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of the United Nations

Food Chain Crisis Early Warning Bulletin

January-March 2016
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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 an eventual 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

During the period **January-March 2016**, Food Chain Crisis (FCC) threats are expected to occur in the regions of Africa, Americas, 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, i.e. January-March 2016, include:

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

El Niño, current situation and forecasting

El Niño is expected to remain strong through the Northern Hemisphere winter 2015-2016, and gradually weaken through spring 2016 with a transition to the El Niño Southern Oscillation (ENSO)-neutral during late spring or early summer 2016.

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

REGIONAL OVERVIEW

AFRICA

Animal and aquatic diseases:

- In West Africa, further spread of **H5N1 highly pathogenic avian influenza** (H5N1 HPAI) in poultry is expected such as in Nigeria and Ghana where the virus is still actively circulating. Inadequate control measures in these countries could cause the introduction of the virus into neighboring countries such as Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Niger and Togo. In Egypt, an increase in the occurrence of H5N1 HPAI outbreaks in poultry and human cases infection is expected as per seasonal pattern. This can also increase the likelihood of introduction of the virus into neighboring countries in the region (e.g. Libya).
- In West Africa, an epidemic of **Ebola virus disease** (EVD) has been ongoing since December 2013, affecting Guinea, Liberia and Sierra Leone. The number of human cases in the most affected countries peaked in autumn 2014 and has been progressively decreasing. Since then, Sierra Leone was declared Ebola-free by WHO on 7 November 2015, Guinea on 29 December 2015 and Liberia on 14 January 2016. On 15 January 2016, WHO reported a new sporadic case in Sierra Leone, which underlines the need to continue effective surveillance even after EVD-free status is declared.
- The recent identification of the new **foot-and-mouth disease** (FMD) Serotype A (topotype Asia 1 Genotype VII) virus in the Islamic Republic of Iran, Saudi Arabia and Turkey can increase the likelihood of introduction of this virus in North Africa. In Southern Africa, the contact between wildlife and livestock can facilitate 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 Eastern Africa, the likelihood of occurrence of **Rift Valley fever** in animals and humans will increase due to favourable 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 likely peak during the Northern Hemisphere in winter 2015-2016 and gradually weaken through spring 2016.
- The aquatic disease **Epizootic ulcerative syndrome** will likely spread to other parts of Southern Africa due to a number of risk factors such as heavy rainfall, flooding, poor biosecurity, movement of infected fish and birds.

REGIONAL OVERVIEW

AFRICA

Plant pests and diseases:

🕒 In Northwest Africa, current **Desert Locust** outbreaks in northwest Mauritania may extend to Western Sahara, Algeria and Morocco. In Eastern Africa, small-scale breeding will cause Desert Locust numbers to increase on both sides of the Red Sea and Gulf of Aden.

In Madagascar, **Malagasy Migratory Locust** numbers will increase as the second generation of breeding is in progress in the southwest.

🕒 In Central Africa, **Banana Bunchy Top Disease** (BBTD) has affected banana production in recent years. This impact is likely to increase.

In Central Africa, **Cassava virus disease** is expected to re-emerge. The disease occurred in the region in recent years and affected Cassava production significantly.

🕒 In Eastern Africa, **BBTD** has impacted banana production in recent years. This impact is likely to increase.

Wheat stem rust disease has been a recurrent threat in Eastern Africa. The recent occurrence of new variants of Ug99 race increases the challenge; therefore stem rust epidemics might occur in the region as well as **yellow rust** (e.g. Ethiopia).

Maize Lethal Necrosis Disease has been affecting production significantly in recent years in Eastern Africa. Though the season is generally dry, it might re-emerge and affect production.

Forest pests:

🕒 In Southern Africa, the likelihood of occurrence of outbreaks of **red gum lerp psyllid** in Eucalyptus forests is high in some countries (Malawi, Mozambique, South Africa, and Zimbabwe). In addition, **blue gum chalcid** and **bronze bug** are a threat for Eucalyptus forests in Zambia and Zimbabwe. Both pests are reported also in Malawi where new outbreaks are likely to occur. In Zambia and Mozambique, very little attempts have been made on pest management activities.

