From these, the following FCC events have significant regional implications:

Plant pests and diseases

- **Fall armyworm (FAW)** - *Spodoptera frugiperda* continues to be a high concern in Africa particularly on maize. The pest was first detected in Central and Western Africa in early 2016 (Benin, Nigeria, Sao Tome and Principe, and Togo) and in late 2016 in Southern Africa. In 2017, it has been detected in most of the countries of Southern Africa (except Lesotho and the Indian Ocean Island States) and in Burundi, Cameroon, Ethiopia, Ghana, Kenya, Niger, Rwanda and Uganda. FAW, which has the potential to cause significant damage and yield losses on crops if not well managed, is expected during the July to September 2017 forecast period to be further detected in areas and countries where it had not been reported yet.

  In Eastern Africa, FAW is very likely to continue spreading in Ethiopia during this forecast period (July-September). This period coincides with the main Meher crop growing season during which the maize crop may be at risk. In Burundi, Kenya, Rwanda and Uganda, this period coincides with the off-season where the pest will have limited access to the maize crop, its preferred host. However, considering that its bio-ecology is still poorly understood, FAW may spread in those countries on alternate hosts.

  In Central Africa, FAW has been reported in three countries (Cameroon, Democratic Republic of Congo and Sao Tome and Principe). Control measures are ongoing effectively in Sao Tome and Principe and parts of Democratic Republic of Congo. FAW is likely to re-emerge in Sao Tome and very likely to continue spreading in the Democratic Republic of Congo if control measures which have been put in place do not continue. The pest is also likely to continue spreading in Cameroon and may have been already introduced in neighbouring countries but not reported due to the absence of monitoring and surveillance activities.

  In Western Africa, FAW has been reported in Benin, Ghana, Niger, Nigeria and Togo. Burkina Faso has reported the presence of armyworms, which could include FAW. FAW is likely to spread during this forecast period to other West African countries where the maize growing season has just started.

  In Southern Africa, FAW is reported to be present in most of the countries except in Lesotho and the Indian Ocean Island States. The likelihood of FAW expansion of occurrence is low and will remain localized in the area which are already affected due to cool conditions characterizing the early part of the forecast period, which do not favour the multiplication of the pest. The forecast period July-September is also characterised in Southern Africa by low production of maize (grown largely for green maize), and other cereals (except for commercial wheat), crops on which the pest primarily feeds. It is worth noting that the FAW has been reported on the winter wheat crops in Zambia and Zimbabwe. FAW populations are however likely to start increasing slightly in September with the beginning of the warm season.

- **Tomato leaf miner** - *Tuta absoluta* affecting tomato production of smallholders, remains a pest of high concern in Africa impacting the livelihoods of small farmers and households. It has been causing losses in tomato production and in some cases farmers had to abandon tomato planting to other cash crops.

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **REGIONAL OVERVIEW**

AFRICA

In Southern Africa, Tomato leaf miner populations are likely to increase and spread across countries during this forecast period (July-September) due to the wide production of tomato. The pest is likely to cause significant losses in yield and quality.

In Western Africa, Tomato leaf miner has been reported in Nigeria, Niger and Senegal. During this forecast period (July-September), which coincides with the main growing season of tomato, the pest is likely to increase in affected countries and spread across countries. The pest is likely to cause significant losses in yield and quality.

In Eastern Africa, the pest infestation varies with the season. Insect pest populations are likely to decrease across countries in the sub-region during this forecast period (July-September), as it generally coincides with the cool season. Tomato is produced under irrigation mostly during the warm dry season, which happens to be favourable for the pest to flourish. If left uncontrolled under these conditions, leaf miner infestations are typically high and can lead to yield loss of 80 - 100%.

- **Wheat stem rust** disease and **Yellow rust might** develop and cause concern due to emerging new races in certain areas in Eastern Africa (e.g. Ethiopia and Kenya).
- **Banana bunchy top disease (BBTD)** which has affected banana production in recent years in Central, Eastern and Southern Africa is likely to continue to occur during this forecast period.

Locusts:

- The development of adult groups and swarms of **locusts**, which, in the absence of control operations could migrate to cropping areas after burning of natural vegetation, and therefore jeopardize food security in the region, is unlikely during the considered period for the different locust species present in Africa.

Forest pest and diseases:

- **Red gum lerp psyllid** outbreaks are likely to continue to occur in Southern Africa causing severe damages in *Eucalyptus* plantations. The introduction of biological control agents to reduce the pest population are in progress.
- **Blue gum chalcid** outbreaks are likely to continue to occur in Eastern and Southern Africa causing severe damages in *Eucalyptus* plantations. The Introduction of biological control agents to reduce the Blue gum chalcid population are in progress.
- **Bronze bug** outbreaks are likely to continue to occur damaging *Eucalyptus* woodlots in Southern Africa (Zimbabwe), although pest management activities are in progress.

Animal and aquatic diseases

- Models based on climatic and ecological indicators for the period July-September 2017 forecast above-average rainfall over many locations in the Sahel and Gulf of Guinea countries, parts of Sudan, and northern Ethiopia. These areas can be suitable for vector amplification and emergence of vector borne diseases such as Rift Valley fever.

  In Central and East Africa, climatic models predict drier than average conditions for the period July-September 2017 in some of the regional countries. Persistent droughts could facilitate the spread of endemic diseases

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **REGIONAL OVERVIEW**

AFRICA

because of deteriorating physical condition of animals, increased contact rate of animals drinking in water points, and to atypical livestock migration in search of better pasture.

- Highly pathogenic avian influenza virus (H5N1 and H5N8 subtypes) have a pandemic potential in countries of Sub-Saharan Africa. Since December 2014, **H5N1 Highly pathogenic avian influenza (HPAI)** has been reported in seven countries in West and Central Africa (Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Niger, Nigeria and Togo). Although a decrease in the number of outbreaks has been observed, additional outbreaks are likely to occur in the already affected region, as well as in other areas in West and Central Africa causing important losses in the poultry sector.

  H5N8 HPAI virus which is spreading globally following bird migratory routes was reported for the first time in November 2016 in Egypt, Nigeria and Tunisia and has been spreading across poultry value chains with outbreaks reported in additional five countries (Cameroon, Democratic Republic of the Congo, Uganda, South Africa and Zimbabwe). The virus is still actively circulating with the risk of spreading to neighbouring countries (Kenya, Rwanda and United Republic of Tanzania).

  H5N8 HPAI virus which is spreading globally following bird migratory routes was reported for the first time in November 2016 in Egypt, Nigeria and Tunisia and has been spreading across poultry value chains with outbreaks reported in additional five countries (Cameroon, Democratic Republic of the Congo, Uganda, South Africa and Zimbabwe). The virus is still actively circulating with the risk of spreading to neighbouring countries (Kenya, Rwanda and United Republic of Tanzania).

- **Foot and mouth disease (FMD)** Serotype A was detected for the first time in Algeria and Tunisia in April 2017. This is of concern for the livestock population in the affected countries and in neighbouring countries because the susceptible population in the region is not immunized against the serotype A. Both Tunisia and Algeria have experienced the presence of FMD outbreaks but with another serotype (serotype O) in 2014 and 2015.
- **Sheep and goat pox (SGP)** was detected for the first time in New Valley governorate in Egypt in February 2017. SGP is endemic in northern Africa and in some areas of Egypt but this is the first occurrence of the disease in New Valley governorate. SGP is likely to spread in the country and in non-affected countries in the region.
- **Tilapia Lake virus (TiLV),** an emerging pathogen, may have wider distribution and likely to be a significant threat to the global Tilapia industry. High awareness and vigilance are required in several Tilapia producing countries in Northern, Eastern and Southern Africa on the occurrence of this emerging threat. A surveillance plan may be necessary to determine the geographical extent of the infection and undertake mitigation measures to restrict the spread of infection. Appropriate diagnostic testing is encouraged, where unexplained mortalities of Tilapia occur, particularly of clinical signs similar to those reported for TiLV. Public information campaigns are recommended to advise aquaculturists on the threat posed by TiLV and the need to report unexplained large-scale mortalities to biosecurity authorities.
- **Epizootic ulcerative syndrome (EUS)** is likely to occur during this forecast period because the water temperatures during the period between July and September ranges from 18 to 25°C which is the optimal temperature for the development of the oomycete fungus. Countries that have such temperature range during this period may be at risk.

