Food and Agriculture Organization
of the United Nations

Food Chain Crisis
Early Warning Bulletin

April-June 2016
No.19

Alerts on threats to the food chain
affecting food security in countries and regions

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 with 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 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), the Global Information and Early Warning System (GIEWS), and the Intelligence and Coordination Unit of the Food Chain Crisis Management Framework (FCC-ICU) of FAO. FCC-ICU coordinates the bulletin.

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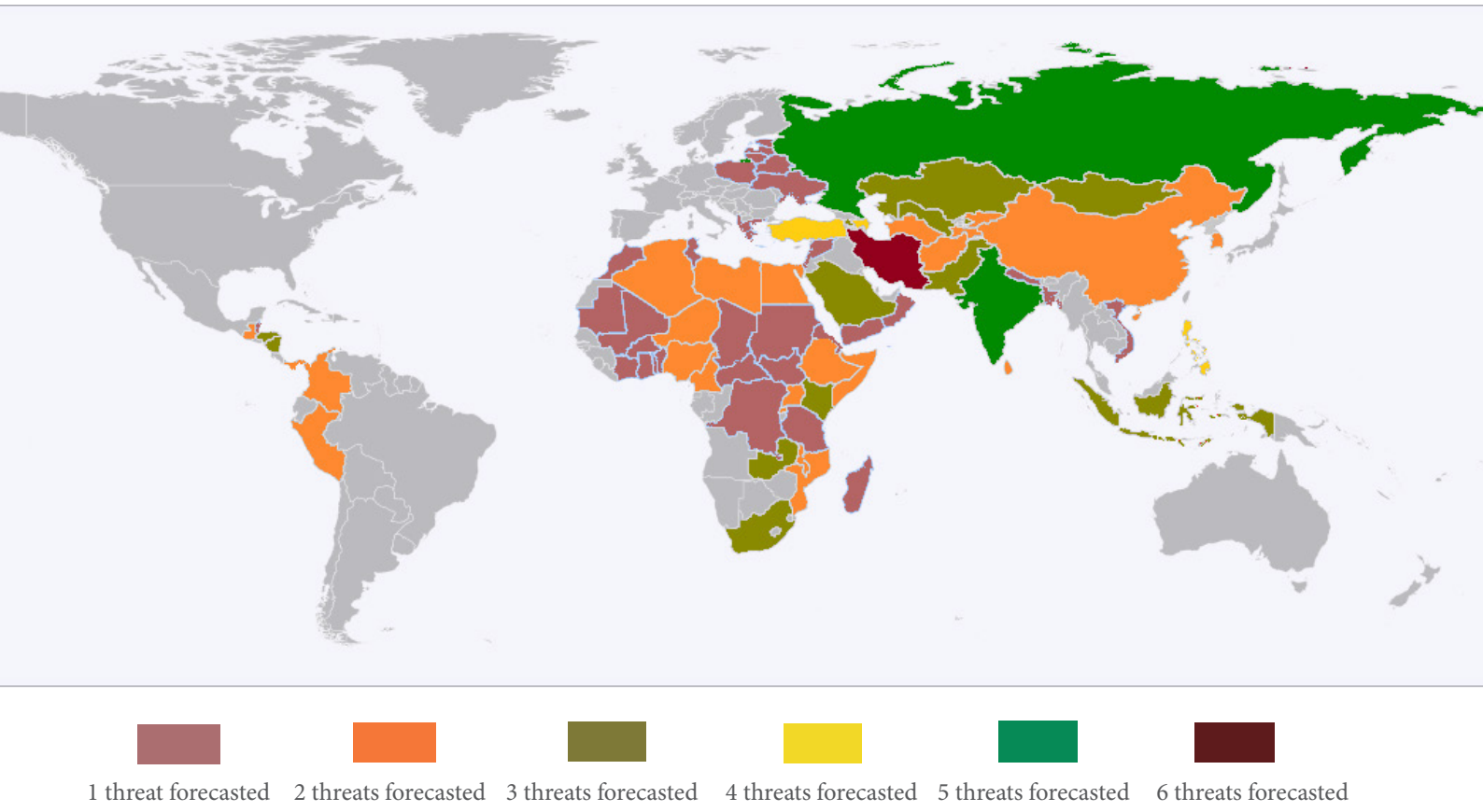
OVERVIEW

The map below shows the global distribution of FCC threats forecasted for the three-month period April-June 2016, in 81 countries. This map displays countries in different colors according to the number of forecasts carried out and does not reflect the level of likelihood of occurrence of the FCC threats.

The map is based on FAO data and information available at the time of preparation of this bulletin.

Figure 1. Geographical distribution of FCC threats forecasted for the period April-June 2016



OVERVIEW

During the period **April-June 2016,** Food Chain Crisis (FCC) threats are expected to occur in the regions of Africa, America, Asia and Europe. FCC threats will be either persisting within a country and possibly spreading to neighboring countries or will be latent and will re-emerge/amplify at a certain time.

The dynamics of the FCC threats depend on a number of risk factors/drivers including agro-ecological factors (e.g. intensive farming systems, deforestation, overgrazing, etc.), climatic changes (e.g. droughts, heavy rains, heat waves, changes in vegetation cover, etc.), human behavior (e.g. cultural practices, conflicts and civil insecurity, trade, etc.) and natural disasters.

FCC threats forecasted for the upcoming three-month period April-June 2016, comprise 28 different animal and plant pests and diseases, aquatic diseases, and forest pests and diseases:

	Animal and zoonotic diseases: African swine fever, Ebola virus disease, foot-and-mouth disease, highly pathogenic avian influenza, lumpy skin disease, low pathogenic avian influenza, Middle East respiratory syndrome coronavirus, peste des petits ruminants and Rift Valley fever
	Aquatic diseases: Acute hepatopancreatic necrosis disease, *Enterozytozoon hepatopenaei*, Epizootic ulcerative syndrome
	Plant diseases: Banana Bunchy Top Disease, Banana Fusarium wilt disease, Cassava virus diseases, Wheat rust diseases
	Locusts: Desert Locust; Italian Locust; Migratory Locust; Moroccan Locust
	Forest pests and diseases: bark beetles, blue gum chalcid, bronze bug, chestnut gall wasp, diebacks, pine processionary moth and red gum lerp psyllid

For the second quarter of 2016, 157 forecasts were conducted in 81 countries: 55 in Africa, 15 in Americas, 74 in Asia and 13 in Europe (Figures 2 and 3). The likelihood of occurrence of the above mentioned forecast events is high for 28 events, moderate for 51, low for 74 and nil[1] for four (Figure 4).

El Niño, current situation and forecasting

The current El Niño is expected to persist until autumn 2016 but weaken over the coming months; there are early signs that the chance of La Niña developing has increased.

1 Nil refers to the forecast of Locust which is continuously under FAO monitoring.

OVERVIEW

All graphs and figures following here-below are based on FAO data and information available at the time of preparation of this bulletin.

Figure 2. Number of forecast events, by threat category and continent

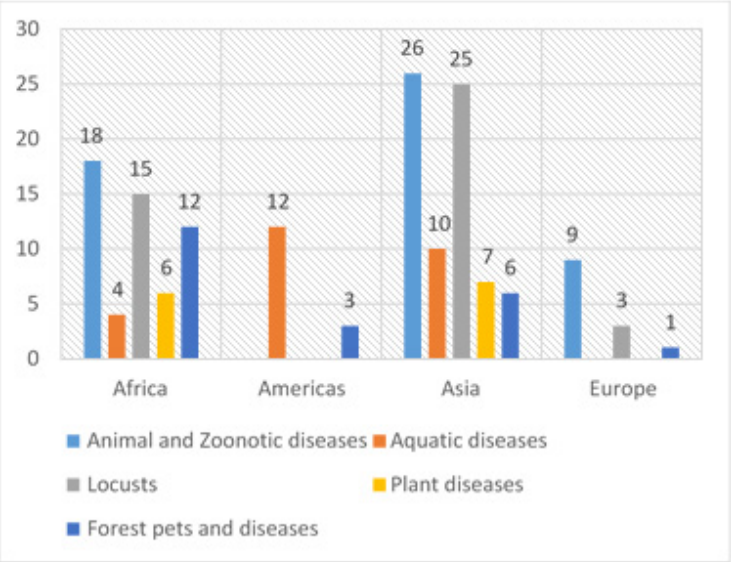


Figure 3. Distribution (%) of the forecast events for the upcoming three months by continent