REGIONAL OVERVIEW

AMERICAS

Aquatic diseases:

- **Enterocytozoon 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 as feeds for broodstock, from infected countries through trade and live aquatic animal movement.

Forest pests:

- A severe outbreak of **Bark beetles** is affecting conifer forests in Honduras. The likelihood of introduction and spread of Bark beetles to affect conifer forests in neighbouring Nicaragua is high.

Plant pests and diseases:

- **Banana Fusarium wilt disease** race TR4 is not yet present in Central America. However, considering that the disease is soil-borne and impossible to eradicate once established and that the region's production depends on the Cavendish variety which is highly susceptible to race TR4, prevention of the entry of this disease into the continent is crucial.
- **Coffee rust disease** was a significant problem in the last few years in Central America. Due to the current dry periods, it is not as prevalent as in previous years; however, it might prevail again as soon as precipitation increases. Thus, monitoring and preparedness are needed.

REGIONAL OVERVIEW

ASIA

Animal and aquatic diseases:

➤ **H5 highly pathogenic avian influenza** viruses are expected to continue circulating and possibly spread to previously unaffected countries in Eastern and Southeast Asia or even over longer distances, as it was observed during winter 2014-2015. The circulation of H7N9 low pathogenic avian influenza has increased as per seasonal pattern but not as much as the previous winter seasons in 2014 and 2015. So far, after three seasons of circulation, the virus has not spread outside China. The presence of poultry trade (formal and informal) between China and neighboring countries might induce cross border spread.

➤ Human cases of **Middle East respiratory syndrome coronavirus** as well as the detection of the virus in camels in Saudi Arabia and other countries in the Middle East are likely to occur. Dromedary camels in the Middle East are considered as the major reservoir for the virus from which humans sporadically become infected through zoonotic transmission.

➤ The new **foot-and-mouth disease** Serotype A (topotype Asia 1 Genotype VII) virus identified between August and October 2015 in the Islamic Republic of Iran, Turkey, and Saudi Arabia is likely to spread within these countries. Its incursion in neighbouring countries is possible.

➤ **Enterocytozoon hepatopenaei** is 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 likely to spread to other parts of Asia from live animals (broodstock, post-larvae) and other live 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 South-West Asia, potential for **Desert Locust** breeding in southern interior affected by November 2015 cyclones.

➤ In Caucasus and Central Asia, the likelihood of occurrence of the **Italian, Migratory and Moroccan Locust pests** is nearly inexistent to moderate for the first quarter of 2016 as most of the hatching of these three locust pests will start at the end of the forecasting period.

➤ In Southern Asia, **Wheat yellow rust disease** has been detected and is likely to intensify in northern parts of India and Pakistan.

REGIONAL OVERVIEW

ASIA

Plant pests and diseases:

➤ **Banana Fusarium wilt disease** has been 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 Lebanon, Jordan, Oman and Pakistan where efforts for containment and prevention are needed.

EUROPE

Animal diseases:

➤ **African swine fever** is likely to continue circulating in wild boars and domestic pigs in the already affected countries (Russian Federation, Ukraine, Poland, Estonia, Lithuania and Latvia) and to spread to neighboring countries.

Plant pests and diseases:

➤ The likelihood of occurrence of the **Italian, Migratory and Moroccan Locust pests** in the Russian Federation is inexistent for the first quarter of 2016 as hatching of the three locust pests will start after the forecasting period.

➤ **Olive quick decline disease** continues to cause significant concern in Italy, therefore prevention of spread in the country is important as well as awareness raising in neighboring countries.

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. In addition, transboundary pest boxwood moth is causing serious diebacks of native box wood species in Abkhazia, in Georgia.