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **REGIONAL OVERVIEW**

AMERICAS

In the Americas, a total number of 15 FCC events have been forecasted including aquatic diseases, locusts, forest pests and diseases. The likelihood of occurrence vary from Low to High. From these, the following FCC events have significant regional implications:

Forest pests and diseases

- Severe infestations of **Bark beetles**, in particular the *Dendroctonus* frontalis species, are being experienced in the dry corridor of Central America, in pine forests of Honduras, Guatemala and Nicaragua. Pine species *Pinus caribaea*, *Pinus oocarpa* and *Pinus patula* within natural forests and plantations have become most vulnerable to the beetle attacks because they are already stressed by prolonged drought triggered by El Niño and weakened due to poor forest management practices,.

ASIA

In Asia, a total number of 57 FCC events have been forecasted including animal and aquatic diseases, locusts, and forest pests and diseases. The likelihood of occurrence vary from Nil1 to High. From these, the following FCC events have significant regional implications:

Plant pest and diseases

- **Banana fusarium wilt disease** is likely to continue to affect bananas in Asia. Banana fusarium wilt disease is a soil-borne disease that cannot be eradicated once established in a field. Thus, containment and prevention of spread is crucial.

Locusts

- **Yellow-Spined Bamboo Locust** hatching was detected in Lao People's Democratic Republic and in Vietnam starting April 2017. This may cause damages to food crops (such as upland rice, maize and banana). Movements of hopper bands have been observed in these provinces and adults will start swarming in July till September.

Forest pests and diseases

- **Dieback of boxwood trees** *(Buxus hyrcana)*, IUCN threatened species, caused by Boxwood blight (pathogen *Calonectria pseudonaviculata*) continues to be reported in the Caspian forest of the Islamic Republic of Iran. The recent introduction of boxwood moth *(Cydalima pesrpectalis)* is likely to cause severe defoliation in summer of 2017.
- **Dry cone syndrome and Western conifer bug** are causing severe losses in pine nut harvest in Lebanon. In the summer period pest activities are likely to resume following the winter period.
- **Chestnut gall wasp** is causing damages to chestnut trees and threatening livelihoods of local communities in Turkey. Biological control is in progress to control the pest.

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **REGIONAL OVERVIEW**

ASIA

Animal and aquatic diseases

- Four **H5 Highly pathogenic avian influenza (HPAI)** serotypes and several H5 clades are circulating in Southern, Eastern and South-eastern Asia. New outbreaks might be expected in affected and non-affected countries in the area. The recent H5N6 HPAI expansion has particularly stricken the poultry sector of the Republic of Korea, Japan and Taiwan Province of China. The H5N8 HPAI strains that have emerged in China in May 2016, have already spread to Republic of Korea, India and Nepal, and might affect additional countries.

  In the Middle East, H5N8 HPAI incursions were detected in poultry farms in the Islamic Republic of Iran and in Israel. Further spread of the disease in the already affected countries and incursions in neighbouring countries might still occur.
- The current **H7N9 Low and Highly pathogenic avian influenza (LPAI/HPAI)** season is being the most intense in Asia since the emergence of the virus in early 2013. This is the first season that H7N9 avian influenza viruses present genetic characteristics suggestive of a shift from a low pathogenic into a highly pathogenic avian virus in poultry. In February-April the virus has spread in new areas of China never affected before (Chongqing, Gansu and Tibet provinces). Although a decrease of virus circulation in poultry and a decrease in occurrence of human cases is expected for the next months due to seasonal pattern, its introduction into neighbouring countries such as Nepal and Vietnam is still possible for the forecasting period July-September 2017.
- **Foot-and-mouth-disease (FMD)** Serotype A was detected on May 2017 in Israel. The episode is of concern for Israel and neighbouring countries because only poor vaccine matching is available so far for serotype A. FMD has been reported recently in West Bank but the serotype was not identified yet. FMD viruses will likely continue spreading in the Middle-East if mitigations in place are not effective.
- **Lumpy skin disease (LSD)** might re-emerge in the Caucasus region due to the upcoming weather conditions favourable for vector amplification, particularly in Georgia, Russian Federation and Kazakhstan, where outbreaks were already reported in 2016.
- **African swine fever (ASF)** has been reported in In Eastern Asia and might have been introduced from the Russian Federation where the ASF virus was detected in late March 2017 in a backyard pig farm in Irkutsk oblast. This big jump eastward (over 3,000 km), marks the first ASF detection in the eastern part of the Russian Federation, increasing the risk of ASF incursion in bordering countries such as Mongolia and in China.
- **Tilapia Lake virus (TiLV),** an emerging pathogen, may have wider distribution and likely to be a significant threat to the global Tilapia industry. High awareness and vigilance are required in several Tilapia producing countries in Asia on the occurrence of this emerging threat. A surveillance plan may be necessary to determine the geographical extent of the infection and undertake mitigation measures to restrict the spread of infection. Appropriate diagnostic testing is encouraged, where unexplained mortalities of Tilapia occur, particularly of clinical signs similar to those reported for TiLV. Public information campaigns are recommended to advise aquaculturists on the threat posed by TiLV and the need to report unexplained large-scale mortalities to biosecurity authorities.

FORECAST FOR THE PERIOD JULY-SEPTEMBER 2017: **REGIONAL OVERVIEW**

EUROPE

In Europe, a total number of 18 FCC events have been forecasted including animal diseases, Locusts and forest pests. The likelihood of occurrence varies from Low to High. From these, the following FCC events have significant regional implications:

Animal diseases

- **H5N8 Highly pathogenic avian influenza (HPAI)** has been spreading globally following wild bird migration routes. The virus which was detected for the first time in China in wild birds in May 2016, has progressively affected Eastern and Western Europe (Austria, Belgium, Bulgaria, Bosnia and Herzegovina, Croatia, Czech Republic, France, Finland, Germany, Greece Denmark, Hungary, Ireland, Italy, Liechtenstein, Lithuania, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, the Former Yugoslav Republic of Macedonia, Ukraine, and the United Kingdom of Great Britain). Since March 2017 the circulation of H5N8 HPAI virus in wild birds and poultry in Western Europe has decreased. This seasonal pattern is expected, though further spreading of the virus towards the East, through the Russian Federation was observed.
- **African swine fever (ASF)** outbreaks and transmission is likely to continue to be reported in a number of countries (Estonia, Latvia, Lithuania, Republic of Moldovia, Poland, Russian Federation, and Ukraine) where the virus is endemic in wild boar populations and is sporadically transmitted to domestic pigs through feeding and other infected material. Informal and uncontrolled animal movement and poor biosecurity conditions in pig farms are the main risk factors for the introduction of the disease in farms and for wider geographical spread. These constraints increase the possibility of spread of the virus into neighbouring countries (Belarus and Romania) via live animals and animal product movement along pig value chains and transmission between seasons through infected carcasses of dead wild boars overwintering.
- **Lumpy skin disease (LSD)**, a vector-borne disease, is likely to re-emerge and spread to non-affected countries in South-East Europe (Albania, Bulgaria, FYR of Macedonia, Greece, Montenegro, Russian Federation, and Serbia) during the forecast period due to the increase in temperature, a favourable condition for vector amplification. The applied vaccination campaigns might mitigate the possibility of re-emergence of the disease and the subsequent risk of spread into neighbouring countries (Bosnia and Herzegovina, Croatia, Ukraine, and Romania).

More detailed information on FCC threats forecasts at country level is available under the FCC threats forecasting at country level section **(see page 13).**

SHORT TAKE ON INFOSAN – WHAT, WHY, WHO, WHERE, AND HOW?

Foodborne diseases are common throughout the world and represent a huge burden on public health and also trade. The global nature and growing complexity of the food chain means that risks posed by unsafe foods have the potential to quickly evolve from a local problem to an international incident in a short period of time. Indeed, an increasing number of food safety events have international ramifications. In order to efficiently prevent and control cross-border spread of unsafe food it is crucial to share relevant food safety information between countries.

What? INFOSAN – the International Food Safety Authorities Network - is a global voluntary network of officially designated government authorities, responsible for, or involved in, the management of food safety events/emergencies.

Why? INFOSAN strengthens prevention, preparedness and response to food safety events or emergencies in countries by promoting the rapid exchange of relevant information during food safety events or emergencies. The network further facilitates the sharing of relevant information of global interest, promotes partnerships and collaboration between countries and between networks relevant to INFOSAN's mission, and helps countries strengthen their capacity to manage food safety events/ emergencies.

Who and where? INFOSAN is jointly managed by FAO and WHO. It has a joint Secretariat that has its main operations in WHO Headquarters. The INFOSAN Secretariat at FAO is located in the Food Safety and Quality Unit with the following email account: infosan@fao.org
INFOSAN at FAO is the main element of food safety early warning and contributes to the response and communication activities of EMPRES Food safety.

