Food and Agriculture Organization of the United Nations

FOOD CHAIN CRISIS EARLY WARNING BULLETIN

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

No. 34
January–March 2020

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NOTE TO THE READER

The purpose of the FCC (Food Chain Crisis) Early Warning Bulletin is to inform the Food and Agriculture Organization of the United Nations (FAO) and other international organizations, countries, scientific experts, and decision makers of forecasted threats to animal and plant health and food safety that may have a 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 that has been collected and analysed by FAO experts.

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

FOOD CHAIN CRISIS FORECASTING METHODOLOGY

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

The FAO Food Chain Crisis-Intelligence and Coordination Unit (FCC-ICU) has developed an integrated forecasting approach to assess the likelihood of the occurrence of threats to the food chain (FCC threat) for the upcoming three months. Based on this approach and on the availability of FAO data, a number of forecast events are presented at country level. Data are collected, analysed and further presented in this quarterly FCC Early Warning Bulletin (see country section, page 16). The food safety threats will be included in future bulletins.

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

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

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

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

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

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

TABLE 2: FCC likelihood scale

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

HIGHLIGHTS

DESERT LOCUST

The current Desert Locust situation is extremely alarming and represents an unprecedented threat to food security and livelihoods in the Horn of Africa. Immature and maturing swarms continue to arrive in the northeast of Kenya from Ethiopia and Somalia and there is a risk that some swarms could appear in northeast Uganda, southeast South Sudan and southwest Ethiopia.

In West Asia, swarms will form on Yemen's Red Sea coast and continue to breed. Some of these may move north to Saudi Arabia to supplement winter breeding there.

In South Asia, swarms from the India-Pakistan border will appear in southwest Pakistan and southern Iran, where early breeding could take place if temperatures remain warm; otherwise, breeding will start in March.

AFRICAN SWINE FEVER (ASF) IN ASIA

ASF continues to be reported in the region. The following countries have reported outbreaks in domestic pigs and sporadic cases in wild boar: China (since August 2018); Mongolia (January 2019); Viet Nam (February 2019); Cambodia (April 2019); the Democratic People's Republic of Korea (May 2019); the Lao People's Democratic Republic (June 2019); Myanmar (August 2019); and the Philippines, the Republic of Korea and Timor-Leste (September 2019); and Indonesia (December 2019).

Over the last few months, there have been numerous detections of ASF virus in pork samples brought to countries in the region (e.g. Australia, Thailand, Republic of Korea, Philippines and Japan).

The risk of further spread of ASF within the countries is considered high in countries that have already been infected, which also poses a risk of ASF introduction into other countries in East and Southeast Asia through the movement of live pigs and pork products.

As the majority of pigs are produced in Asia, especially China, the recent escalation of the ASF epidemic is likely to have devastating consequences for animal health and food security, as well as a noticeable impact on the pig industry and related businesses, both in the region and worldwide.

RIFT VALLEY FEVER (RVF) IN EASTERN AFRICA

In Eastern and Central Africa, the precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, the United Republic of Tanzania and Uganda, and to a lesser extent, the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, Kenya, southern Ethiopia, Rwanda, Somalia, southeastern South Sudan, southern Sudan, (large areas in the south and small hotspots in the north), northeastern Uganda and the eastern United Republic of Tanzania. In addition, some hotspots are predicted in the eastern area of the Democratic Republic of Congo and in central Chad.

In Southern Africa, the FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in north and central Mozambique.

In West Africa, according to the FAO RVF Monitoring/Early Warning tool, given the current suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals, a potential low risk of RVF occurrence may persist along the Senegal River between Mauritania and Senegal, in east-central Senegal, in eastern-central Mali, and in small localized areas in Niger.

OVERVIEW FCC FORECAST FOR THE PERIOD JANUARY–MARCH 2020

During the period January to March 2020, Food Chain Crisis (FCC) threats are expected to occur in Africa, the Americas, Asia and Europe where they can persist within a country, spread to neighbouring countries, remain latent, or re-emerge or amplify.

The dynamics and likelihood of the occurrence of FCC threats depend on a number of risk factors or drivers. These include agro-ecological factors (intensive farming systems, deforestation, overgrazing, etc.), climate change and variability (droughts, extreme weather events, flooding, heavy rains, heat waves, the El Niño-Southern Oscillation – ENSO), changes in vegetation cover, water temperature, human behaviour (cultural practices, conflicts and civil insecurity, trade, etc.) and natural disasters.