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

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 available information at the time of the preparation of the 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

Countries	Threat name	Likelihood of occurrence	Forecast for January -March 2016	Details	Factors impacting country food security
Algeria	Desert Locust	High	 Small-scale breeding in central Sahara.		
Benin	Avian Influenza (AI)	Moderate	 Introduction 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 Nigeria and Ghana, the virus is still actively circulating. Inadequate control measures in these countries can further facilitate regional spread.	
Burkina Faso	Avian Influenza (AI)	Moderate	 Introduction of H5N1 highly pathogenic avian influenza from neighboring countries where the virus is still actively circulating.	Since February 2015, the country reported 94 H5N1 outbreaks in 12 different regions with the last observed outbreak in July 2015. In Nigeria and Ghana, the virus is still actively circulating. Inadequate control measures in these countries can further facilitate regional spread.	<ul style="list-style-type: none"> • Over 32 000 Malian refugees are estimated to be living in the country.
Cameroon	Avian Influenza (AI)	Moderate	 Introduction of H5N1 highly pathogenic avian influenza from neighboring countries amplified by inadequate capacity to detect and control the infection in poultry.	In Nigeria and Ghana the virus is still actively circulating. Inadequate control measures in these countries can further facilitate regional spread.	<ul style="list-style-type: none"> • In September 2015, the number of food insecure was estimated at 1.27 million. The most affected areas are the North and Far North regions. • Insecurity along the borders with Nigeria has led to the internal displacement of 81 700 individuals.
	Banana Bunchy Top Disease (BBTD)	Moderate	 Spread of Banana Bunchy Top Disease which is present in the southern part of the country.	The disease has already impacted banana production in recent years.	

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.	
Côte d'Ivoire	Avian Influenza (AI)	Moderate	 Introduction of H5N1 highly pathogenic avian influenza from neighboring countries where the virus is still actively circulating.	So far, the country reported 35 H5N1 HPAI outbreaks in four different regions, with last outbreak reported in August 2015. In Nigeria and Ghana the virus is still actively circulating. Inadequate control measures in these countries can further facilitate regional spread.	
Egypt	Avian Influenza (AI)	Moderate	 Increase in the number of H5N1 highly pathogenic avian influenza outbreaks in poultry and possible occurrence of human cases.	In November and December 2015 the number of H5N1 HPAI outbreaks already started to increase with three and 13 outbreaks reported, respectively. Other influenza viruses - H5 LPAI and H9N2 LPAI - are circulating in the country.	
	Desert Locust	Moderate	 Small-scale breeding in southeast.		
Equatorial Guinea	Banana Bunchy Top Disease (BBTD)	Low	 Spread of Banana Bunchy Top Disease.	The disease is present and may spread in the country.	
Eritrea	Desert Locust	High	 Small-scale breeding on the Red Sea coast.		<ul style="list-style-type: none"> • Vulnerability to food insecurity due to El Niño-related drought and economic constraints.

<p>Ethiopia</p>	<p>Wheat rust</p>	<p>Low</p>	<p> Possible epidemics of stem and yellow rusts due to inoculum presence and possible excess in rainfalls in the short rainy season in certain parts of the country.</p>	<p>New variants of Ug99 race might also be introduced and spread in the country. Rust diseases are a recurrent problem in Ethiopia and past epidemics have impacted wheat production significantly.</p>	<ul style="list-style-type: none"> • The estimated number of food insecure people has sharply increased from 2.9 million in January 2015 to 8.2 million in October, as severe rainfall deficits led to rapid deterioration of food security conditions in several agro pastoral and pastoral areas. • Locally, thousands of livestock deaths are severely limiting availability of livestock products and household income. • Poor and erratically distributed rains have severely affected 2015 main “meher” season crops in eastern parts of the country.
<p>Gabon</p>	<p>Banana Bunchy Top Disease (BBTD)</p>	<p>Moderate</p>	<p> Spread of Banana Bunchy Top Disease.</p>	<p>The disease has already impacted banana production in the country.</p>	
<p>Ghana</p>	<p>Avian Influenza (AI)</p>	<p>Moderate</p>	<p> Occurrence of further H5N1 highly pathogenic avian influenza outbreaks in poultry.</p>	<p>H5N1 HPAI virus has been circulating in five countries in West Africa since January 2015. In Ghana the virus has caused more than 30 outbreaks in five different regions.</p>	