How: Currently 188 countries are members of INFOSAN. At the national level, there is a designated INFOSAN Emergency Contact Point. This contact points is responsible for reporting urgent food safety events of potential international concern to the INFOSAN Secretariat and for responding to verification and assessments requests from the INFOSAN Secretariat. In addition, INFOSAN Focal Points located in various sectors relevant to food safety can be established. These Focal Points collaborate with the Emergency Contact Point. It is recommended that there is collaboration with the International Health Regulations (IHR) Focal Point at national level, similar to the interaction between the IHR and INFOSAN secretariats. The INFOSAN system also interacts with other relevant networks such as GLEWS. INFOSAN has an email account and a secure Community Website for exchange of confidential information.

FAO colleagues at national and regional levels are encouraged to support the strengthening of the INFOSAN Emergency Contact Points and Focal Points functions at national level, which in turn will help improve prevention and response of international food safety events.

FCC THREATS FORECASTING AT **COUNTRY LEVEL**

This section provides, at country level, for the upcoming three months, forecasting of FCC threats having potential high impact on food and nutrition security. It also provides, when available and appropriate, background information on other factors impacting food and nutrition security.

The list of country names refers only to countries for which information is available. The country table assigns countries and areas to geographic regions on the basis of the current composition of macro geographical (continental) regions of the United Nations Statistics Division (United Nations Statistics Division- Standard Country and Area Codes Classification (M49); http://unstats.un.org/unsd/methods/m49/m49regin.htm).

The assessment of the likelihood of occurrence was performed using FAO data and information available at the time of preparation of this bulletin and might be subject to changes later.

Legend

Threats category	Likelihood of occurrence			
	High	Moderate	Low	Nil
Animal and zoonotic diseases				
Aquatic diseases				
Plant pests and diseases				
Locusts				
Forest pests and diseases				

- **High:** an event is highly likely to occur
- **Moderate**: an event is likely to occur
- **Low:** an event is unlikely to occur
- **Nil**: an event is very unlikely to occur

FCC THREATS FORECASTING AT **COUNTRY LEVEL**

AFRICA

ALGERIA

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: High

Forecast for July-September 2017: FMD (serotype A) outbreaks are very likely to occur in the country due to the recent presence of the virus in the country.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.* FMD serotype A outbreaks were reported for the first time in March 2017 in the country (Relizane region). This is a concern for Algeria and neighbouring countries because the susceptible animal population in the region is not immunized against this strain.

ANGOLA

Threat name: Epizootic ulcerative syndrome (EUS)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Possibly further spread of EUS to other parts of the country through for example heavy rainfall, flooding, poor biosecurity, movement of infected fish and possibly birds.

Forecast context: Water temperature during the period between July to September ranges from 18 to 25°C optimal for development of the oomycete fungus responsible of the disease.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, and the limited production of maize and other cereals at this time.

Forecast context: FAW has not been reported in the country but has across boundaries with countries where FAW outbreaks are already present.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to continue to spread in the country.

Forecast context: Tomato leaf miner presence is already present in the country.

BENIN

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to new introduction of AI viruses from neighbouring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI has been reported in seven countries in West and Central Africa since December 2014. H5N8 HPAI has been spreading globally since November 2016, following bird migratory routes. So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW is very likely to amplify during this forecast period which coincides with the maize growing season.

Forecast context: Benin was among the first countries affected by the FAW in April 2016.

BOTSWANA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, and the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to continue to spread in the country.

Forecast context: Tomato leaf miner presence is already present in the country.

Threat name: Epizootic ulcerative syndrome (EUS)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Possibly further spread of EUS to other parts of the country through for example heavy rainfall, flooding, poor biosecurity, movement of infected fish and possibly birds.

Forecast context: /

BURKINA FASO

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of H5N1 HPAI virus in the country or due to new introductions of AI viruses from neighbouring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry sector with trade impact. Avian Influenza viruses can affect humans.* H5N1 HPAI has been reported in seven countries in West and Central Africa since December 2014. In Burkina Faso it has been reported from February 2015 to July 2016. H5N8 HPAI has been spreading globally since November 2016, following bird migratory routes. So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW is very likely to occur in the country through the introduction of the pest from neighbouring countries considering its presence in Ghana and Niger.

Forecast context: The presence of armyworms has been reported in the country but *Spodoptera frugiperda* has not been identified yet.

BURUNDI

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW is likely to spread to non-affected parts of the country.

Forecast context: The presence of FAW is confirmed but data on incidence and severity of damage is not yet available. The likelihood of spread of FAW is moderate because July - September coincides with the off-season period and the pest will have limited access to the maize crop, which is its preferred host. However, despite the poor understanding of the bioecology of FAW in Africa, it is known to be able to multiply on alternate hosts.

CABO VERDE

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Nil

Forecast for July-September 2017: FAW has not been reported in the country.

Forecast context: FAW has not been reported in the country.

CAMERUM

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW is likely to spread to non-affected parts of the country.

Forecast context: The presence of the pest is confirmed in the West, Centre, Far North, Littoral and South-West Regions of the country (March 2017). Recent information received from farmers and extension agents indicates that other parts of the country could be affected as well.

Threat name: Banana bunchy top disease (BBTD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: BBTD which is currently present in the southern part of the country is likely to spread further in the country.

Forecast context: BBTD was first recorded in 2008 and expanded in recent years affecting banana production in the south west part of the country.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of the virus in the country or due to new introductions of AI viruses from neighboring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI outbreaks have been detected in Cameroon in late May 2016 until March 2017 affecting five regions of the country. In January 2017, H5N8 HPAI, currently spreading globally, was detected in an Exotic peacock farm in the Extreme-North region. So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

CENTRAL AFRICAN REPUBLIC

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW introduction is very likely due to the presence of the pest in two neighbouring countries (Cameroon and Democratic republic of Congo).

Forecast context: FAW has not been reported in the country yet. The current sporadic civil unrest in the country could hinder any monitoring and surveillance efforts.

Threat name: Epizootic ulcerative syndrome (EUS)

Likelihood of occurrence: Low

Forecast for July-September 2017: Suspected EUS outbreak in central and southern areas of the country.

Forecast context: EUS is suspected in the central and southern areas of the country. If the disease is confirmed, the outbreak will have a serious impact on the livelihoods and food security of thousands of persons who depend on fisheries in the Central African Republic.

CHAD

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW introduction is likely (especially in the southern part of the country) with the imminent onset of the rainy season and the presence of infestation in the neighbouring Far North Region of Cameroon.

Forecast context: FAW has not been reported in the country yet.

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in central and northern areas that receive summer rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

CÔTE D'IVOIRE

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of the virus in the country or due to new introductions of AI viruses from neighbouring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI was reported in Côte d'Ivoire in 2015 and 2016. H5N8 HPAI is spreading globally since November 2016 following bird migratory routes. So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW introduction is very likely considering the presence of the pest in Ghana at the border with Côte d'Ivoire.

Forecast context: FAW has not been reported yet in Cote d'Ivoire.

DEMOCRATIC REPUBLIC OF THE CONGO

Threat name: Epizootic ulcerative syndrome (EUS)
Likelihood of occurrence: Low

Forecast for July-September 2017: Further spread of EUS to other parts of the country and potentially to other parts of Africa through for example heavy rainfall, flooding, poor biosecurity, movement of infected fish and possibly birds.

Forecast context: The country experienced the first heavy mortalities in December 2014 and continued until March 2015. The laboratory diagnosis through PCR (polymerase chain reaction) and histology testing was positively, confirming that several fish species were affected from EUS. Fish belonging to the families of *Clariidae*, *Channidae* and *Protopridae* are of greatest concern regarding the spread of EUS, as fish of these families represent important food commodities in DRC. They also represent air-breathing fish, and marketable fish are transported to and from markets live, thus making an effective pathway for pathogen transfer.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry and further spread in the country.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5 HPAI were observed with high mortalities in chicken in late April 2017 in the area of Ituri, (approximately 250 km from H5N8 HPAI outbreak site near Lake Victoria in Uganda that occurred in January 2017). So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria and in Eastern Africa in Uganda and Zimbabwe.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW is very likely to spread out to non-affected parts of the country considering the current geographical distribution of the pest.

Forecast context: FAW was reported for the first time in the country in December 2016. Fifty out of the 147 territories are currently affected by FAW with an estimated 25,000 hectares infested.

DJIBOUTI

Threat name: Desert Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW is unlikely to be introduced into the country from neighbouring Ethiopia due to current hot and dry conditions and limited availability of preferred host (maize).

Forecast context: FAW has not yet been reported in Djibouti.

EGYPT

Threat name: Desert Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

Threat name: Sheep and goat pox (SGP)

Likelihood of occurrence: High

Forecast for July-September 2017: SGP is very likely to spread within the country.