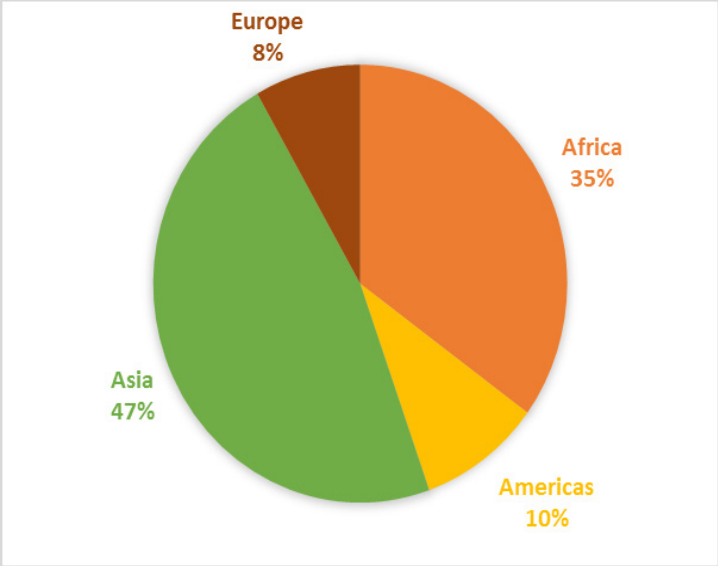
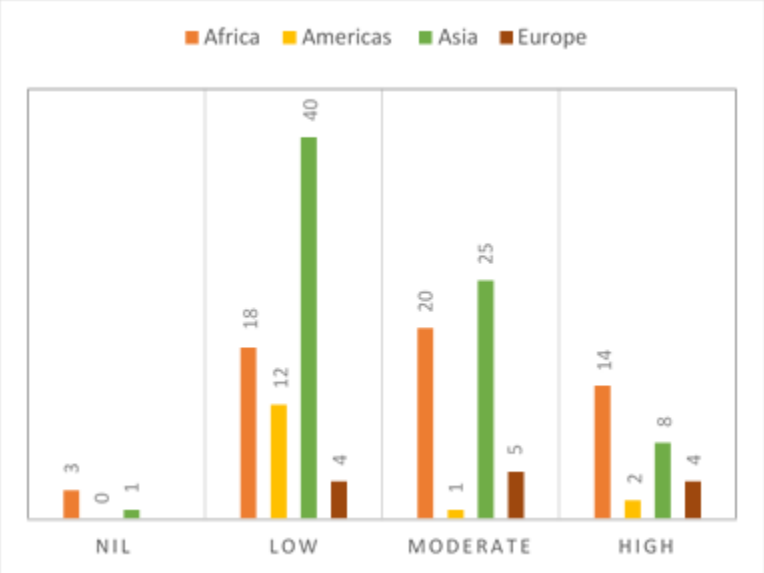


Figure 4. Number of forecast events by the level of likelihood of occurrence



REGIONAL OVERVIEW

AFRICA

In Africa, a total number of 55 events have been forecasted including animal and aquatic diseases, plant and forest pests and diseases. The likelihood of occurrence of the threats varies from Nil to High (Figure 5 (a) and (b)).

Figure 5 (a). Percentage of FCC threats forecasted in Africa by likelihood of occurrence

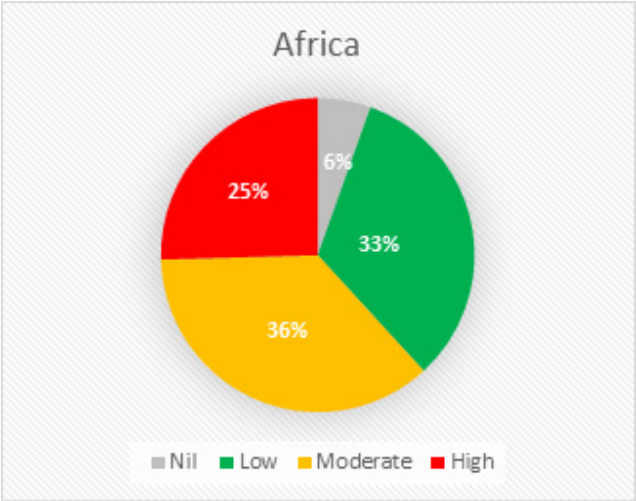
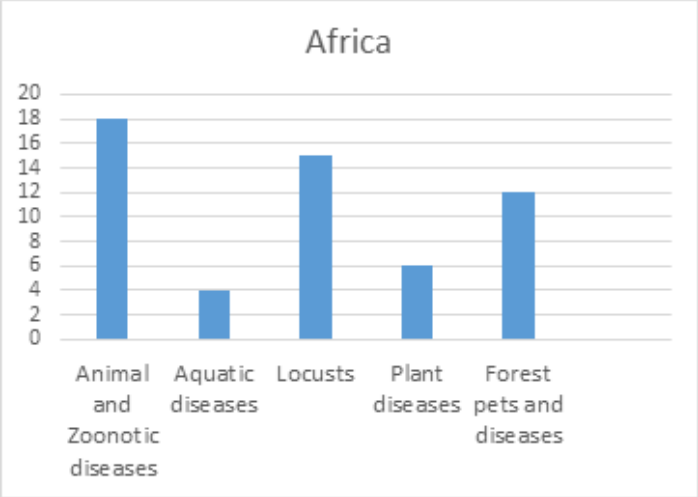


Figure 5 (b). Number of FCC threats by threat category in Africa



Animal and aquatic diseases

- Further amplification and spread of **H5N1 highly pathogenic avian influenza** (H5N1 HPAI) in poultry is expected in Western Africa, in Nigeria, where the current epidemiological situation suggests that the disease is becoming endemic, and also threatening other countries in the region such as Ghana and Côte d'Ivoire where the virus has been introduced. Inadequate implementation of control measures in these countries put at high risk the introduction of the virus into neighboring countries such as Benin, Burkina Faso, Cameroon, Niger and Togo. In Northern Africa, in Egypt, the spread of H5N1 highly pathogenic avian influenza outbreaks in poultry and sporadic occurrence of human cases are associated with exposure to infected poultry. This can also increase the likelihood of introduction of the virus into neighboring countries in the region (e.g. Libya).

- In Western Africa, **Ebola virus disease** (EVD) human cases might rise in Guinea, Sierra Leone and Liberia, as a result of an unknown transmission chain, reintroduction from an animal reservoir, or re-emergence of virus that had persisted in human survivors.

REGIONAL OVERVIEW

AFRICA

In December 2013, the largest-ever documented outbreak of EVD, both in terms of outbreak and geographical spread started in West Africa, affecting mainly Guinea, Liberia and Sierra Leone. The number of human cases in these countries peaked in autumn 2014 and has been progressively decreasing since then, with Liberia firstly declared free from the disease in May 2015, Sierra Leone in November 2015 and Guinee in December 2015. Since then, EVD epidemiology has been characterized by the re-emergence of cases due to its persistence in survivors, last in Guinea and in Liberia in March-beginning of April.

The identification of a new **foot-and-mouth disease** (FMD) Serotype A (topotype Asia 1 Genotype VII) virus in livestock in the Islamic Republic of Iran, Saudi Arabia and Turkey is increasing the risk of incursion of this FMD virus in North Africa. In Southern Africa, the contact between wildlife and livestock facilitates the spread of FMD SAT types from wildlife to domestic cattle. Since mid-2014 and all throughout 2015, FMD outbreaks have been reported in a number of countries in the region including Angola, Botswana, Malawi, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe.

In Uganda, the possibility of a silent spread of **Rift Valley fever** (RVF) outbreaks, a zoonotic disease, in livestock is high, given the detection of two confirmed and three suspected RVF human cases in March 2016 associated with the exposure to slaughtering animals. In Eastern Africa, the likelihood of occurrence of RVF in animals and humans is moderate due to favorable meteorological conditions (e.g. heavy-rains) created by El Niño, which, according to the National Oceanic and Atmospheric Administration (NOAA)'s El Niño advisory, will gradually weaken through spring 2016.

The aquatic disease **Epizootic ulcerative syndrome** (EUS) will likely spread to other parts of Western Africa, in view of EUS current suspicion in Central African Republic and due to a number of risk factors such as heavy rainfall, flooding, poor biosecurity, movement of infected fish and birds. EUS will likely continue to spread to other parts of southern African countries.

Plant pests and diseases

Desert Locust spring breeding will decline in Northwest Africa by June 2016; thereafter, small-scale movement of locusts to summer breeding areas in North Sahel. In Madagascar, the number and the density of Malagasy Migratory Locust will increase with the third generation of breeding and the end of the rainy season.

In Central Africa, **Banana Bunchy Top Disease** (BBTD) has affected banana production in recent years. Its impact is likely to increase. In Eastern Africa, BBTD has impacted banana production in recent years. This impact is likely to increase. In Southern Africa, Banana Bunchy Top Disease (BBTD) has been spreading in recent years. Its impact is likely to increase.

REGIONAL OVERVIEW

AFRICA

Yellow and stem rust diseases of wheat are recurrent threats in Eastern Africa. A recently detected stem rust race (Digalu) in Ethiopia and Kenya increases the risk of outbreaks.

Maize Lethal Necrosis Disease has been affecting production significantly in Eastern Africa in recent years. Depending on weather conditions, it might re-emerge and affect production in certain areas.