<p>Kenya</p>	<p>Rift Valley fever (RVF)</p>	<p>High</p>	<p> Occurrence of Rift Valley fever outbreak.</p>	<p>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.</p>	<ul style="list-style-type: none"> • The National Oceanic and Atmospheric Administration (NOAA)'s El Niño advisory predicts the current El Niño will likely peak during the Northern Hemisphere winter 2015-2016, then abate during late spring or early summer 2016. NOAA assesses it could rank among the top three strongest El Niño episodes since 1950.
<p>Libya</p>	<p>Avian Influenza (AI)</p>	<p>Low</p>	<p> Introduction of H5N1 highly pathogenic avian influenza from Egypt and further spread due to inadequate control measures.</p>	<p>In 2014 and 2015 H5N1 HPAI outbreaks were reported to occur in Libya in March and February, respectively, and possibly due to illegal movement of animals.</p>	
	<p>Desert Locust</p>	<p>Moderate</p>	<p> Limited breeding in southwest.</p>		
<p>Madagascar</p>	<p>Migratory Locust</p>	<p>High</p>	<p> Second generation of breeding in southwest Madagascar.</p>	<p>The end of a plague with remission is expected in June 2016.</p>	<ul style="list-style-type: none"> • An estimated 1.89 million people are food insecure, including 400 000 people who require immediate assistance. • Dry conditions at the start of the 2015-2016 cropping season (October-June) have negatively impacted planting activities and establishment of early-planted crops.

					<ul style="list-style-type: none"> • Weather forecasts for the season, influenced by the current strong El Niño episode that is predicted to continue until early 2016, point to a higher probability of below-normal rains until March 2016 across large portions of the sub region. • 2016 production prospects are unfavourable.
Malawi	Banana Bunchy Top Disease (BBTD)	High	 Spread of Banana Bunchy Top Disease.	The disease has already impacted banana production in the country.	<ul style="list-style-type: none"> • Dry conditions at the start of the 2015-2016 cropping season (October-June) have negatively impacted planting activities and establishment of early-planted crops. • Weather forecasts for the season, influenced by the current strong El Niño episode that is predicted to continue until early 2016, point to a higher probability of below-normal rains until March 2016 across large portions of the sub region. • 2016 production prospects are unfavourable.
	Red gum lerp psyllid	High	 Occurrence of outbreaks of Red gum lerp psyllid in Eucalyptus plantation forests.		
	Blue gum chalcid	High	 Occurrence of outbreaks of Blue gum chalcid in Eucalyptus plantation forests.		

Mali	Desert Locust	Low	 Low numbers of Desert Locusts persist in the north.		<ul style="list-style-type: none"> •About 116 000 people are estimated to be in Phase 3: “Crisis” and above according to the last “Cadre Harmonisé” analysis.
Mauritania	Desert Locust	High	 Breeding, groups and bands form in northern and northwest Mauritania.		<ul style="list-style-type: none"> •Over 149 000 people are estimated to be in Phase 3: “Crisis” and above according to the last “Cadre Harmonisé” analysis. • More than 52 000 Malian refugees remain in southeastern Mauritania.
Morocco	Foot-and-mouth disease (FMD)	Moderate	 Spread of Foot-and-mouth disease serotype O outbreaks. The likelihood is mitigated by the vaccination campaigns ongoing in the country.	Since November 2015, FMD outbreaks, due to a Serotype O FMD virus closely related to those circulating in Tunisia and Algeria, were reported in mix sheep and cattle farms located in different provinces of the Central Region. Morocco started a preventive mass-vaccination campaigns targeting cattle in 2014, with three rounds conducted from August 2014 to December 2015. These has been reinforced by a peri-focal vaccination around the detected outbreaks.	
	Desert Locust	High	 Breeding and groups of hoppers and adults form in Western Sahara.		