Forecast context: *SGP are highly contagious diseases of sheep and goats which can cause high mortality*. SGP was reported in sheep in Egypt in February 2017 in New Valley governorate. This is the first time since 2005 that the disease is reported in Egypt and it is a concern due to the high likelihood of spreading within New Valley territory and the rest of the country.

Threat name: Avian influenza (AI)

Likelihood of occurrence: High

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) and Low pathogenic avian influenza (LPAI) outbreaks are likely to occur in poultry as per seasonal pattern with possible occurrence of sporadic AI human infections.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI is endemic in Egypt. Outbreaks in poultry are reported every month with a marked seasonal winter pattern. Since November 2016, H5N8 HPAI has spread to five additional governorates. Other influenza viruses circulating in poultry in the country are H5 LPAI and H9N2 LPAI.

EQUATORIAL GUINEA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW introduction is likely from neighbouring Cameroon.

Forecast context: FAW has not been reported in the country yet.

ERITREA

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in western and eastern lowlands that receive summer rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

ETHIOPIA

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of stem rust and yellow rust disease in wheat are likely to occur.

Forecast context: In recent years Ug99 and Digalu races of stem rust and AF2012 race of yellow rust affected wheats severely. Due to presence of inoculum of these races these diseases might amplify and cause outbreaks.

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Low numbers of adults may appear and breed in areas of recent rains in the east.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW is very likely going to spread to non-affected parts of the country considering the current geographical distribution of the pest.

Forecast context: FAW has already caused damage to maize fields in the Southern and South Western part of the country in 144 districts of the three major maize-growing regional states – Gambella, Oromia and Southern Nations Nationalities and Peoples' Region (SNNPR). July - September coincides with the main Meher crop growing season during which the maize crop will be very much at risk.

Threat name: Tomato leaf miner

Likelihood of occurrence: Low

Forecast for July-September 2017: Tomato leaf miner is unlikely to spread in Ethiopia considering that the forecast period does not correspond to the tomato growing season.

Forecast context: Tomato is not grown during July-September in Ethiopia due to the long rainy season, which favours late blight that normally causes up to 100% yield loss.

GABON

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW introduction is likely from neighbouring Cameroon.

Forecast context: FAW has not been reported in the country. The NPPO (National Plant Protection Organisation) will soon embark on crop monitoring to establish the presence or absence of the pest in the country.

Threat name: Banana bunchy top disease (BBTD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: BBTD which is currently present in the southern part of the country is likely to occur.

Forecast context: BBTD was first recorded in 1982 in Gabon and expanded in recent years affecting bananas in recent years in the northwest part of the country.

GAMBIA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW introduction is unlikely considering that neighbouring countries are not affected by the pest.

Forecast context: Although FAW has not been detected in Gambia yet, the Department of Plant Protection Services has set up a Task Force and has indicated its interest in undertaking an awareness campaign among farmers ahead of the coming rainy season.

GHANA

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of the virus in the country or due to new introductions of AI viruses from neighbouring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.*H5N1 HPAI was reported in Ghana from April 2015 to October 2016. H5N8 HPAI is spreading globally since November 2016 following bird migratory routes. So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW situation is very likely to amplify during this forecast period, which coincides with the maize growing season.

Forecast context: FAW was first reported on maize in Eastern region in April 2016. By March, 2017 FAW was reported in all ten (10) regions in the country. It is estimated that about 48 000 ha have been affected by the pest so far. The situation is already alarming.

GUINEA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW introduction is unlikely considering that neighboring countries are not affected by this pest.

Forecast context: FAW has not been reported in the country.

GUINEA-BISSAU

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW introduction is unlikely considering that neighboring countries are not affected by this pest.

Forecast context: FAW has not been reported in the country.

KENYA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW is likely to spread to non-affected parts of the country.

Forecast context: FAW has been reported in the Western, North and South Rift regions (25 counties). The likelihood of spread of FAW is moderate because July - September coincides with the off-season period and the pest will have limited access to the maize crop, which is its preferred host. However, the pest may multiply on alternate hosts, even though its bioecology in Africa is still poorly understood.

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of stem rust disease in wheat are likely to occur.

Forecast context: Stem rust is a recurrent problem in Kenya. In addition to presence of inoculum of the Ug99 race of the fungus, a new race of stem rust (Digalu race) and yellow rust (AF2012) which were recently detected in Ethiopia can spread to Kenya .

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5N8 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Forecast context: HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans. H5N8 HPAI virus was detected for the first time in January 2017 in wild birds and poultry in the neighboring Uganda (along the shores of Lake Victoria in Wakiso District).

LESOTHO

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Nil

Forecast for July-September 2017: FAW outbreaks are very unlikely to occur given the cold temperatures that do not favour the development of the pest and the fact that there have been no introductions of the pest in the country so far.

Forecast context: FAW has not been reported in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner outbreaks are likely to occur due to the high level of tomato trade between Lesotho and South Africa.

Forecast context: Tomato leaf miner has not been reported in the country. Lesotho is geographically surrounded by South Africa where the pest is already present.

LIBERIA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW introduction is unlikely considering that neighboring countries are not affected by the pest.

Forecast context: FAW has not been reported in the country.

LIBYA

Threat name: Desert Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI virus is endemic in Egypt and consequently can spread to neighbouring countries. Since November 2016, H5N8 HPAI has been spreading globally following bird migratory routes and infections in birds have been reported in Western and Central Africa and in Egypt.

MADAGASCAR

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Nil

Forecast for July-September 2017: FAW outbreaks are very unlikely to occur given the cold temperatures that do not favour the development of the pest, as well as the fact that there have been no introductions of the pest in the country so far.

Forecast context: FAW has not been reported in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Low

Forecast for July-September 2017: Tomato leaf miner outbreaks are unlikely to occur.

Forecast context: Tomato leaf miner has not been reported in the country. The island is separated from the affected countries, with limited trade.

Threat name: Migratory Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Adult populations of the last generation of the rainy season that have escaped control operations will be very mobile during the three next months (winter time) and will mature and breed at the onset of the next rainy season –or exceptionally in case of suitable ecological conditions-.

Forecast context: A plague came to an end in July 2016 following the implementation of a FAO Three-year emergency Programme. Scarce information only was received during the 2016/17 locust campaign.

Threat name: Red Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Immature adult populations will be mobile during the winter period and will mature and breed at the onset of the next rainy season.

Forecast context: Increase in Red Locust populations could lead to infestations -sometimes in association with the Migratory Locust-, which was not the case for the two last decades.

MALAWI

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Nil

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period and the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Low

Forecast for July-September 2017: Tomato leaf miner is likely to spread with the start of the tomato production season.

Forecast context: Tomato leaf miner is already present in the country.

Threat name: Red gum lerp psyllid

Likelihood of occurrence: High

Forecast for July-September 2017: The insect pest Red gum lerp psyllid is likely to spread in *Eucalyptus* plantations.

Forecast context: The combination of climate change with the general decline of forest conditions and the occurrence of Red gum lerp psyllid continue to damage plantations and small wood lots.

Threat name: Blue gum chalcid

Likelihood of occurrence: High

Forecast for July-September 2017: Outbreaks of the insect Blue gum chalcid are likely to occur in *Eucalyptus* plantations.

Forecast context: Blue gum chalcid continues to cause severe damages in nurseries and young *Eucalyptus* plantations.

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of Cassava Mosaic Virus are likely to occur.

Forecast context: Cassava Mosaic Virus was reported for the first time in Malawi 1998 and has been recently affecting the crop significantly in many districts and the disease is likely to escalate.

Threat name: Banana bunchy top disease (BBTD)

Likelihood of occurrence: High

Forecast for July-September 2017: Outbreaks of Banana Bunchy Top Disease (BBTD) are very likely to occur.

Forecast context: BBTD was first reported in 1998 but it has already impacted banana production in the country recently and might further escalate.

Threat name: Red Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped control operations will be highly mobile during the winter period and will mature and breed with the onset of the rainy season.

Forecast context: This species is the main locust pest in southern Africa

MALI

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in central and northern areas that receive summer rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW introduction is likely to occur from neighboring affected countries.

Forecast context: FAW has not been reported in the country yet.

MAURITANIA

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in south and central areas that receive summer rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

MAURITIUS

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Nil

Forecast for July-September 2017: FAW outbreaks are very unlikely to occur given the cold temperatures that do not favour the development of the pest, as well as the fact that there have been no introductions of the pest in the country so far.

Forecast context: FAW has not been reported in the country yet.