Forest pests

In Southern Africa, the likelihood of occurrence of outbreaks of the insect pest **red gum lerp psyllid** in Eucalyptus forests is still high in some countries (Malawi, Mozambique, South Africa, and Zimbabwe).

In addition, the insect pest **blue gum chalcid** and **bronze bug** are still a threat for Eucalyptus forests in Zambia and Zimbabwe. Both pests are reported also in Malawi where new outbreaks are likely to occur.

In Eastern Africa, the insect pest **blue gum chalcids** is currently causing severe damages in eucalyptus plantations in Uganda and Rwanda.

REGIONAL OVERVIEW

AMERICAS

Zika virus: Zika virus disease (Zika) is a disease caused by the Zika virus, which is spread to humans primarily through the bite of an infected Aedes species mosquito. The most common symptoms of Zika in humans are fever, rash, joint pain, and conjunctivitis and serious birth defect called microcephaly in pregnant women. The current strain of Zika virus, first affecting Chile (Easter Islands in 2014) then Brazil (2015) and now numerous countries in the Americas is not known to affect livestock, although they are kept in peri-urban and rural areas, where their need for water also increases opportunities for mosquitoes to breed and thrive. A specific challenge is posed by watering facilities for livestock, such as drinking water containers and watering holes. Widespread alarm over the current outbreak of Zika will likely see, at least in the short term, a dramatic increase in the use of pesticides to control mosquito populations or their larvae in water. If pesticides are used, then it is important that the right types of pesticides are used in the right manner.

The FCC threats situation in the Americas has remained the same for aquatic diseases and forest pests compared to the previous forecasting period, January-March 2016. A total number of 15 events for these threats have been forecasted. The likelihood of occurrence of the threats varies from Low to High.

Aquatic diseases

- ***Enterozytozoon hepatopenaei*** is likely to spread to Central America from live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock from infected countries through trade and live aquatic animal movement.

- **Acute hepatopancreatic necrosis** disease is likely to spread to Central America from live animals (broodstock, post-larvae) and other live animals (e.g. live polychaetes, clams, oysters, etc.) used asfeeds for broodstock, from infected countries through trade and live aquatic animal movement.

Forest pests

- A severe outbreak of the insect pest **bark beetles** continues to affect conifer forests in Honduras. The likelihood of introduction and spread of bark beetles to affect conifer forests in Nicaragua is still high.

REGIONAL OVERVIEW

ASIA

In Asia, a total number of 74 events have been forecasted including animal and aquatic diseases, plant pests and diseases and forest pests. The likelihood of occurrence of the threats varies from Nil to High (Figure 6 (a) and (b)).

Figure 6 (a). Percentage of FCC threats forecasted in Africa by likelihood of occurrence

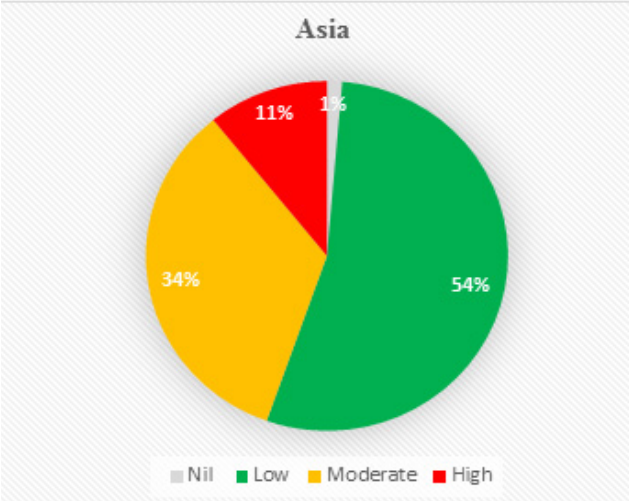
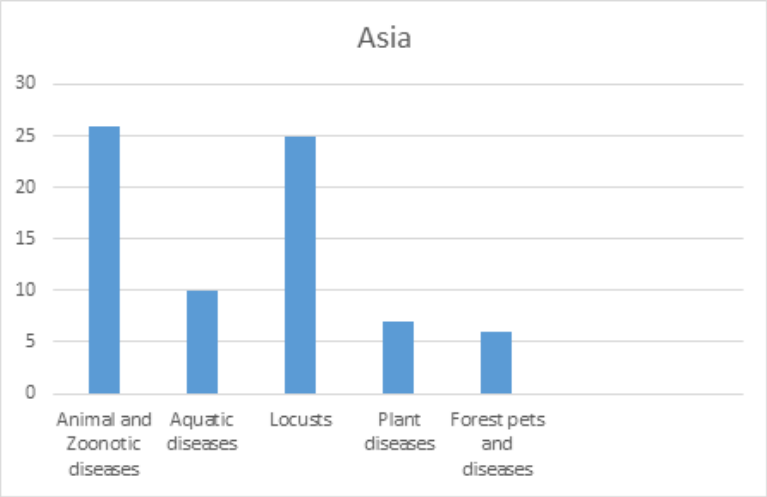


Figure 6 (b). Number of FCC threats by threat category in Africa



Animal and aquatic diseases

- Human cases of **Middle East respiratory syndrome coronavirus** (MERS-CoV) as well as the detection of the virus in camels in Saudi Arabia and other countries in the Middle East are likely to occur. Although it is known that dromedary camels in the Middle East are considered as the major reservoir for the virus from which humans sporadically become infected through zoonotic transmission, critical gaps remain in knowledge of many aspects of MERS-CoV epidemiology, ecology, and pathogenesis in animals, and dynamics of transmission at the animal-human interface.

- The new **foot-and-mouth disease** (FMD) Serotype A (topotype Asia 1 Genotype VII) virus in livestock identified between August and October 2015 in the Islamic Republic of Iran, Turkey, and Saudi Arabia and lastly in Armenia is likely to spread within these countries. Its incursion in neighboring countries is possible. FMD viruses' incursion from endemic countries into non-endemic countries is possible, as it has occurred in Mongolia and the Republic of Korea in 2015.

REGIONAL OVERVIEW

ASIA

- The ongoing **sheep and goat pox** outbreak in Mongolia poses a risk of further spread of the disease within the country, and of disease incursion to neighboring countries.

- Possible incursion of **peste des petits ruminants** (PPR) from endemic countries to non-endemic countries, as it has been observed in Georgia the incursion of this disease for the first time in January 2016.

- Increased risk of persistent and slow spread of **lumpy skin** disease (LSD) from the areas in the Middle East to areas in the Caucasus, Central Asia and Southeast Europe.

- ***Enterozytozoon hepatopenaei*** is still likely to spread to other parts of Asia from live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock from infected countries through trade and live aquatic animal movement.

- **Acute hepatopancreatic necrosis** disease is still likely to spread to other parts of Asia from live aquatic animals (broodstock, post-larvae) and other live aquatic animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock, from infected countries through trade and live aquatic animal movement.

Plant pests and diseases

- In Western Asia, the **Desert Locust** situation in Yemen is a potentially dangerous situation indicated by the formation of hopper bands and at least one swarm during March 2016 in areas that received rains in November 2016. The state of insecurity in the country limits survey and control operations, and therefore locust numbers are expected to increase further, and consequently more adult groups and swarms are likely to move along the coast and to the interior. Adult groups and few small swarms could possibly reach spring breeding areas in Central Saudi Arabia, Northern Oman and Southeast Islamic Republic of Iran. Neighbouring countries, Saudi Arabia, Oman and Islamic Republic of Iran, are urged to mobilize survey and control teams and to take all necessary measures to prevent the destructive insects from reaching breeding areas situated in their respective territories. Also, close monitoring in northwest Africa over the next few months is necessary to prevent the insects from forming large, destructive swarms.

- In Northern Asia, **Desert Locust** spring breeding will decline in South East Islamic Republic of Iran and South West Pakistan by June 2016; thereafter, small-scale movement of locusts to summer breeding areas along Indo-Pakistan border.

- In Caucasus and Central Asia, the likelihood of occurrence of the **Italian, Migratory and Moroccan Locust** pests is low to moderate due to start or mass hatching at the beginning of the considered period.

REGIONAL OVERVIEW

ASIA

- **Palm Weevil** or **Indian Red Palm Weevil** is indigenous to South and South-East Asian Countries. It is one of the world's major invasive pest species and is the single most destructive pest of some 40 palm species worldwide. It was detected in the Gulf region during the mid-eighties, and has significantly expanded westwards over the last three decades to cover almost all countries of Near East and North Africa region. The pest has significant socio-economic impact on the date palm production sector and livelihoods of farmers in affected areas.

- **Banana Fusarium** wilt disease continues to be a significant challenge in Southeast Asia affecting banana production. Countries are advised to develop disease containment and recovery strategies. The disease has been detected recently for the first time in Jordan, Lebanon, Oman and Pakistan where efforts for containment and prevention are needed.