Mozambique	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.	Mozambique has the shrimp species susceptible to AHPND. Strong awareness on shrimp diseases is present in the country.	
	Banana Fusarium Wilt disease	Low	 Spread of Banana Fusarium Wilt disease race TR4, which is already present in Nampula Province in the country.	The disease is reported in two farms in Nampula province. Its containment is essential.	<ul style="list-style-type: none"> • The number of food insecure persons in 2015 is estimated at about 138 000. • Cereal production outlook for the 2016 crops is uncertain on account of unfavourable weather forecasts.
	Red gum lerp psyllid	High	 Spread of Red gum lerp psyllid in Eucalyptus forests.		
Niger	Avian Influenza (AI)	Moderate	 Introduction of H5N1 highly pathogenic avian influenza 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 Nigeria and Ghana the virus is still actively circulating. Inadequate control measures in these countries can further facilitate regional spread.	<ul style="list-style-type: none"> • About 657 000 people are estimated to be in Phase 3: “Crisis” and above according to the last “Cadre Harmonisé” analysis. • Over 49 000 Malian refugees and 105 000 Nigerian refugees are estimated to be living in the country.
	Desert Locust	Low	 Low numbers of Desert Locusts persist in northern Niger.		

Nigeria	Avian Influenza (AI)	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. In Nigeria, it has caused 500 outbreaks in poultry in 22 States and it is still actively circulating in poultry.	
Rwanda	Cassava Brown Streak Virus	Moderate	 Re-emergence of Cassava Brown Streak Virus in the country.	The disease has already impacted cassava production in recent years.	
Somalia	Rift Valley fever (RVF)	High	 Occurrence of Rift Valley fever outbreaks.	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.	<ul style="list-style-type: none"> • The National Oceanic and Atmospheric Administration (NOAA)'s El Niño advisory predicts the current El Niño will likely peak during the Northern Hemisphere winter 2015-2016, then abate during late spring or early summer. NOAA assesses it could rank among the top three strongest El Niño episodes since 1950. • Conflict, civil insecurity and reduced localized crop production is persisting.
	Desert Locust	High	 Small-scale breeding on northwest coast.		
South Africa	Red gum lerp psyllid	High	 Spread of Red gum lerp psyllid in Eucalyptus forests within the country.		<ul style="list-style-type: none"> • Weather forecasts for the season, influenced by the current strong El Niño episode that is predicted to continue until early 2016, point to a higher probability of below-normal rains until March 2016 across large portions of the sub region. • 2016 production prospects are unfavourable.

	Blue gum chalcid	High	 Occurrence of outbreaks of Blue gum chalcid in Eucalyptus forests.		
South Sudan	Rift Valley fever (RVF)	High	 Occurrence of Rift Valley fever outbreaks.	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.	<ul style="list-style-type: none"> • The National Oceanic and Atmospheric Administration (NOAA)'s El Niño advisory predicts the current El Niño will likely peak during the Northern Hemisphere winter 2015-2016, then abate during late spring or early summer. NOAA assesses it could rank among the top three strongest El Niño episodes since 1950.
Sudan	Desert Locust	High	 Small-scale breeding on the Red Sea coast.		<ul style="list-style-type: none"> • Conflict and civil insecurity is persisting.
Togo	Avian Influenza (AI)	Moderate	 Introduction of H5N1 highly pathogenic avian influenza from neighboring countries amplified by inadequate capacity to detect and control the infection in poultry.	So far, no Avian Influenza outbreaks have been reported in Togo however, in Nigeria and Ghana, it is still actively circulating. Inadequate control measures in these countries can further facilitate regional spread.	
United Republic of Tanzania	Rift Valley fever (RVF)	High	 Occurrence of Rift Valley fever outbreaks.	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.	<ul style="list-style-type: none"> •The National Oceanic and Atmospheric Administration (NOAA)'s El Niño advisory predicts the current El Niño will likely peak during the Northern Hemisphere winter 2015-2016, then abate during late spring or early summer. NOAA assesses it could rank among the top three strongest El Niño episodes since 1950.

	Maize Lethal Necrosis Disease	Low	 Re-emergence of Maize Lethal Necrosis Disease depending on climatic factors.	Factors affecting occurrence and spread need further investigation.	
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 biosecurity, movement of infected fish and possibly birds.	Zambia is the most severely affected country by EUS in Southern Africa.	
	Blue gum chalcid	High	 Occurrence of outbreaks of Blue gum chalcid in Eucalyptus plantation forests.		
	Red gum lerp psyllid	High	 Occurrence of outbreaks of Red gum lerp psyllid in Eucalyptus plantation forests.		
Zimbabwe	Red gum lerp psyllid	High	 Outbreaks of Red gum lerp psyllid will continue to be reported.	Pest management efforts using biological control are in progress.	<ul style="list-style-type: none"> • Weather forecasts for the season, influenced by the current strong El Niño episode that is predicted to continue until early 2016, point to a higher probability of below-normal rains until March 2016 across large portions of the sub-region. • 2016 production prospects are unfavourable.
	Blue gum chalcid	High	 Outbreaks of 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.	