In relation to food security, and according to the last "Crop prospects and food situation" report (January–March 2020), FAO estimates that globally, 42 countries (32 in Africa, 8 in Asia and 2 in the Americas) are in need of external assistance for food. Persisting conflicts continue to be the dominant factor driving high levels of severe food insecurity. Weather shocks have also adversely affected food availability and access. FCC threats can compound food insecurity in fragile countries stricken by weather shocks and conflicts.

MAIN FOOD CHAIN THREATS

Thirty-one plant and forest pests and diseases, locusts and animal and aquatic diseases were monitored and forecasted by FAO experts for the period January to March 2020. A total of **260** forecasts were conducted in **116** countries.

OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

TABLE 3: Potential (moderate-high likelihood) Food Chain Threats forecasted for January to March 2020

Continent	FCCs Threats	Plant pests and diseases	Forest pests and diseases	Locusts	Animal diseases
AFRICA	17	Fall armyworm (FAW) Cassava mosaic disease (CMD) Cassava swollen shoot disease (CBSD) Banana fusarium wilt disease (BFWD) Banana bunchy top disease (BBTD) Mango mealybug	Blue gum chalcid Red gum lerp psyllid Bronze bug Polyphagous (PSHB)	Desert Locust Migratory Locust Red Locust	Rift Valley fever (RVF) Foot-and-mouth disease (FMD) *Peste des petits ruminants* (PPR) Avian influenza (AI)
AMERICAS*	3	Banana fusarium wilt disease (BFWD)	Bark beetles	-	Avian Influenza (AI)
ASIA	11	Fall armyworm (FAW) Banana fusarium wilt disease (BFWD) Cassava mosaic disease (CMD) Wheat rust	Boxwood blight	Desert Locust	African swine fever (ASF) Foot-and-mouth disease (FMD) Avian Influenza (AI) Lumpy skin disease (LSD) *Peste des petits ruminants* (PPR)
EUROPE	6	*Xylella fastidiosa* on olive trees	Pine processionary moth	-	African swine fever (ASF) Avian Influenza (AI) *Peste des petits ruminants* (PPR) Lumpy skin disease (LSD)
OCEANIA	1	Fall armyworm (FAW)	-	-	-
TOTAL by FCC category		8	7	3	6

* *Forecasted threats in the Americas are of limited coverage and currently under review.*

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

AFRICA

In Africa, 121 FCC events in 44 countries were forecasted, comprising plant pests and diseases, locusts, animal and aquatic diseases, and forest pests. The likelihood of occurrence varies from Low to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

- **Fall Armyworm** (*Spodoptera frugiperda*) presence is confirmed in all **Eastern African** countries except in Djibouti. In Ethiopia, the forecast period (January–March) coincides with the growing of irrigated maize and the maize crop, a preferred host, will be at risk. In Burundi, Kenya, Rwanda, Somalia, South Sudan and Uganda, these months coincide with the off-season period, and the pest will therefore have limited access to maize crops. This means that the likelihood of pest spread and damage will be low.
  - In **North Africa**, Egypt has officially reported the presence of FAW on maize fields in southern Egypt. Sudan has been reporting the introduction of the pest since 2017 and the Nile Valley may be considered the probable route of introduction to Egypt. The climate in Egypt and Sudan allows for continuous planting of many host plants, which increase the likelihood of pest spread and damage.
  - In **Southern Africa**, maize will be in the vegetative stages in almost all countries. Therefore, there will be a high risk of FAW amplification.
  - In **Central Africa**, the likelihood of FAW spreading and amplification depends on the availability of the host plant in different countries.
  - In **West Africa**, the likelihood of FAW spreading and amplification ranges from Nil to Moderate, depending on the availability of the maize crop.
- In **Eastern Africa**, insect pest populations of **Tomato leaf miner** (*Tuta absoluta*) are likely to be relatively high across countries in the subregion during this forecast period, because it generally coincides with the relatively warm season, during which large volumes of tomato are cultivated under irrigation. Tomato is mainly produced during the warm season, and these conditions also happen to be favourable for the pest to flourish. If left uncontrolled under these conditions, leaf miner infestations are typically high and can lead to significant yield losses.
- **Cassava mosaic disease** and **Cassava brown streak disease** continue to affect countries in Eastern Africa and may amplify where weather conditions are favourable.
- In **North Africa**, **Tomato leaf miner** (*Tuta absoluta*) will have lower possibility of spread, as the main host plant are not yet grown in open fields.
- In **Central Africa**, **Banana bunchy top disease**, **Cassava brown streak** and **Cassava mosaic disease** continue to affect the region and can escalate.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