- **Yellow rust of wheat** can cause epidemics in Western Asia.

Forest pests

- **Dieback** of *buxus hyrcana* trees (IUCN threatened species) caused by boxwood blight continues to be reported in the Caspian forest of the Islamic Republic of Iran and the spread of the disease has been reported in neighboring countries such as Azerbaijan and Georgia.

- Transboundary pests **boxwood moth** and **boxwood blight** are causing diebacks of native box wood species in Abkhazia, Georgia.

- **Chestnut gall wasp** is causing heavy damages to chestnut trees and threatening livelihoods of local communities in Turkey. Pest management activities are in progress to minimize the populations and further spread.

- In Lebanon, **Dry cone syndrome** and **western conifer seed** bug are continuing to cause damages to Pinus pinea plantations.

REGIONAL OVERVIEW

EUROPE

In Europe, a total number of 13 events have been forecasted including animal diseases, plant pests and diseases and forest pests. The likelihood of occurrence of the threats varies from Low to High.

Animal diseases

- **African swine fever** outbreaks and transmission are likely to continue in wild boars and domestic pigs in the already affected countries (Estonia, Latvia, Lithuania, Poland, Russian Federation, and Ukraine) where the virus is becoming endemic in wild boar populations and it is sporadically transmitted to domestic pigs. This increase the possibility of incursion into neighboring countries via live animals and animal products movement along pig value chain and spread to neighboring countries.

Plant pests and diseases

- A new race of wheat **yellow rust strain 'warrior'** can spread and affect wheat crops especially in Eastern and Central Europe.

Forest pests

- **Pine processionary moth** continues to cause heavy damages to pine forests in Albania.

More detailed information on FCC threats forecasts at country level is available under the FCC threats forecasting section.

FCC THREATS FORECASTING AT COUNTRY LEVEL

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

The list of country names refers only to countries for which information is available.

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 impossible to occur

AFRICA

Country/Area	Threat name	Likelihood of occurrence	Forecast for April-June 2016	Details	Country context (as of March 2016)
Algeria	**Peste des petits ruminants (PPR)**	Moderate	Occurrence of additional peste des petits ruminants outbreaks in the affected area and possible spread to new areas.	In February 2016, Algeria officially reported a PPR outbreak in a nomadic herding in Garat Djirir. PPR was previously reported in Algeria in 2013. The disease is known to be present in the area and its spread within the country and in the region is foreseen if appropriate control measures are not implemented.	• Drought conditions have acutely weakened 2016 production prospects, particularly of winter cereals.
	Desert Locust	Moderate	Small-scale breeding will cause locust numbers to increase slightly.		
Benin	**Avian Influenza**	Moderate	Incursion of H5N1 highly pathogenic avian influenza from neighboring countries amplified by inadequate capacity to detect and control the infection in poultry.	H5N1 HPAI virus has been circulating in five countries in West Africa since January 2015. The virus has never been reported in Benin so far. In the first months of 2016, the virus is still actively circulating in limited area in Ghana and Côte d'Ivoire, while is widely spreading in Nigeria. Inadequate control measures in these countries can further facilitate regional spread.	
Burkina Faso	**Avian Influenza**	Low	Incursion of H5N1 highly pathogenic avian influenza in poultry from neighboring countries where the virus is still actively circulating.	After its incursion in Nigeria in December 2014, H5N1 HPAI has been detected in Burkina Faso in February 2015 in the southwestern part of the country. In six months, the country reported 94 H5N1 HPAI outbreaks in 12 different regions with the last observed outbreak in July 2015. During the first months of 2016, the	• Over 34 000 Malian refugees are estimated to be living in the country.

				virus is still actively circulating in limited area in Ghana and Côte d'Ivoire, while it is widely spreading in Nigeria. Inadequate control measures in these countries and illegal movement of animals could further facilitate regional spread.	
Cameroon	**Avian Influenza**	Moderate	Incursion of H5N1 HPAI from neighboring countries amplified by inadequate capacity to detect and control the infection in poultry.	H5N1 HPAI virus has been circulating in five countries in West Africa since January 2015. The virus has not been reported in Cameroon so far, however the virus is still actively circulating in the region, particularly in Nigeria, where a dramatic increase in the number of outbreaks has been observed since January. Inadequate control measures in these countries can further facilitate regional spread.	• The number of refugees from the Central African Republic (CAR) was estimated at 267 000 in January 2016 and about 65 000 refugees were estimated from Nigeria. • In February 2016, the number of food insecure people was estimated at 2.4 million, more than two times the level in June 2015. The most affected area is the Far North Region.
	Banana bunchy top disease (BBTD)	Moderate	Spread of Banana bunchy top disease which is already present in the southern part of the country.	The disease impacts banana production in the country.	
Central African Republic	**Epizootic ulcerative syndrome (EUS)**	High	Suspected Epizootic ulcerative syndrome outbreak in central and southern areas of the country.	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.	• The widespread conflict, which caused large-scale displacements, the loss and the depletion of the households' productive assets and input shortages, is continuing to weigh down the early 2016 production outlook.
Chad	**Desert Locust**	Nil	No significant developments.		• Over 370 000 refugees, continue to add pressure on local food supplies, negatively affecting food security. • Over 4 447 000 people are estimated to be in need of food assistance according to the last "Cadre Harmonisé"analyisis.

Côte d'Ivoire	**Avian Influenza**	Moderate	Occurrence of further H5N1 highly pathogenic avian influenza outbreaks in poultry and possible incursion from neighboring countries where the virus is still actively circulating.	After its incursion in Nigeria in December 2014, H5N1 HPAI has been detected in Côte d'Ivoire in April 2015. So far, the country reported over 30 H5N1 HPAI outbreaks in four different regions. The virus is still circulating in the country in the Abidjan area. Also, outbreaks are currently reported in Ghana and the virus is widely spreading in Nigeria. Inadequate control measures in these countries can further facilitate regional spread.	
Democratic Republic of the Congo	**Epizootic ulcerative syndrome (EUS)**	High	Further spread of Epizootic ulcerative syndrome 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.	Several fish species were positively confirmed through PCR (polymerase chain reaction) laboratory and histology testing.	• As of late August 2015, refugees from the CAR, mainly hosted in the northern Equateur Province, were estimated at about 97 000. • Torrential rains received in the last quarter of 2015 and in January 2016, linked to El Niño, have resulted in floods which affected about half a million people, caused the displacement of 50 000 individuals and damaged about 9 000 hectares of crop land.
Djibouti	**Desert Locust**	Nil	No significant developments.		• About 230 000 people are severely food insecure, mainly in pastoral southeastern areas and in the Obock Region.
Egypt	**Avian Influenza**	Moderate	Occurrence of further H5N1 highly pathogenic avian influenza outbreaks in poultry and possible occurrence of sporadic human cases.	H5N1 HPAI is endemic in Egypt. Since November 2015, the number of H5N1 HPAI outbreaks in poultry has started to increase as expected for seasonal pattern. The first human case of the season has occurred at the end of February 2016. A progressive decrease in the number of	

				outbreaks is foreseen in the next months. Other influenza viruses circulating in poultry in the country are H5 LPAI and H9N2 LPAI.	
	Desert Locust	Low	No significant developments.		
	Wheat rust	Low	Occurrence of stem rust.	The Ug99 race of stem rust has been reported from the country recently for the first time. Surveillance and precaution needed.	
Eritrea	**Desert Locust**	Low	Number of locusts declines on Red Sea coast.		• Vulnerability to food insecurity due to El Niño-related drought and economic constraints.
Ethiopia	**Wheat rust**	Moderate	Epidemics of stem and yellow rusts due to inoculum presence and possible excess in rainfalls in certain parts of the country.	Yellow rust and Digalu race of stem rust can cause Wheat rust outbreaks. Rust diseases are a recurrent problem in Ethiopia and past epidemics have impacted wheat production significantly.	• The estimated number of food insecure people has sharply increased from 2.9 million in January 2015 to 10.2 million in December 2015, as severe rainfall deficits led to the rapid deterioration of food security conditions in several agro-pastoral and pastoral areas. • Locally, thousands of livestock deaths are severely limiting the availability of nutritious livestock products and households' incomes.
	Desert Locust	Low	Low numbers of adult locusts may appear in the eastern part of the country and breed.		
Ghana	**Avian Influenza**	Moderate	Occurrence of further H5N1 highly pathogenic avian influenza outbreaks in poultry.	H5N1 HPAI virus has been circulating in five countries in West Africa since January 2015. Firstly reported in March 2015 in Ghana the virus has caused more than 30 outbreaks in five different regions. The last reported outbreak was observed in January 2016.	