	Bronze bug	High	 Occurrence of outbreaks of Bronze bug in Eucalyptus plantation forests.	Pest management activities are in progress.	
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AMERICAS

Countries	Threat name	Likelihood of occurrence	Forecast for January -March 2016	Details	Factors impacting country food security
Belize	Bark beetles	Moderate	 Occurrence of outbreaks of Bark beetles.		
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 diseases 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 in preparation.	

	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.		
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. A national action plan on AHPND is in preparation.	
	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 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.	• Despite improved rains for the current second season, production prospects are uncertain.
Nicaragua	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. A national action plan on AHPND is in preparation.	

	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	 Occurrence of outbreaks of Bark beetles.		• Despite improved rains for the current second season, production prospects are uncertain.
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. A national action plan on AHPND is in preparation.	
	Enterocytozoon hepatopenaei (EHP)	Low	 Introduction 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 polychaetes, clams, oysters, etc. used as feed for broodstock.	Strong awareness on AHPND is present in the country. A national action plan on AHPND is in preparation.	

	Enterocytozoon hepatopenaei (EHP)	Low	 Introduction 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.	
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ASIA

Countries	Threat name	Likelihood of occurrence	Forecast for January -March 2016	Details	Factors impacting country food security
Afghanistan	Italian and Moroccan Locusts	Moderate	 Italian and Moroccan Locust hatching starts at the end of this forecasting period in the northern part of the country.		<ul style="list-style-type: none"> • 2.1 million people are classified as very severely food insecure. • Over 700 000 people are internally displaced, mostly in Helmand Province.
Armenia	Lumpy skin disease (LSD)	Low	 Spread of Lumpy skin disease within the country, possibly mitigated by the adverse weather condition for the vectors.	At the beginning of December 2015, LSD was observed for the first time in Armenia in the Syunik province.	
	Italian Locust	Nil	 Italian Locust hatching starts after this forecasting period.		
Azerbaijan	Lumpy skin disease (LSD)	Low	 Introduction of Lumpy skin disease from neighboring countries, possibly mitigated by the adverse weather condition for the vectors.		
	Italian and Moroccan Locusts	Nil	 Italian and Moroccan Locust hatching starts after this forecasting period.		

China	Avian Influenza (AI)	Moderate	 Increase in the number of Avian Influenza outbreaks in poultry due to several H5 highly pathogenic avian influenza and low pathogenic avian influenza viruses circulating in the country and increase in the number of avian influenza human cases in the early months of the year.	Several serotypes of HPAI and LPAI AI viruses are circulating in China. A seasonal pattern with an increase in the outbreaks observed in the winter month is usually observed. Human cases can occur as already observed in the last years.	
Gaza Strip	Avian Influenza (AI)	Low	 Introduction of H5N1 highly pathogenic avian influenza from Egypt and further spread due to limited capacity to implement adequate control measures in the Gaza Strip area.	In 2015, a total of 20 H5N1 HPAI outbreaks were reported between June and August in the Gaza Strip.	
Georgia	Lumpy skin disease (LSD)	Low	 Introduction of Lumpy skin Disease from neighboring countries, possibly mitigated by the adverse weather condition for the vectors.		
	Italian and Moroccan Locusts	Nil	 Italian and Moroccan Locust hatching starts after this forecasting period.		
India	Acute hepatopancreatic necrosis disease (AHPND)	Low	 Introduction of Acute hepatopancreatic necrosis disease from affected countries through trade and movement of: (1) 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.	
	Enterocytozoon hepatopenaei (EHP)	Low	 Introduction of Enterocytozoon hepatopenaei from other countries	Good surveillance and biosecurity measures are in place in the country as well as strong awareness on shrimp	