MOROCCO

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

MOZAMBIQUE

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, as well as the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: The insect pest Red gum lerp psyllid is likely to spread in *Eucalyptus* plantations.

Forecast context: Monitoring of pest spread is in progress

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Banana fusarium wilt disease race TR4, which is already present in Nampula province in the country is likely to spread.

Forecast context: Banana fusarium wilt disease has been already reported in two farms in Nampula province. It is a soil-borne disease that cannot be eradicated once established in a plantation. Thus, containment and prevention of spread is crucial.

Threat name: Red Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped control operations will be highly mobile during the winter period and will mature and breed with the onset of the rainy season.

Forecast context: This species is the main locust pest present in southern Africa.

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND disease from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Mozambique has the shrimp species susceptible to AHPND. Strong awareness on shrimp diseases is present in Mozambique. There is improved awareness of EUS in the country.

NAMIBIA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, and the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread with the start of the tomato production season.

Forecast context: Tomato leaf miner is already present in the country.

NIGER

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in central and northern areas that receive summer rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of the virus in the country or due to new introductions of AI viruses from neighboring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI was detected in the country sporadically since April 2015. In January 2017, H5N1 and H5N8 HPAI outbreaks were detected in Niamey. Recently H5N8 HPAI is spreading globally following bird migratory routes. So far, H5N8 HPAI has been reported in West and Central Africa also in Cameroon, Democratic Republic of Congo and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW is very likely to spread during this forecast period which coincides with maize growing season in the country.

Forecast context: FAW has been reported in Tahoua (at the border with Nigeria) and Tillabery (at the border with Mali) in 2017

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread within the country as it coincides with the main growing season of tomato.

Forecast context: Tomato leaf miner is already present in the country since 2013 and is currently causing damages in 7 out of 8 regions of the country.

NIGERIA

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of the virus within the country or due to new introductions of AI viruses from neighboring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI virus has been circulating in West Africa since December 2014 with Nigeria being the most affected country with over 800 outbreaks reported in poultry in 26 States. In November 2016, the H5N8 HPAI virus which is spreading globally, was detected in poultry (in Kano state) and so far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, and Niger.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW is very likely to spread within the country during this forecast period which coincides with maize growing season.

Forecast context: FAW was reported for the first time in 2016. The information indicates a widespread infestation of FAW on maize affecting about 700, 000 ha of farmlands. The maize farmlands devastation is already affecting poultry production in the Country. Intervention is currently limited to only information dissemination and advocacy.

Threat name: Tomato leaf miner

Likelihood of occurrence: High

Forecast for July-September 2017: Tomato leaf miner is very likely to spread within the country as it coincides with the main growing season of tomato.

Forecast context: Tomato leaf miner is already present in the country since 2015. In 2016 the pest ravaged many tomato farms across Nigeria, causing an astronomical increase in the market price of tomato.

REPUBLIC OF CONGO

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW introduction is very likely due to the presence of the pest in neighbouring countries (Cameroon and DRC).

Forecast context: FAW has not been reported in the country yet.

RWANDA

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: The insect pest Red gum Lerp Psyllid is likely to spread in *Eucalyptus* plantations.

Forecast context: The insect pest Red Gum Lerp Psyllid continues damaging *Eucalyptus* plantations since 2015 in Rwanda. A survey to quantify the spread of the pest is being organized and approaches to manage the pest using biological control.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5N8 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N8 HPAI virus was detected in January 2017 in wild birds and poultry in neighbouring Uganda (along the shores of Lake Victoria in Wakiso District). This is the first time that AI was reported in Uganda and in Eastern Africa since 2008.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW is likely to spread within the country.

Forecast context: In a three-month period, the pest has affected all 30 districts. The likelihood of spread of FAW is moderate because July - September coincides with the off-season period and the pest will have limited access to the maize crop, which is its preferred host. However, the pest may multiply on alternate hosts.

SAO TOME AND PRINCIPE

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW is likely to re-emerge if control measures in place in the country are interrupted.

Forecast context: Initially detected in Sao Tome in April 2016, the pest has rapidly spread to the island of Principe. Ongoing control measures have significantly improved the pest incidence compared to 2016 and consequently improved the maize yields. However, in the absence of further control measures FAW is likely to re-emerge.

SENEGAL

Threat name: Desert Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread within the country as it coincides with the main growing season of tomato.

Forecast context: Tomato leaf miner is already present in the country since 2012 and is currently found in all its regions.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H9 Low pathogenic avian influenza (LPAI) and/or H5 HPAI outbreaks are likely to occur in poultry.

vH9 LPAI was detected in April 2017 in chicken in Thies region. This is the first time that AI is reported in Senegal.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW is unlikely to occur in the country as neighbouring countries are not affected by the pest.

Forecast context: FAW has not been reported in the country.

SIERRA LEONE

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW is unlikely to be introduced in the country as neighbouring countries are not affected by the pest.

Forecast context: FAW has not been reported in the country.

SOMALIA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW introduction is likely from neighbouring Ethiopia and Kenya.

Forecast context: Pest has not yet been reported in Somalia.

Threat name: Tomato leaf miner

Likelihood of occurrence: High

Forecast for July-September 2017: Tomato leaf miner is very likely to continue to spread in the country.

Forecast context: The pest was first reported in Somalia in 2014 and the situation remains severe with big losses expected especially where farmers have no mitigation measures in place. Tomato production is done under irrigation so this is an all year round challenge.

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Small-scale breeding could occur on the plateau in areas of recent rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

SOUTH AFRICA

Threat name: Avian Influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5N8 Highly pathogenic avian influenza (HPAI) is likely to spread within the country.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N8 HPAI was detected for first time in the country in a commercial farm in June 2017 in Mpumalanga region. So far, H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria, in Eastern Africa in Uganda and in Southern Africa in South Africa and Zimbabwe.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, as well as the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread with the start of the tomato production season.

Forecast context: Tomato leaf miner is already present in the country.

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Low

Forecast for July-September 2017: The insect pest Red gum lerp psyllid is likely to spread in *Eucalyptus* plantations within the country.

Forecast context: The introduction of biological control agents to reduce the pest population is in progress.

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Blue gum chalcid outbreaks are likely to occur in *Eucalyptus* nurseries and young plantations.

Forecast context: The introduction of biological control agents to reduce the pest population is in progress.

SOUTH SUDAN

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW introduction is very likely from neighbouring Kenya and Uganda.

Forecast context: FAW has not yet been reported in South Sudan.

SUDAN

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in interior areas that receive summer rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

SWAZILAND

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, and the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is highly likely to occur due to proximity to infested countries (South Africa and Mozambique).

Forecast context: Tomato leaf miner has not been reported in the country.

SEYCHELLES

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Nil

Forecast for July-September 2017: FAW outbreaks are very unlikely to occur during this period given the cold temperatures that do not favour the development of the pest, and the fact that there have been no introductions so far been reported.

Forecast context: FAW has not been reported in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread within the country.

Forecast context: Tomato leaf miner has been already reported in the country on 4 large-scale farms.

TOGO

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur in poultry due to further spread of the virus in the country or due to new introductions of AI viruses from neighboring countries.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI has been reported in seven countries in West and Central Africa since December 2014. It was detected in August 2016 in Togo at the border with Ghana. H5N8 HPAI is spreading globally since November 2016 following bird migratory routes. So far H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast for July-September 2017: FAW outbreaks are very likely to amplify during this forecast period, which coincides with the maize growing season.

Forecast context: FAW has been reported for the first time in the country in April 2016.

TUNISIA

Threat name: Desert Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: High

Forecast for July-September 2017: FMD serotype A are very likely to occur in the country due to the recent presence of the virus detected in the country.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.*FMD serotype A outbreaks were reported for the first time in March 2017 in the country (Bizerte region). The episode is of concern for Tunisia and neighbouring countries because the susceptible animal population in the region is not immunized against this strain.

UGANDA

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of the insect pest Blue gum chalcid are likely to occur in *Eucalyptus* nurseries and plantations.

Forecast context: The insect Blue gum chalcid is currently causing severe damages in *Eucalyptus* nurseries, woodlots and plantations. Management options of the pest are being provided to farmers.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5N8 Highly pathogenic avian influenza (HPAI) is likely to spread within the country.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N8 HPAI virus was detected for the first time in January 2017 in wild birds and poultry in Uganda (along the shores of Lake Victoria in Wakiso District). Since then, H5N8 HPAI was reported in Kalangala, Masaka and Wakiso districts. This is the first time that AI was reported in Uganda and in Eastern Africa since 2008. So far, H5N8 HPAI has been reported in Eastern Africa in Uganda, in Southern Africa in South Africa and Zimbabwe and in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria.