Kenya	**Rift Valley fever (RVF)**	Moderate	Occurrence of Rift Valley fever outbreaks in livestock due to vectors amplification.	Outbreaks of RVF are closely associated with periods of heavy rains and prolonged flooding, as those driven by the warm phase of the El Niño/ Southern Oscillation (ENSO) phenomenon, which increase habitat suitability for vector populations. In East Africa, RVF epidemics take place periodically every ten years, with last major outbreak occurred in 2006-2007.	• About 1.1 million people are severely food insecure, mainly located in coastal and northeastern counties.
	Wheat rust	Low	Occurrence of wheat stem rust outbreak.	New UG99 group races affecting Digalu and Robin wheat varieties have been recently reported and can cause outbreaks of stem rust in wheat.	
	Maize Lethal Necrosis Disease (MLND)	Moderate	Re-emergence of Maize Lethal Necrosis Disease depending on climatic factors.	The disease has impacted production significantly in the country in recent years. In certain parts of the country, unusual precipitation is expected. This, together with high temperatures could lead to more humidity and consequently to multiplication and movement of vectors.	
Libya	**Avian Influenza**	Low	Introduction of H5N1 highly pathogenic avian influenza from Egypt and further spread in the country due to inadequate control measures in poultry.	In 2014 and 2015, H5N1 HPAI outbreaks were reported to occur in Libya in March 2015 and February 2015, respectively, and possibly due to illegal movement of poultry infected from Egypt.	
	Desert Locust	Low	Possible small-scale breeding in southwest.		
Madagascar	**Migratory Locust**	Moderate	Third generation of breeding in the southwest with end of the plague expected by June 2016.		• Successive poor agricultural seasons in southern areas have resulted in severe food security conditions in these areas, with 2016 production prospects similarly unfavorable.

					• Nationally, an estimated 1.89 million people are food insecure. • Drought conditions, associated with the El Niño episode, have acutely weakened 2016 production prospects. Aggregate cereal production is expected to decline from last year's already reduced and below-average level.
Malawi	**Red gum lerp psyllid**	High	Occurrence of outbreaks of the insect pest Red gum lerp psyllid in eucalyptus plantation.		• Drought conditions, associated with the El Niño episode, have acutely weakened 2016 production prospects. • Aggregate cereal production is expected to decline from last year's already reduced and below-average level. • Maize production in 2016 is expected to fall from the below-average. • The number of people requiring assistance in 2015/16 is estimated at 2.8 million, up from 1.3 million in 2014/15.
	Blue gum chalcid	High	Occurrence of outbreaks of the insect pest Blue gum chalcid in eucalyptus plantation.		
Mali	**Desert Locust**	Low	Low numbers of adults persist in the north.		• About 115 000 people, located mostly in Timbuktu, Mopti and Sikasso regions, are estimated to be in Phase 3: "Crisis" and above according to the last "Cadre Harmonisé" analysis.
Mauritania	**Desert Locust**	Moderate	Breeding continues, causing groups to form in the north.		• More than 50 000 Malian refugees remain in southeastern Mauritania. • Over 149 000 people are

					estimated to be in Phase 3: "Crisis" and above according to the last "Cadre Harmonisé" analysis.
Morocco	**Desert Locust**	Moderate	Breeding continues, causing groups to form in southwest; movement to south side of Atlas Mountains.		• Drought conditions have acutely weakened 2016 production prospects, particularly of winter cereals.
Mozambique	**Acute hepatopancreatic necrosis disease (AHPND)**	Low	Introduction of Acute hepatopancreatic necrosis disease affecting shrimps 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.	Mozambique has the shrimp species susceptible to AHPND. Strong awareness on shrimp diseases is present in the country.	• Currently, an estimated 176 139 people are food insecure. • Drought conditions, associated with the El Niño episode, have acutely weakened 2016 production prospects. • Aggregate cereal production is expected to decline from last year's already reduced and below-average level. • Maize production in 2016 is expected to fall compared to the below-average 2015 harvest due to unfavorable seasonal rains.
	Red gum lerp psyllid	High	Spread of the insect pest Red gum lerp psyllid in eucalyptus forests.		
	Banana Fusarium wilt disease	Low	Spread of Banana Fusarium wilt disease race TR4.	The disease is reported in two farms in Nampula Province. Its containment is essential.	
Niger	**Avian Influenza**	Low	Incursion of H5N1 highly pathogenic avian influenza in poultry from neighboring countries where the virus is still actively circulating.	In the country, only one outbreak was reported in April 2015 in the Maradi Region. In the first months of 2016, the virus is still actively circulating in limited area in Ghana and Côte d'Ivoire, and it is widely spreading in Nigeria where states close to the Niger's border have been lately affected. Inadequate control measures in these countries can further facilitate regional spread.	• About 657 000 people are estimated to be in Phase 3: "Crisis" and above according to the last "Cadre Harmonisé" analysis. • About 657 000 people are estimated to be in Phase 3: "Crisis" and above according to the last "Cadre Harmonisé" analysis.

	Desert Locust	Low	Low numbers of adult locusts persist in the north.		
Nigeria	**Avian Influenza**	High	Further spread of H5N1 highly pathogenic avian influenza outbreaks in poultry.	H5N1 HPAI virus has been circulating in West Africa since January 2015 with Nigeria being the most affected country with over 500 outbreaks in poultry in 26 states. The number of outbreaks detected in the country has markedly increased since the beginning of 2016. Given the current epidemiological situation and the lack of effective control measures, H5N1 HPAI can be considered endemic in Nigeria.	
	Banana bunchy top disease (BBTD)	Moderate	Banana bunchy top disease can amplify in the southern part of the country.	The disease is already present and can spread across the country.	
Rwanda	**Rift Valley fever (RVF)**	Low	Rift Valley fever incursion from neighboring countries, amplification of RVF in animals and occurrence of human cases.	On 11 of March 2016, Uganda reported for the first time two confirmed Rift Valley fever human cases in the Southern-West Municipality of Kabale at the border with Rwanda.	
	Blue gum chalcids	Moderate	Further spread of Blue gum chalcids.	The insect pest Blue gum chalcids is currently damaging eucalyptus plantation.	
Somalia	**Rift Valley fever (RVF)**	Low	Occurrence of Rift Valley fever outbreaks in livestock due to vector amplification.	Outbreaks of RVF are closely associated with periods of heavy rains and prolonged flooding, as those driven by the warm phase of the El Niño/ Southern Oscillation (ENSO) phenomenon, which increase habitat suitability for vector populations.	
	Desert Locust	Low	Low numbers of adult locusts persist in northwest.		

South Africa	**Banana bunchy top disease (BBTD)**	Low	Spread of Banana bunchy top disease.	The disease has been reported for the first time in March 2016 in the country and spread needs to be prevented.	• Drought conditions, associated with the El Niño episode, have acutely weakened 2016 production prospects. • Aggregate cereal production is expected to decline from last year's already reduced and below-average level.
	Blue gum chalcids	High	Occurrence of outbreaks of the insect pest Blue gum chalcids in eucalyptus forests.		
	Red gum lerp psyllid	High	Spread of the insect pest Red gum lerp psyllid in eucalyptus forests within the country.		
South Sudan	**Rift Valley fever (RVF)**	Low	Occurrence of Rift Valley fever outbreaks in livestock due to vectors amplification.	Outbreaks of RVF are closely associated with periods of heavy rains and prolonged flooding, as those driven by the warm phase of the El Niño/ Southern Oscillation (ENSO) phenomenon, which increase habitat suitability for vector populations.	• Over 2.8 million people, including 40 000 people in the Integrated Food Security Phase Classification (IPC) Household Phase 5: "Catastrophe", are severely food insecure, mainly in the conflict-affected states of Jonglei, Unity and Upper Nile. • New pockets of severe food insecurity are in Northern Bahr el Ghazal, Warrap and Eastern Equatoria states due to trade disruptions and high market prices.
Sudan	**Desert Locust**	Low	Locusts decline on Red Sea coast and move to the Nile Valley.		• An estimated 3.9 million people are in need of humanitarian assistance, mainly IDPs in conflict affected areas and pastoral communities.
Togo	**Avian Influenza**	Moderate	Incursion of H5N1 highly pathogenic avian influenza from neighboring countries amplified by inadequate capacity to detect and control the infection in poultry.	H5N1 HPAI virus has been circulating in five countries in West Africa since January 2015. The virus has not been reported in Togo so far, however the virus is still actively circulating in the region,	