			through live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed for broodstock.	diseases.	
	Wheat Rust	Moderate	 Epidemics of Wheat Yellow Rust disease around Punjab State.	The disease is a recurrent problem in the country.	
Indonesia	Avian Influenza (AI)	Moderate	 Increase in number of H5N1 highly pathogenic avian influenza outbreaks in poultry and increase in number of human cases in the early months of the year.	H5N1 HPAI is endemic in Indonesia where it has been detected since 2003. Outbreaks in animals show a seasonal pattern with the seasonal peak usually observed during the winter.	
	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.	Surveillance for AHPND is in place in the country as well as strong awareness on shrimp diseases. Many small-scale producers are present in the country.	
	Enterocytozoon hepatopenaei (EHP)	Moderate	 Introduction from other countries through live animals (e.g. live polychaetes, clams, oysters, etc.) used as feed 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 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.	
	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 ¹ threatened species) caused by Boxwood Blight continues to be reported.		
	Desert Locust	Moderate	 Small-scale breeding in southeast.		
Israel	Avian Influenza (AI)	Low	 Introduction of H5N1 highly pathogenic avian influenza from Egypt.	In 2015, H5N1 HPAI outbreaks were reported to occur in Israel in Haifa, Central and Northern District.	
Jordan	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 disease is soil-borne and cannot be eradicated once established in a plantation. Thus prevention of spread is crucial.	

¹ The International Union for Conservation of Nature.

Kazakhstan	Italian, Migratory and Moroccan Locusts	Nil	 Italian, Migratory and Moroccan Locust hatching starts after this forecasting period.		
Kyrgyzstan	Italian and Moroccan Locusts	Nil	 Italian and Moroccan Locust hatching starts after this forecasting period.		
Lebanon	Banana Fusarium Wilt disease	Low	 Spread of Banana Fusarium Wilt disease race TR4 which has been recently reported for the first time in one farm.	The disease is soil-borne and cannot be eradicated once established in a plantation. Thus prevention of spread is crucial.	
	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	Foot-and-mouth disease (FMD)	Low	 Occurrence of Foot-and-mouth disease outbreak 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 in the country have been already observed lately in October 2015.	
Nepal	Anthrax, Foot-and-mouth disease, Newcastle disease, Highly Pathogenic Avian Influenza, Peste des petits ruminants, Rabies	High	 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.		
	Coffee leaf rust	Moderate	 Spread of coffee leaf rust disease.	The disease has been reported in Lalitpour district and might spread in the country.	

Oman	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 disease is soil-borne and cannot be eradicated once established in a plantation. Thus prevention of spread is crucial.	
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 disease is soil-borne and cannot be eradicated once established in a plantation. Thus prevention of spread is crucial.	
	Desert Locust	Moderate	 Small-scale breeding in southwest.		
Philippines	Acute hepatopancreatic necrosis disease (AHPND)	Moderate	 Further spread of Acute hepatopancreatic necrosis disease to other parts of the country.	Strong awareness on AHPND is present in the country. A national action plan on AHPND is in preparation.	
	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 feed for broodstock.		
	Banana Fusarium Wilt disease	Moderate	 Spread of Banana Fusarium Wilt disease race TR4 which has been reported recently for the first time in one farm.	The disease is soil-borne and cannot be eradicated once established in a plantation. Thus prevention of spread is crucial.	
Republic of Korea	Avian Influenza (AI)	Moderate	 Increase in the number of H5N8 highly pathogenic avian influenza outbreaks in the early months of the year. Possible incursions of other avian influenza serotypes from neighboring countries.	Outbreaks in animals show a seasonal pattern with the seasonal peak usually observed during the winter (January-February). Last H5N8 HPAI outbreaks were reported in mid-November in the country.	