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FAW is likely to spread to non-affected parts of the country.

Forecast context: In Uganda, the pest is confirmed in 115out of 144 districts. The likelihood of spread of FAW is moderate because July - September coincides with the off-season period and the pest will have limited access to the maize crop, which is its preferred host. However, despite the poor understanding of the bio-ecology of FAW in Africa, it is known to be able to multiply on alternate hosts.

UNITED REPUBLIC OF TANZANIA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, and the limited production of maize and other cereals at this time.

Forecast context: FAW is already present in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread within the country.

Forecast context: Tomato leaf miner is already present in the country

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of the insect pest Blue gum chalcid will continue to occur in *Eucalyptus* nurseries and plantations.

Forecast context: Damage continues in *Eucalyptus* nurseries, woodlots and plantations due to Blue gum chalcid.

Threat name: Red Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped control operations will be highly mobile during the winter period and will mature and breed with the onset of the rainy season.

Forecast context: This species is the main locust pest in southern Africa.

Threat name: Epizootic ulcerative syndrome (EUS)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: EUS is likely to occur in the country due to the confirmed presence of the disease in neighbouring countries such as Zambia and DRC.

Forecast context: Water temperatures during the period between July to September ranges from 18 to 25°C optimal for development of the oomycete fungus responsible of the disease.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5N8 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N8 HPAI virus was detected for the first time in January 2017 in wild birds and poultry in Uganda (along the shores of Lake Victoria in Wakiso District). This is the first time that AI was reported in Eastern Africa since 2008.

ZAMBIA

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, and the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread within the country.

Forecast context: Tomato leaf miner is already present in the country.

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of the insect pest Blue gum chalcid are likey to occur in *Eucalyptus* nurseries and plantations.

Forecast context: Zambia has initiated pest management activities based on silvicultural practices, breeding programmes and quarantine measures to reduce the insect populations. Introduction of biological control agents to reduce the Blue gum chalcid population is in progress.

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of the insect pest Red gum lerp psyllid are likely to occur in *Eucalyptus* plantations.

Forecast context: Pest management activities based on silvicultural practises are in progress.

Threat name: Cassava mosaic disease (CMD)

Forecast for July-September 2017: Cassava Mosaic Virus is likely to continue to spread.

Cassava Mosaic Virus was first reported in 2014 in six provinces affecting significantly the crop and is likely to spread further.

Threat name: Migratory Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped control operations will be highly mobile during the winter period and will mature and breed with the onset of the rainy season.

Forecast context: This species is one of the main locust pest present in southern Africa.

Threat name: Red Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped control operations will be highly mobile during the winter period and will mature and breed with the onset of the rainy season.

Forecast context: This species is the main locust pest present in southern Africa

Threat name: Epizootic ulcerative syndrome (EUS)

Likelihood of occurrence: Low

Forecast for July-September 2017: Possibly further spread of EUS other parts of the country through for example heavy rainfall, flooding, poor biosecurity, movement of infected fish and possibly birds.

Forecast context: Water temperatures during the period between July to September ranges from 18 to 25°C optimal for development of the oomycete fungus responsible of the disease.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5N8 Highly pathogenic avian influenza (HPAI) is likely to spread within the country.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N8 HPAI was observed for first time in the country in chicken in mid May 2017 in Mashonaland East region. So far, H5N8 HPAI has been reported in West and Central Africa in Cameroon, Democratic Republic of Congo, Niger and Nigeria, in Eastern Africa in Uganda and in Southern Africa in South Africa and Zimbabwe.

ZIMBABWE

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast for July-September 2017: FAW outbreaks are unlikely to occur due to cool conditions that characterise this period, as well as the limited production of maize and other cereals at this time.

Forecast context: FAW presence has already been confirmed in the country.

Threat name: Tomato leaf miner

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Tomato leaf miner is likely to spread within the country.

Forecast context: Tomato leaf miner is already present in the country.

Threat name: Red gum lerp psyllid

Likelihood of occurrence: High

Forecast for July-September 2017: Outbreaks of the insect pest Red gum lerp psyllid will continue to be reported in *Eucalyptus* plantations.

Forecast context: Pest management activities based on silvicultural practises are in progress.

Threat name: Blue gum chalcid

Likelihood of occurrence: High

Forecast for July-September 2017: Outbreaks of the insect pest Blue gum chalcid will continue to be reported in *Eucalyptus* nurseries, woodlots and plantations.

Forecast context: Pest management activities based on application of biological control agent are in progress to reduce Blue gum chalcid populations.

Threat name: Bronze bug

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of the insect pest Bronze bug are likely to occur in *Eucalyptus* plantations.

Forecast context: Pest management activities are in progress.

Threat name: Epizootic ulcerative syndrome (EUS)

Likelihood of occurrence: High

Forecast for July-September 2017: Possibly further spread of EUS to other parts of the country through for example heavy rainfall, flooding, poor biosecurity, movement of infected fish and possibly birds.

Forecast context: Water temperatures during the period between July to September ranges from 18 to 25°C optimal for development of the oomycete fungus responsible of the disease.

AMERICAS

COLOMBIA

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Strong awareness on shrimp disease is present in the country.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.

Forecast context: Strong awareness on EHP is present in the country.

GUATEMALA

Threat name: Bark beetles

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of Bark beetles in pine plantations are likely to occur.

Forecast context: Silvicultural practises to reduce the pest populations is in progress. Training of foresters on prevention and management practices is in progress.

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Strong awareness on AHPND is in place in the country. National action plan on AHPND is in preparation.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.

Forecast context: Strong awareness on EHP is in place in the country.

HONDURAS

Threat name: Bark beetles

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of Bark beetles are continuing to be reported causing heavy losses in pine plantations.

Forecast context: A severe outbreak of bark beetles is affecting about 500 000 ha of conifer forests. Training of foresters on prevention and management practices is in progress.

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Strong awareness on AHPND is in place in the country. National action plan on AHPND is in preparation.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.

Forecast context: Strong awareness on EHP is in place in the country.

NICARAGUA

Threat name: Bark beetles

Likelihood of occurrence: High

Forecast for July-September 2017: Outbreaks of Bark beetle are very likely to occur in pine plantations.

Pest management activities based on silvicultural practices are in progress.

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Strong awareness on AHPND is in place in the country. National action plan on AHPND are in preparation.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.

Forecast context: Strong awareness on EHP is in place in the country.

PANAMA

Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Strong awareness on AHPND; national action plan on AHPND in preparation

Enterocytozoon hepatopenaei (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.

Forecast context: Strong awareness on EHP is in place in the country.

PERU

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Strong awareness on AHPND is in place in the country. National action plan on AHPND is in preparation.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.

Forecast context: Strong awareness on EHP is in place in the country.

ASIA

AFGHANISTAN

Threat name: Italian Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Not reported this year.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Hopper populations having escaped control operations have fledged; they will mate and lay eggs and eventually disappear during the forecast period.

Forecast context: The species is one of the three locust pests present in Central Asia.

ARMENIA

Threat name: Italian Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations will mate and lay eggs. Some limited infestations may have to be controlled.

Forecast context: The species is one of the two locust pests present in Caucasus.

AZERBAIJAN

Threat name: Italian Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Not reported this year.

Forecast context: The species is one of the two locust pests present in Caucasus.

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Adult populations having escaped hopper control operations will lay eggs and eventually disappear.

Forecast context: The species is one of the two locust pests present in Caucasus.

CHINA

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Occurrence of AI outbreaks in poultry due to several H5 and H7 Highly pathogenic avian influenza (HPAI) and low pathogenic avian influenza (LPAI) viruses circulating in the country. Sporadic avian influenza human cases are likely to occur due to H5 HPAI and to H7N9 LPAI virus.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* Several serotypes of HPAI and LPAI AI viruses are circulating and being detected in China. The current H7N9 LPAI season has been the heaviest since the emergence of the virus in early 2013. In addition, this is the first season that H7N9 AI viruses have genetic suggestive of evolving from a low pathogenic into a highly pathogenic avian virus.

GAZA STRIP

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FMD (serotype O and A) outbreaks are likely to occur.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.* FMD serotype O outbreaks were reported in February 2017 in farms at the border with Israel and Egypt. Vaccination has been implemented.

GEORGIA

Threat name: Boxwood moth

Likelihood of occurrence: High

Forecast for July-September 2017: Outbreaks of Boxwood moth are very likely to cause dieback of native boxwood species.

Forecast context: As part of Integrated Pest management programme, the use of bio pesticide Btk and pheromone trapping are in progress to protect the native boxwood species.