				particularly in Nigeria. Inadequate control measures in these countries can further facilitate regional spread.	
Tunisia	**Desert Locust**	Nil	No significant developments.		
Uganda	**Rift Valley fever (RVF)**	Moderate	Occurrence of Rift Valley fever outbreaks in livestock and occurrence of additional RVF human cases.	In March 2016, Uganda reported for the first time Rift Valley fever human cases in the Southern-West Municipality of Kabale at the border with Rwanda. Despite the proximity of Uganda to Kenya and the United Republic of Tanzania, and serological evidence in animal and virus isolation in mosquitos in Uganda, RVF outbreaks have never been reported in the country before, in either humans or animals. The source of infection has still to be identified, but the detection of human cases is usually a signal that a large outbreak is ongoing in animals.	• About 320 000 people in Karamoja region are estimated to be severely food insecure following consecutive unfavorable rainy seasons.
	Blue gum chalcids	High	Outbreaks of the insect pest Blue gum chalcids will continue to occur.	The insect pest Blue gum chalcids is currently causing severe damages in eucalyptus plantations.	
United Republic of Tanzania	**Rift Valley fever (RVF)**	Moderate	Occurrence of Rift Valley fever outbreaks in livestock due to vector amplification.	Outbreaks of RVF are closely associated with periods of heavy rains and prolonged flooding, as those driven by the warm phase of the El Niño/ Southern Oscillation (ENSO) phenomenon, which increase habitat suitability for vector populations.	
Zambia	**Epizootic ulcerative syndrome (EUS)**	Moderate	Further spread of Epizootic ulcerative syndrome to other parts of the country and potentially to other parts of Africa through, for example, heavy rainfall, flooding, poor	Zambia is the most severely affected country by EUS in southern Africa.	• Drought conditions, associated with the El Niño episode, have acutely weakened 2016 production prospects. • Aggregate cereal production is

			biosecurity, movement of infected fish and possibly birds.		expected to decline from last year's already reduced and below-average level.
	Blue gum chalcids	High	Occurrence of outbreaks of the insect pest Blue gum chalcid in eucalyptus plantation.		
	Red gum lerp psyllid	High	Occurrence of outbreaks of the insect pest Red gum lerp psyllid in eucalyptus plantation.		
Zimbabwe	**Foot-and-mouth disease (FMD)**	Low	Occurrence of further Foot-and-mouth disease outbreaks in livestock, mitigated by the ongoing control measures.	Since January 2015, several FMD outbreaks were reported in the country and several provinces were affected. Control measures including vaccination campaigns, animal movement control and awareness campaigns are ongoing.	• Recently revised food insecure numbers indicate that 2.8 million people require assistance, up from an early estimate of 1.5 million. • Drought conditions, associated with the El Niño episode, have acutely weakened 2016 production prospects. • Aggregate cereal production is expected to decline from last year's already reduced and below-average level.
	Bronze bug	High	Outbreaks of the insect pest Bronze bug in eucalyptus plantation.	Pest management activities are in progress.	
	Blue gum chalcids	High	Outbreaks of the insect pest Blue gum chalcid will continue to be reported in eucalyptus plantation forests.	Pest management activities based on application of biological control agent are in progress to reduce the populations.	
	Red gum lerp psyllid	High	Outbreaks of the insect pest Red gum lerp psyllid will continue to be reported in eucalyptus plantation.	Pest management efforts using biological control are in progress.	

AMERICAS

Country/Area	Threat name	Likelihood of occurrence	Forecast for April-June 2016	Details	Country context (as of March 2016)
Belize	**Bark beetles**	Moderate	Occurrence of outbreaks of the insect pest Bark beetles in pine forest.		
Colombia	**Acute hepatopancreatic necrosis disease (AHPND)**	Low	Introduction of Acute hepatopancreatic necrosis 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.	Strong awareness on shrimp disease is present in the country.	
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	Strong awareness on EHP is present in the country.	
Guatemala	**Acute hepatopancreatic necrosis disease (AHPND)**	Low	Introduction of Acute hepatopancreatic necrosis 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.	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	

	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.	Strong awareness on EHP is present in the country.	
Honduras	**Acute hepatopancreatic necrosis disease (AHPND)**	Low	Introduction of Acute hepatopancreatic necrosis 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.	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	Strong awareness on EHP is present in the country.	
	Bark beetles	High	Outbreaks of the insect pest Bark beetles are continuing to be reported causing heavy losses of pine forest.	A severe outbreak of Bark beetles has affected about 10 000 ha of conifer forests.	
Nicaragua	**Bark beetles**	High	Occurrence of outbreaks of the insect pest Bark beetles causing losses in pine forest.		
	Acute hepatopancreatic	Low	Introduction of Acute hepatopancreatic necrosis disease from affected countries through trade and movement of: (i) infected	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	

	necrosis disease (AHPND)		broodstock and post-larvae and (ii) other live aquatic animals such as polychaetes, clams, oysters, etc. used as feed for broodstock.		
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	Strong awareness on EHP is present in the country.	
Panama	**Acute hepatopancreatic necrosis disease (AHPND)**	Low	Introduction of Acute hepatopancreatic necrosis 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.	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	Strong awareness on EHP is present in the country.	
Peru	**Acute hepatopancreatic necrosis disease (AHPND)**	Low	Introduction of Acute hepatopancreatic necrosis disease from affected countries through trade and movement of: (i) infected broodstock and post-larvae and (ii) other live aquatic animals such as	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	

			polychaetes, clams, oysters, etc. used as feed for broodstock.		
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	Strong awareness on EHP is present in the country.	

ASIA

Country/Area	Threat name	Likelihood of occurrence	Forecast for April-June 2016	Details	Country context (as of March 2016)
Afghanistan	**Italian Locust**	Moderate	Hatching should start at the beginning of the forecast period followed by hopper development.		• Some 2.1 million people are classified as very severely food insecure. • Over 700 000 people are internally displaced, mostly in Helmand Province.
	Moroccan Locust	Moderate	Mass hatching will occur at the beginning of the forecast period followed by hopper development.		
Armenia	**Foot-and-mouth disease (FMD)**	Moderate	Spread within the country of the serotype A topotype Asia 1 Genotype VII Foot-and-mouth disease virus recently detected in livestock in the country.	A new serotype A strain, (topotype Asia, Genotype VII) has recently emerged from the Indian subcontinent and is now rapidly spreading in the Middle East. Incursion of this strain in Armenia was observed in December 2015 in a mix farm at the border with Turkey and Iran Islamic Republic. So far, no additional outbreak has been officially reported in the country. In the	

				affected and high risk area, vaccination campaign targeting cattle have been set up, however vaccine-matching data indicates that field isolates are not well matched against any of the vaccines currently used in the region.	
	Lumpy skin disease (LSD)	Moderate	Spread of Lumpy skin disease in livestock within the country and possible further incursions from neighboring countries, possibly reinforced by the upcoming favorable weather condition for the vectors.	At the beginning of December 2015, Armenia observed its first LSD outbreak in the southernmost province of the country. Since then, no additional outbreaks were officially reported.	
	Italian Locust	Low	Hatching will start before the end of the forecast period followed by hopper development.		
Azerbaijan	**Lumpy skin disease (LSD)**	Low	Incursion of Lumpy skin disease in livestock from neighboring countries, possibly reinforced by the upcoming favorable weather condition for the vectors.	LSD has never been reported in Azerbaijan before. LSD has spread throughout the Middle East in recent years, including Iran Islamic Republic, Turkey, where the disease is considered endemic since 2014. LSD has been detected in the Russian Federation for the first time in July 2015 and in December 2015 in Armenia, in both case in areas bordering Azerbaijan.	
	Italian Locust	Moderate	Hatching should start in May followed by hopper development.		
	Moroccan Locust	Low	Hatching should start in April followed by hopper development.		
	Dieback	High	Dieback of *Buxus hyrcana* trees (IUCN threatened species)		

			caused by boxwood blight continues to be reported.		
Bangladesh	**Avian influenza**	Low	Potential occurrence of Avian Influenza (HPAI) outbreaks in poultry.	The occurrence of an H5N1 HPAI human case in October 2015 and the detection of the virus in dead crows in February, suggest that the virus is currently circulating in Bangladesh.	
China	**Avian Influenza**	Moderate	Further occurrence of Avian Influenza outbreaks in poultry due to several H5 highly pathogenic avian influenza and low pathogenic avian influenza viruses circulating in the country. Further occurrence of sporadic avian influenza human cases due to H5 HPAI and to H7N9 LPAI virus.	Several serotypes of HPAI and LPAI AI viruses are circulating and being detected in China and outbreaks in poultry and human cases have been occurring in the first months of the year, but with a lower intensity compared to previous years. The occurrence of outbreaks in poultry and of human cases usually follows a seasonal pattern, with an increase in the outbreaks observed during the winter months. A decline in the number of outbreaks is foreseen in the next months. Data reported so-far suggest this influenza season to be milder, however additional outbreaks and human cases are still expected.	
	Peste des petits ruminants (PPR)	Low	Occurrence of additional peste des petits ruminants outbreaks in livestock.	Since its incursion in 2014 in the northwest of the country, PPR has spread to the rest of the country. Despite control measures, outbreaks have been reported until December 2015.	