	Foot-and-mouth disease (FMD)	Low	 Occurrence of Foot-and-mouth disease outbreak 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 in the country has been already observed lately in July 2014-March 2015.	
Saudi Arabia	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 the country.	A new FMD serotype A strain, (topotype Asia, Genotype VII) has been detected in two outbreaks in September and October 2015 in the Riyadh Region.	
	Desert Locust	High	 Small-scale breeding on Red Sea coast.		
Sri Lanka	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.	Strong awareness on shrimp diseases is present in the country. A national action plan on AHPND is in preparation.	
	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	Brucellosis, Foot-and-mouth disease, Lumpy skin disease, New Castle disease, Rabies	High	 Spread of Transboundary animal diseases (TADs) including Brucellosis, Foot-and-mouth disease, Lumpy skin disease, New Castle disease, and Rabies due to high internal flow of refugees and their livestock.		<ul style="list-style-type: none"> • Conflict is worsening with significant impact on agricultural production.

Tajikistan	Italian and Moroccan Locusts	Nil	 Italian and Moroccan Locust hatching starts after this forecasting period.		
Turkey	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 the country.	A new FMD serotype A strain, (topotype Asia, Genotype VII) is circulating in Turkey since September 2015. Turkey is currently vaccinating cattle with newly produced vaccines including the new strain and vaccine-matching studies are ongoing.	
	Lumpy skin disease (LSD)	Low	 Spread of Lumpy skin disease within the country, possibly mitigated by the adverse weather condition for the vectors.		
Turkmenistan	Italian and Moroccan Locust	Moderate	 Italian and Moroccan Locust hatching starts after this forecasting period.		
Uzbekistan	Italian, Migratory and Moroccan Locusts	Nil	 Italian, Migratory and Moroccan Locust hatching starts after this forecasting period.		
Viet Nam	Avian Influenza (AI)	Moderate	 Potential increase in the number of highly pathogenic avian influenza (H5N1 and H5N6 HPAI) outbreaks in the early months of the year.	Both H5N1 and H5N6 HPAI outbreaks were reported in the country in November and December 2015.	
West Bank	Avian Influenza (AI)	Low	 Introduction of H5N1 highly pathogenic avian influenza from Egypt and further spread due to limited capacity to implement adequate control measures in the West Bank area.	H5N1 HPAI occurred between January and March 2015 in West Bank.	
Yemen	Desert Locust	High	 Small-scale breeding on Red Sea coast.	Potential of widespread breeding in areas impacted by two cyclones in south.	• The level of food insecurity increased by 21 percent compared to the previous year.

EUROPE

Countries	Threat name	Likelihood of occurrence	Forecast for January -March 2016	Details	Factors impacting country food security
Albania	Pine processionary moth	High	 Outbreaks 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	 Introduction of African swine fever outbreaks from neighboring countries and spread in 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.	
Georgia	Boxwood moth and boxwood blight	High	 The outbreaks of Boxwood moth and the occurrence of boxwood blight continue to cause dieback of native box wood species.	Pest management activities are initiated to protect the native species.	
Greece	Lumpy skin disease (LSD)	Low	 Spread of Lumpy skin disease within the country, possibly mitigated by the mitigations measures and the adverse weather condition for the vectors.	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.	
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)	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.	
Poland	African swine fever (ASF)	Moderate	 Occurrence of African swine fever outbreaks.	Since the ASF incursion 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)	Low	 Spread of Lumpy skin disease within the country, possibly mitigated by the adverse weather condition for the vectors.		
	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.	
	Italian, Migratory and Moroccan Locusts	Nil	 Italian, Migratory and Moroccan Locust hatching starts after this forecasting period.		
Turkey	Chestnut gall wasp	High	 Chestnut gall wasp in Chestnut trees continues to spread in the country.	Pest management activities based on application of biological control agent are in progress to reduce the populations of the pest.	
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 TERMINOLOGY

FCC threat	Food chain crisis (FCC) threats are transboundary animal and plant pests and diseases, including aquatic and forest pests and 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
- WHO Ebola Situation Report (as of 30 September 2015) available at <http://apps.who.int/ebola/current-situation/ebola-situation-report-30-september-2015>

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. 2015. Crop Prospects and Food Situation, No 3, October 2015 available at <http://www.fao.org/3/a-I4970E.pdf>
- El Niño. International Research Institute for Climate and Society available at <http://iridl.ldeo.columbia.edu/maproom/IFRC/FIC/elninorain.html>
- GIEWS Update. Central America - Drought Update available at <http://www.fao.org/3/a-I4926E.pdf>

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