Threat name: Boxwood blight

Likelihood of occurrence: Low

Forecast for July-September 2017: Occurrence of Boxwood blight disease (caused by pathogen *Calonectria pseudonaviculata*) continues, however, the spread is low due to winter temperatures and lack of rain.

Forecast context: Monitoring of the disease spread is in progress.

Threat name: Italian Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the two locust pests present in Caucasus.

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the two locust pests present in Caucasus.

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors.

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* LSD was reported for the first time in Georgia in November 2016 in Oni district, Racha-Lechkhum Kvemo Svaneti Region, at the border with Russia.

INDIA

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in Rajasthan and Gujarat areas that receive monsoon rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Good surveillance and biosecurity measures in place. Strong awareness on shrimp diseases is present in the country.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.

Forecast context: Good surveillance and biosecurity measures in place. Strong awareness on shrimp diseases is present in the country.

INDONESIA

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Surveillance for AHPND as well as Strong awareness on shrimp diseases is in place in the country. Many small-scale producers are present.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.

Forecast context: /

IRAN (ISLAMIC REPUBLIC OF)

Threat name: Charcoal disease

Likelihood of occurrence: High

Forecast for July-September 2017: Oak charcoal disease (pathogen *Biscogniauxia mediterranea*) continues to cause decline of oak forest in Zagros due to the abiotic stresses. High summer temperatures and low precipitation levels are likely to increase the disease incidence.

Forecast context: The decline of oak charcoal disease has been reported since 2012 in the Zagros region of the country. It has a negative impact on the livelihood of nomad people and watershed management. Operations to minimize the impact of the charcoal disease and abiotic stresses are in progress.

Threat name: Boxwood moth

Likelihood of occurrence: High

Forecast for July-September 2017: The Boxwood moth (*Cydalima pesrspectalis*) is very likely to spread in spring and likely to cause massive defoliations.

Forecast context: The first introduction of boxwood moth was reported in August 2016. The native boxwood forests are under new threat of Boxwood moth which is highly destructive. Early actions such as pheromone trapping for monitoring and treatments using bio pesticide Btk is required to reduce further spread. FAO is organizing a visit from Georgia to Iran to share the experiences on BTK application and pheromone trappings.

Threat name: Boxwood blight

Likelihood of occurrence: High

Forecast for July-September 2017: Occurrence of Boxwood blight disease (caused by *Calonectria pseudonaviculata*) continues to cause dieback of native box wood species, however, the spread is low due to winter temperatures and lack of rain.

Forecast context: Boxwood blight was reported for the first time in the country in 2012. Currently approximately 50,000 ha of boxwood forest is affected by the disease. Pest management activities in selected areas are in progress.

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: No significant developments likely.

Forecast context: Significant or substantial crop damage is unlikely.

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.

Forecast context: Efficient surveillance and biosecurity measures are in place in the country. Strong awareness on shrimp diseases is present in the country.

Threat name: Avian influenza (AI)

Likelihood of occurrence: Low

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks within the country is unlikely to occur.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* A new H5N1 HPAI outbreak was detected in January 2017 (in Mazdaran region), after the previous one in the country occurred in June 2016. The H5N8 HPAI that is currently spreading globally following wild birds migratory routes have been detected in wild and domestic birds in eight governorates. The last detection occurred in February 2017.

ISRAEL

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: High

Forecast for July-September 2017: FMD (serotype O and A) outbreaks are very likely to occur.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.* An FMD serotype A outbreak was detected in May 2017 in a cattle farm (in Aramsha, Northern district). This is of concern to Israel and neighbouring countries because of poor vaccine matching available so far.

JORDAN

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Banana fusarium wilt disease race TR4 which has been recently reported for the first time in one farm is likely to spread.

Forecast context: Banana fusarium wilt disease is a soil-borne disease that cannot be eradicated once established in a plantation. Thus, containment and prevention of spread is crucial.

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: FMD (serotype O) outbreaks are likely to spread and FMD serotype A is likely to be introduced from neighboring countries.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.* FMD outbreaks were detected in cattle farms in February-March 2017 in three different regions of the country.

KAZAKHSTAN

Threat name: Italian Locust

Likelihood of occurrence: High

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Migratory Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped hopper control operations will lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors.

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* Kazakhstan reported its first and unique LSD outbreak In July 2016, in a village in West Kazakhstan region.

KYRGYZSTAN

Threat name: Italian Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped hopper control operations will lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Threat name: Yellow-Spined Bamboo Locust

Likelihood of occurrence: High

Forecast for July-September 2017: Movements of adult groups and swarms are very likely to start in July and last until September.

Forecast context: Hatching in April followed by hopper development with fledging by June in 580 locations of the 5 provinces affected. Adults may cause damage to food crops along the swarming paths.

LEBANON

Threat name: Dry cone syndrome

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Dry cone syndrome is continuing to cause damages to pine plantations (*Pinus pinea*).

Forecast context: Heavy yield losses continue to impact rural livelihoods. The yield reduction of pine nuts is reported throughout the country. Silvi cultural practises to stregthen the trees are in progress.

Threat name: Western conifer seed bug

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Outbreaks of Western conifer seed bug is continuing to cause damage to pine plantations (*Pinus pinea*). Pest activities likely to be increased in summer months.

Forecast context: Monitoring of pest population using traps is in progress.

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Banana fusarium wilt disease race TR4 which has been recently reported for the first time in one farm is likely to spread.

Forecast context: Banana fusarium wilt disease is a soil-borne disease that cannot be eradicated once established in a plantation. Thus, containment and prevention of spread is crucial.

NEPAL

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: H5 Highly pathogenic avian influenza (HPAI) outbreaks and introduction of H7N9 LPAI from China are likely to occur.

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 HPAI outbreaks were reported in In February-March 2017 in two poultry farms (in Western region); H5N8 HPAI was detected in captive birds in a zoo in Eastern region. H7N9 LPAI was reported for first time in neighbouring Tibet, province of China, in February 2017 enhancing the possibility for the virus to spread into Nepal.

OMAN

Threat name: Desert Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: No significant developments likely.

Significant or substantial crop damage is unlikely.

PAKISTAN

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Banana fusarium wilt disease race TR4 which has been reported recently for the first time in one farm is likely to spread.

Forecast context: Banana fusarium wilt disease is a soil-borne disease that cannot be eradicated once established in a plantation. Thus, containment and prevention of spread is crucial.

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Small-scale breeding in Cholistan and Nara deserts that receive monsoon rains.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

PHILIPPINES

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.

Forecast context: /

REPUBLIC OF KOREA

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: Low

Forecast for July-September 2017: FMD (serotype A and O) outbreaks are unlikely to occur the country.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.* FMD serotype A outbreaks were reported in February 2017 for the first time since 2010. FMD serotype O has been regularly reported since 2014. Both FMD serotype O and A were last reported in February 2017.

SAUDI ARABIA

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Unusual risk of local breeding in southwest interior and coast.

Forecast context: Minor potential threat to crops at the end of forecast period, depending on extent of summer breeding.

SRI LANKA

Threat name: Acute hepatopancreatic necrosis disease (AHPND)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of AHPND from affected countries through trade of aquatic animals (infected broodstock, post-larvae and other live aquatic animals such as polychaetes, clams, oysters, etc) used as feed for broodstock.

Forecast context: Strong awareness on AHPND is in place in the country. National action plan on AHPND is in preparation.

Threat name: *Enterocytozoon hepatopenaei* (EHP)

Likelihood of occurrence: Low

Forecast for July-September 2017: Introduction of EHP from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.

Forecast context: /

TAJIKISTAN

Threat name: Italian Locust

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped hopper control operations will lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

TURKEY

Threat name: Chestnut gall wasp

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Chestnut gall wasp continues to spread across the country in Chestnut trees.

Forecast context: Pest management activities based on application of biological control agent are in progress to reduce the populations of the insect pest.

TURKMENISTAN

Threat name: Italian Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Adult populations having escaped hopper control operations will lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Adult populations having escaped hopper control operations will lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

UZBEKISTAN

Threat name: Italian Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Migratory Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Nil

Forecast for July-September 2017: Adult populations having escaped hopper control operations will disappear after egg-laying.

Forecast context: The species is one of the three locust pests present in Central Asia.

VIET NAM

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: Spread of H5 Highly pathogenic avian influenza (HPAI) outbreaks and incursion of H7N9 LPAI from China

Forecast context: *HPAI is a highly contagious disease causing high mortality in poultry resulting in severe losses in the poultry production sector with impact on food security and trade. Avian Influenza viruses can affect humans.* H5N1 and H5N6 HPAI outbreaks were reported in the country in 2016 and at the beginning of 2017. Historically AI outbreaks occur regularly throughout the year and increase by the end of the year.