Gaza Strip	**Avian Influenza**	Low	Incursion of H5N1 highly pathogenic avian influenza in poultry from Egypt and potential spread to the territory due to limited capacity to implement adequate control measures in the Gaza Strip area.	A total of 20 H5N1 HPAI outbreaks were reported between June and August 2015 in Gaza Strip.	
Georgia	**Lumpy skin disease (LSD)**	Low	Incursion and spread of Lumpy skin disease in livestock from neighboring countries, possibly reinforced by the upcoming favorable weather condition for the vectors.	LSD has never been reported in Georgia before. The disease has spread throughout the Middle East in recent years, including Iran Islamic Republic, Turkey, where the disease is considered endemic since 2014. LSD has been detected in the Russian Federation for the first time in July 2015 and outbreaks have been observed in areas bordering Georgia. Last LSD incursion was reported in December 2015 in Armenia.	
	Peste des petits ruminants (PPR)	Moderate	Occurrence of additional peste des petits ruminants outbreaks in livestock in the affected area and possible spread within the country. The risk is mitigated by the ongoing vaccination campaign.	In January 2016, Georgia reported a PPR outbreak for the first time in a sheep flock in the Tbilisi area. The country has immediately embarked in a mass vaccination campaign targeting sheep and goat across the country. While the exact source of infection remain unknown in the area, PPR is known to be present in Turkey, Iran Islamic Republic and Iraq.	
	Italian Locust	Moderate	Hatching should start in May followed by hopper development.		

	Moroccan Locust	Low	Hatching should start in May followed by hopper development.		
	Dieback	High	The outbreaks of boxwood moth and the occurrence of boxwood blight continue to cause Dieback of native boxwood species.	Pest management activities are initiated to protect the native species.	
India	**Avian influenza**	Low	Occurrence of Avian Influenza (HPAI) outbreaks in poultry.	H5N1 HPAI outbreaks are reported every year in the country. The virus has been reported to circulate in the country with last outbreak detected in January in Tripura State, at the border with Bangladesh.	
	Acute hepatopancreatic necrosis disease (AHPND)	Low	Introduction of Acute hepatopancreatic necrosis disease affecting shrimps 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.	Good surveillance and biosecurity measures are in place. Strong awareness on shrimp diseases is present in the country.	
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* affecting shrimps from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	Good surveillance and biosecurity measures are in place. Strong awareness on shrimp diseases is present in the country.	
	Wheat rust	Low	Epidemics of Wheat yellow rust disease around Punjap State.	The disease is a recurrent problem in the country.	

	Desert Locust	Nil	No significant developments.		
Indonesia	**Avian Influenza**	Low	Occurrence of H5N1 highly pathogenic avian influenza outbreaks in poultry and of human cases in the early months of the year.	H5N1 HPAI is endemic in Indonesia where it has been regularly detected since 2003. Outbreaks in animals show a seasonal pattern with the seasonal pick usually observed during the winter. Last H5N1 HPAI outbreaks was officially reported in September 2015, although a number of H5 outbreaks associated with high mortality in animals have been detected in January 2016.	
	Acute hepatopancreatic necrosis disease (AHPND)	Moderate	Introduction of Acute hepatopancreatic necrosis disease affecting shrimps 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.	Surveillance of AHPND as well as strong awareness on shrimp diseases are in place in the country. Many small-scale producers are present.	
	Enterocytozoon hepatopenaei (EHP)	Moderate	Introduction of *Enterocytozoon hepatopenaei* from other countries through live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.		
Iran (Islamic Republic of)	**Foot-and-mouth disease (FMD)**	Moderate	Spread within the country of the serotype A topotype Asia 1 Genotype VII Foot-and-mouth disease virus recently detected in livestock in the country.	A new FMD serotype A strain, (topotype Asia, Genotype VII) has been detected in one outbreak in August 2015 in the Qom Region.	

	Acute hepatopancreatic necrosis disease (AHPND)	Low	Introduction of Acute hepatopancreatic necrosis 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.	Good surveillance and biosecurity measures are in place in the country. Strong awareness on shrimp diseases is present in the country.	
	Wheat rust	Low	Epidemic of Wheat yellow rust disease.	The disease is a recurrent problem in the country.	
	Desert Locust	Low	Low numbers of adult locusts may appear in southeast and breed.		
	Abiotic and biotic disturbances	High	Decline of oak forest in Zagros region caused by biotic and abiotic stresses is continuing.	The decline of oak has a negative impact on the livelihood of nomad people and water shed management. Operations to minimize the biotic and abiotic stresses are in progress.	
	Dieback	High	Dieback of *Buxus hyrcana* trees (IUCN threatened species) caused by boxwood blight continues to be reported.		
Iraq	**Acute hepatopancreatic necrosis disease (AHPND)**	Moderate	Introduction of Acute hepatopancreatic necrosis 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.		• Over two million people have been displaced since January 2014.

Israel	**Avian Influenza**	Low	Incursion of H5N1 highly pathogenic avian influenza in poultry from Egypt.	In 2015, H5N1 HPAI outbreaks were reported to occur in Israel in Haifa, Central and Northern District.	
Kazakhstan	**Italian Locust**	Low	Hatching should start in May followed by hopper development.		
	Migratory Locust	Low	Hatching should start in May followed by hopper development.		
	Moroccan Locust	Low	Hatching should start in April followed by hopper development.		
Kyrgyzstan	**Italian Locust**	Low	Hatching should start in May followed by hopper development.		
	Moroccan Locust	Moderate	Hatching should start in April followed by hopper development.		
Lebanon	**Dry cone syndrome** and **western conifer seed bug**	High	Dry cone syndrome and western conifer seed bug are continuing to cause damages to Pinus pinea plantations.	Heavy yield losses continue to impact rural livelihoods. The yield reduction of pine nuts is reported throughout the country.	
Mongolia	**Sheep and goat pox**	High	Further spread of sheep and goat pox in the eastern part of the country and possible spread to the non-affected western region.	The risk of spread is fostered by the extremely cold weather condition and by difficulties in implementing control measures, including vaccination. In January 2015, Mongolia reported the first SGP outbreak in sheep since February 2013. Since January 2016, the number of reported outbreaks has dramatically increased and the virus has spread into new areas. Low vaccination coverage is currently preventing to control the epidemic.	

	Peste des petits ruminants (PPR)	Low	Incursion of peste des petits ruminants from neighboring countries.	PPR has never been reported in the country, however the virus is circulating in the neighboring countries.	
	Foot-and-mouth disease (FMD)	Low	Sporadic occurrence of Foot-and-mouth disease outbreak in livestock due to incursion from neighboring countries and further spread within the country due to uncontrolled animal movement.	FMD incursion with further spread of the disease across the country has been already observed, lately in October 2015.	
Nepal		Moderate	Increased risk of spread of Transboundary animal diseases (TADs) including Anthrax, Foot-and-mouth disease, Newcastle disease, Highly pathogenic avian influenza, peste des petits ruminants, Rabies, due to high internal flow of refugees and their livestock.		• The earthquake that struck in April 2015, mostly impacting central and western parts, resulted in the loss of nearly 9 000 lives. In addition, the damage to the agricultural sector, coupled with poor rains during the cropping season, contributed to a reduction in 2015 cereal output, mainly for rice and maize crops.
Oman	**Desert Locust**	Moderate	Adult groups and a few small swarms from Yemen may appear in the south and move to the north.		
Pakistan	**Wheat rust**	Low	Epidemics of Wheat yellow rust disease in northern parts of the country.	The disease is a recurrent problem in the country.	
	Banana Fusarium Wilt disease	Low	Spread of Banana Fusarium Wilt disease race TR4 which has been reported recently for the first time in one farm.	The Banana Fusarium Wilt disease is a soil-borne disease and cannot be eradicated once established in a plantation. Thus, prevention of spread is crucial.	
	Desert Locust	Low	Low numbers of adult locusts may appear in southwest and breed.		

Philippines	**Acute hepatopancreatic necrosis disease (AHPND)**	Moderate	Further spread of Epizootic ulcerative syndrome to other parts of the country.	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	
	***Enterocytozoon hepatopenaei* (EHP)**	Moderate	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.		
	Banana Fusarium Wilt disease	Moderate	The disease is already affecting bananas in the country and can spread into new areas.	The Banana Fusarium Wilt disease is a soil-borne disease and cannot be eradicated once established in a plantation. Thus, prevention of spread is crucial.	
Republic of Korea	**Avian Influenza**	Low	Occurrence of Avian Influenza (HPAI) outbreaks in poultry in the early months of the year. Possible incursions of other avian influenza serotypes from neighboring countries.	Since its incursion in the country in January 2014, H5N8 HPAI has been circulating with outbreaks detected almost every month. Last H5N8 HPAI outbreaks were reported in mid-November.	
	Foot-and-mouth disease (FMD)	Moderate	Further spread of Foot-and-mouth disease virus circulating in the southwest part of the country and possible incursion from neighboring countries due to uncontrolled livestock movement.	FMD serotype O incursion with further spread of the disease across the country have been already observed in December 2014. As of June 2015, the virus spread to seven regions causing 185 outbreaks. In January 2016, a new incursion has been promptly reported and since then further outbreaks have been reported.	
Saudi Arabia	**Foot-and-mouth disease (FMD)**	Low	Spread within the country of the serotype A topotype Asia 1 Genotype VII Foot-and-mouth	A new FMD serotype A strain, (topotype Asia, Genotype VII) has been detected in two outbreaks in September and October 2015, in the Ryad Region.	

			disease virus recently detected in livestock in the country.		
	Middle East Respiratory Syndrome-coronavirus (MERS-CoV)	Moderate	Circulation of Middle East respiratory syndrome coronavirus (MERS-CoV) in camels, with possible spill over to humans.	The detection of the virus in a camel farm in January 2016 in Saudi Arabia suggests that the virus is actively circulating in animals. Human-to-human amplification among household contacts and in healthcare settings is likely to occur. The number of reported human cases has increased since January 2016 as already observed in previous years. Critical gaps remain in knowledge of many aspects of MERS-CoV epidemiology, ecology, and pathogenesis in animals, and dynamics of transmission at the animal-human interface.	
	Desert Locust	Moderate	Adult groups and a few small swarms from Yemen may arrive in southern and central interior areas.		
Sri Lanka	**Acute hepatopancreatic necrosis disease (AHPND)**	Moderate	Introduction of Acute hepatopancreatic necrosis disease 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.	Strong awareness on AHPND is present in the country. National action plan on AHPND is being prepared.	
	***Enterocytozoon hepatopenaei* (EHP)**	Low	Introduction of *Enterocytozoon hepatopenaei* from other countries through trade of live animals (e.g. live polychaetes, clams, oysters, etc.) used as feeds for broodstock.		

Syrian Arab Republic		High	Spread of Transboundary animal diseases (TADs) including Brucellosis, Foot-and-mouth disease, Lumpy skin disease, New Castle disease, Rabies) due to high internal flow of refugees and their livestock.		• Agricultural production is significantly affected by conflict. • About 13.5 million people are in need of humanitarian assistance, with caseloads increasing.
Tajikistan	**Italian Locust**	Low	Hatching should start in April followed by hopper development.		
	Moroccan Locust	Moderate	Mass hatching will occur at the beginning of the forecast period followed by hopper development.		
Turkey	**Foot-and-mouth disease (FMD)**	Low	Occurrence of further serotype A topotype Asia 1 Genotype VII Foot-and-mouth disease virus recently detected in livestock in the country. The likelihood of the occurrence of the disease is mitigated by the vaccination campaigns undertaken in the country.	A new serotype A strain, (topotype Asia, Genotype VII) has recently emerged from the Indian subcontinent and is now rapidly spreading to the Middle East. Its incursion in Turkey has been recorded in September 2015 and since then the new serotype has rapidly spread across the country. Turkey has been vaccinating cattle with newly produced vaccines which include the new strain. Results from vaccine matching studies are awaited.	
	Lumpy skin disease (LSD)	Moderate	Spread of Lumpy skin disease in livestock within the country, reinforced by the upcoming favorable weather condition for the vectors.	LSD was first detected in October 2013. The disease has spread rapidly across the country and is currently considered endemic.	
	Wheat rust	Low	Outbreaks of Wheat yellow rust disease in west and northwestern part of the country.	New strain of yellow rust (Warrior) from Europe may spread to the country.	
	Chestnut gall wasp	High	The insect pest Chestnut gall wasp continues to spread across the country in chestnut trees.	Pest management activities based on application of biological control agent	

				are in progress to reduce the populations.	
Turkmenistan	**Italian Locust**	Low	Hatching should start in April followed by hopper development.		
	Moroccan Locust	Low	Mass hatching will occur at the beginning of the forecast period followed by hopper development.		
United Arab Emirates	**Desert Locust**	Low	A few small swarms from Yemen may appear in the south and transit the country towards southeast Iran.		
Uzbekistan	**Italian Locust**	Low	Hatching should start in April followed by hopper development.		
	Migratory Locust	Low	Hatching should start in May followed by hopper development.		
	Moroccan Locust	Moderate	Mass hatching will occur at the beginning of the forecast period followed by hopper development.		
Viet Nam	**Avian Influenza**	Low	Further spread of Avian Influenza (HPAI) outbreaks in poultry.	Both H5N1 and H5N6 HPAI outbreaks were reported in the country in the first month of 2016. Historically, outbreaks in poultry occur throughout the year.	
West Bank	**Avian Influenza**	Low	Incursion of H5N1 highly pathogenic avian influenza in poultry from Egypt and further spread due to limited capacity to implement adequate control measures in West Bank.	H5N1 HPAI occurred between January and March 2015 in West Bank.	
Yemen	**Desert Locust**	High	Adult groups and small swarms will form on the southern coast and move into the interior between Marib and Thamud.	The presence of recently discovered Desert Locust infestations in southern Yemen pose a potential threat to crops in the Region. The prevailing insecurity is making it impossible for survey	• The level of food insecurity increased by 21 percent compared to the previous year.

				teams to access most areas and is severely hampering control operations.	

EUROPE

Country/Area	Threat name	Likelihood of occurrence	Forecast for April-June 2016	Details	Country context (as of March 2016)
Albania	**Pine processionary moth**	High	Outbreak of pine processionary moth will continue to be reported.	About 80 000 ha of Albania's black pine forests is affected by pine processionary moth. Various levels of infestation are found in the north and the south of the country.	
Belarus	**African swine fever (ASF)**	Moderate	Incursion of African swine fever outbreaks from neighboring countries and spread within the country.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	
Estonia	**African swine fever (ASF)**	High	Occurrence of African swine fever outbreaks.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	
Greece	**Lumpy skin disease (LSD)**	Moderate	Re-emergence of Lumpy skin disease in livesltock in the already affected area and possible spread within the country, due to the upcoming favorable weather condition for the vectors. The likelihood of occurrence of the disease is lowered due to the control measures (i.e. vaccination).	In mid-August 2015, LSD was detected for the first time in Greece, in the Evros Delta Region along the border with Turkey. Since then, the disease affected eastern Macedonia and Thrace Region, central Macedonia and North Aegean Regions. Last officially reported outbreak occurred in late December.	

Latvia	**African swine fever (ASF)**	High	Occurrence of African swine fever outbreaks.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	
Lithuania	**African swine fever (ASF)**	High	Occurrence of African swine fever outbreaks.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	
Poland	**African swine fever (ASF)**	Low	Occurrence of African swine fever outbreaks in the northeast part of the country.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	
Russian Federation	**Lumpy Skin Disease (LSD)**	Moderate	Re-emergence of Lumpy skin disease in livestock in the already affected area and possible spread within the country, due to the upcoming favorable weather condition for the vectors.	LSD was firstly detected in the southern part of the country in July 2015, at the border with Azerbaijan. Since then, 17 outbreaks have been officially reported in the southern part of the country. The last outbreak was reported in October 2015.	
	African swine fever (ASF)	Moderate	Occurrence of African swine fever outbreaks and spread into new area within the country.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	
	Italian Locust	Low	Hatching should start in May followed by hopper development.		
	Migratory Locust	Low	Hatching should start in May followed by hopper development.		
	Moroccan Locust	Low	Hatching should start in May followed by hopper development.		
Ukraine	**African swine fever (ASF)**	Moderate	Occurrence of African swine fever outbreaks.	Since the ASF incursion in the country in early 2014, the presence of the virus continues to be reported in domestic pigs and wild boars in the country.	

FCC TERMINOLGY

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.
Likelihood of occurrence	Chances of a FCC threat to happen.
Likelihood of spread	Chances of geographical spread of a FCC threat within a country beyond its original introduction.
Likelihood of re-emergence/ amplification	Chances of re-emergence/amplification (e.g. increase, breeding, etc.) of a threat already existing within a country.

INFORMATION SOURCES

Transboundary Animal Diseases

- Early Mortality Syndrome/Acute hepatopancreatic necrosis disease (EMS/AHPND)FAO. 2013. Report of the FAO/MARD Technical Workshop on Early Mortality Syndrome (EMS) or Acute Hepatopancreatic Necrosis Syndrome (AHPNS) of Cultured Shrimp (available at http://www.fao.org/docrep/018/i3422e/i3422e00.htm)
- 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
- Zika. http://www.fao.org/zika-virus/en/

Desert Locust

- 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

Locusts (three species) in Caucasus and Central Asia

- Regional monthly bulletins on locust situations in CCA
- Reports of the annual Technical Workshop on Locusts in CCA available at http://www.fao.org/ag/locusts-CCA/en/index.html

Wheat rust disease

- Global wheat rust monitoring system

Threats to Food Security

- FAO. 2016 Crop Prospects and Food Situation, No 1, March 2016 available at http://www.fao.org/3/a-i5455e.pdf
- El Niño. Climate Prediction Center. NCEP. http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

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