Threat name: Yellow Spined Bamboo Locust

Likelihood of occurrence: High

Forecast for July-September 2017: Movements of adult groups and swarms are very likely to start in July and last until September.

Forecast context: Nymphs sighted in two provinces (Son La and Dien Bien). Adults may cause damage to rice and maize along the swarming paths.

WEST BANK

Threat name: Foot-and-mouth disease (FMD)

Likelihood of occurrence: High

Forecast for July-September 2017: FMD (serotype A and O) outbreaks are very likely to occur due to the introduction the virus from neighboring countries.

Forecast context: *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs and can cause a sharp drop in milk and meat production and mortality in young animals. It is the most restrictive animal disease for livestock trade.* An FMD serotype A outbreak was detected in a cattle farm in May 2017 in Israel. The episode is of concern to West Bank because of the presence of the virus in neighbouring countries and the poor vaccine matching with the serotype A available so far.

YEMEN

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Small-scale breeding in the interior.

Forecast context: Minor potential threat to crops at end of forecast period, depending on extent of summer breeding.

EUROPE

ALBANIA

Threat name: Pine processionary moth

Likelihood of occurrence: Moderate

Forecast for July-September 2017: The new generation is likely to cause severe defoliation of pine forests.

Forecast context: Mechanical removal of nests are in progress to manage the pest populations.

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors. However the possibility is lowered due to the mitigation measures (i.e. vaccination).

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* LSD was detected for the first time in June 2016. LSD has caused so far in the country 217 outbreaks affecting 14 counties. An emergency vaccination campaign has been implemented. Last outbreak occurred in September 2016.

BELARUS

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur due to possible introduction of the virus from neighbouring countries.

Forecast context: ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. *So far no vaccines are available.* Since its first occurrence in Europe in early 2014, ASF has become endemic in some countries bordering Belarus, lastly in Ukraine, Poland and Lithuania.

BULGARIA

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors. However the possibility is lowered due to the mitigation measures (i.e. vaccination).

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* LSD which was first detected first detected in April 2016 (in Haskovo province) has spread in the country causing more than 200 outbreaks in 19 provinces. A massive emergency vaccination campaign has been implemented in the country.

GREECE

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors. The possibility is lowered due to the mitigation measures (i.e. vaccination).

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* LSD was detected for the first time in Greece in mid-August 2015, in the Evros Delta Region along the border with Turkey. In the same year the disease affected over 100 cattle farms in three regions. Despite the control measures (e.g. movement control and emergency vaccination campaign) the virus has re-emerged in April 2016 spreading to new regions within Greece and to four additional countries in the region.

LITHUANIA

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur.

Forecast context: *ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. So far no vaccines are available.* Since the first ASF occurrence in the country in early 2014, the presence of the virus continues to be reported mainly in wild boars which is a high concern because ASF can be easily transmitted from wild boars to domestic pigs.

MONTENEGRO

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors. However the possibility is lowered due to the mitigation measures (i.e. vaccination).

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* LSD which was first detected in April 2016 in the country, has spread in the country causing more than 60 outbreaks in seven municipalities. The last outbreak occurred in August 2016. An emergency vaccination campaign has been implemented in the country.

POLAND

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur.

Forecast context: *ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. So far no vaccines are available.* Since the first occurrence of ASF in the country in early 2014, the presence of the virus continue to be reported mainly in wild boars.

REPUBLIC OF MOLDOVA

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur due to possible introduction of the virus from neighbouring countries.

Forecast context: *ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. So far no vaccines are available.* ASF was reported for the first time in late September 2016 (in Donduseni district) at the northern border with Ukraine. Since its first occurrence in Europe in early 2014, the presence of the virus continues to be reported at the border area with Ukraine in backyard farms close the border of Moldova (Rep. of).

ROMANIA

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur due to possible introduction of the virus from neighbouring countries.

Forecast context: *ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. So far no vaccines are available.* In Ukraine, outbreaks of ASF are occurring in small holdings at the border with Romania.

RUSSIAN FEDERATION

Threat name: Italian Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Migratory Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Hopper populations having escaped control operations will fledge and adults will mate, lay eggs and eventually disappear.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: Moroccan Locust

Likelihood of occurrence: Low

Forecast for July-September 2017: Adult populations having escaped hopper control operations will disappear after egg-laying.

Forecast context: The species is one of the three locust pests present in Central Asia.

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur in the country.

Forecast context: *ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. So far no vaccines are available.* The presence of the virus continues to be reported both in wild boars and domestic pigs, with new area being affected in early months of 2017.

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors.

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* After its re-emergence in May 2016 in Dagestan, LSD has spread north, east, and westwards, affecting 18 administrative subjects and causing almost 250 outbreaks. Its spread has decreased due to unfavourable weather condition for the vector.

SERBIA

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emerge and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors. However the possibility is lowered due to the mitigation measures (i.e. vaccination).

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* LSD was first observed in a backyard farm in Pcinja district. Since then, 223 outbreaks were officially reported in 12 districts. An emergency vaccination campaign has been implemented.

THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: LSD is likely to re-emergence and further spread in the country. The possibility is fostered by the upcoming favourable weather condition for the vectors although the possibility is lowered due to the mitigation measures (i.e. vaccination).

Forecast context: *LSD is a severe disease transmitted by vectors which affects mainly cattle causing important meat and milk production losses.* Since its first occurrence in July 2016, LSD has caused almost 170 outbreaks affecting 21 municipalities.

UKRAINE

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast for July-September 2017: ASF outbreaks are likely to occur in the country.

Forecast context: *ASF is a highly contagious viral disease of swine, both domestic and wild, which can cause high mortality. So far no vaccines are available.* Since the first occurrence of ASF in the country in early 2014, ASF continues to be reported in domestic pigs, with new areas being affected in early months of 2017.

GLOSSARY

FCC threat	Food chain crisis (FCC) threats are transboundary animal and plant pests and diseases, including forest pests and aquatic diseases, and food safety threats, that can affect any step of the food chain with a potential high impact on food and nutrition security. FCC threats may reach epidemic proportions by spreading within a country and to a number of countries necessitating control/management cooperation between several countries
Forecasting	Ability to predict future condition or occurrence of an FCC threat for the upcoming three months.
Likelihood of introduction	Chances of introduction of a FCC threat into a country, across border or to a specific area for the upcoming three months.
Likelihood of occurrence	Chances of a FCC threat to happen for the upcoming three months.
Likelihood of spread	Chances of geographical spread of a FCC threat within a country beyond its original introduction for the upcoming three months.
Likelihood of re-emergence/ amplification	Chances of re-emergence/amplification (e.g. increase, breeding, etc.) of a threat already existing within a country for the upcoming three months.
Biosecurity	All the cumulative measures that can or should be taken to keep disease (viruses, bacteria, fungi, protozoa, parasites) from a farm and to prevent the transmission of disease (by humans, insects, rodents and wild birds/animals) within an infected farm to neighbouring farm (FAOTERM).
Incursion	An isolated population of a pest recently detected in an area, not known to be established, but expected to survive for the immediate future (FAOTERM).
Outbreak	A recently detected pest population, including an incursion, or a sudden significant increase of an established pest population in an area (FAOTERM).
Zoonosis	Any disease or infection which is naturally transmissible from animals to humans (FAOTERM).

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- ECDC - Communicable disease threats report (CDTR) available at http://ecdc.europa.eu/en/publications/surveillance_reports/Communicable-Disease-Threats-Report/Pages/default.aspx
- FMD Situation Reports available at http://www.fao.org/ag/againfo/commissions/eufmd/commissions/eufmd-home/fmd-surveillance/situation-reports/en/
- Global Animal Disease Information System (EMPRES-i) (http://empres-i.fao.org/eipws3g/)
- Global Early Warning System (GLEWS) at FAO
- OIE World Animal Health Information Database (WAHID) Interface http://www.oie.int/wahis_2/public/wahid.php/Wahidhome/Home

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- FAO Desert Locust Information Service (DLIS) www.fao.org/ag/locusts

Migratory Locust in Madagascar

- Bulletins of the Locust Watch Unit (available at http://www.fao.org/emergencies/crisis/madagascar-locust/en/)
- Locust Situation Updates available at http://www.fao.org/ag/locusts/en/info/info/index.html

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Glossary

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- **IPPC Glossary:** https://www.ippc.int/en/publications/glossary-phytosanitary-terms/
- **FAO Food Safety and Quality website – A-z index:** http://www.fao.org/food/food-safety-quality/a-z-index/biosecurity/en/

ACAPS: https://www.acaps.org/

Food-Chain-Crisis@fao.org
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