AFRICA

LOCUSTS

- In **Eastern Africa**, the current **Desert Locust** situation is extremely alarming and represents an unprecedented threat to food security and livelihoods in the Horn of Africa. Immature and maturing swarms continue to arrive in the northeast of Kenya from Ethiopia and Somalia and there is a risk that some swarms could appear in northeast Uganda, southeast South Sudan and southwest Ethiopia.
- In **Southern Africa,** after the onset of rains, breeding of **Red Locust** occurred, followed by hatching and hopper development in all four concerned countries.
- In Madagascar, the second generation of breeding of the **Malagasy Migratory Locust** will take place.

ANIMAL DISEASES

- **Avian influenza (AI)**

H5N1 and H5N8 Highly Pathogenic Avian Influenza (HPAI) viruses may sporadically cause new outbreaks in some countries. However, the risk is considered moderate for the forecast period, given the observed seasonality of the disease.

H9N2 Low Pathogenic Avian Influenza (LPAI) is considered endemically circulating in many African countries, causing losses to poultry production.

- In **North Africa**, circulation of H5N1 HPAI, H5N8 HPAI and H9N2 LPAI is expected to continue in Egypt at a moderate intensity and to increase towards March 2020.
- In **West Africa**, H5N8 HPAI re-emerged in April 2018 in Nigeria. Since then, the country has not reported any outbreaks. However, continued circulation of the virus cannot be ruled out. In November 2019, H5N6 AI was reported for the first time in the country: it was detected in June 2019, in birds in a live bird market located in Sokoto State. The risk of reoccurrence of H5 strains for the period January–March 2020 is therefore considered moderate.
- In **Central and East Africa**, reports of H5N8 HPAI virus have ceased, and the risk for the period January–March 2020 is considered nil.
- In **Southern Africa**, the latest reports of the H5N8 HPAI virus in South Africa and Namibia were observed in September and June 2019, respectively. As the warmer season is approaching in this hemisphere, the risk for the period January–March 2020 is considered nil in Namibia and low in South Africa.

It should be noted that this assessment is based on relatively scarce data, given that, for example, LPAI viruses are not notifiable to the World Organisation for Animal Health (OIE) and that countries with endemic circulation of HPAI viruses are not required to report every Avian influenza event.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

AFRICA

Foot-and-mouth disease (FMD), serotype O

- In 2018-2019, a widespread epizootic affected extensive regions of **Northern Africa** (Algeria, Libya, Morocco and Tunisia) and **West and Central Africa** (12 countries: Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal and Sierra Leone) caused by serotype O strain. Over 350 FMD outbreaks were reported in Northern Africa and over 230 in West Africa, from January to December 2018 and from July to November 2019. Since the virus observed appears to be genetically very close to the virus that affected Algeria in 2014 (serotype O, topotype EA3), it seems that cross-Saharan movements of FMD are becoming a regular event. Further spread of the disease is likely to occur within the infected countries and throughout the region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Algeria, Mali, Mauritania, Morocco, Tunisia, etc.). The disease is likely to continue to occur in the region.
- In **Southern and Eastern Africa**, FMD, serotype O, which re-emerged in Zambia in August 2018, is likely to continue to occur in Zambia (non-vaccinated areas). These events are of concern because the disease may spread from Zambia into the Southern Africa region, reaching countries that have never been affected by this particular serotype before (e.g. Botswana, Namibia and Zimbabwe). If this happens, the impact on the subregion's beef-exporting countries would be huge. In Comoros, an FMD serotype O outbreak was reported for the first time in March 2019, where FAO and partners are taking control measures through an emergency Technical Cooperation Programme (TCP) and other actions.

Foot-and-mouth disease (FMD)

- An **FMD** outbreak was reported in November 2019 in **South Africa**, Limpopo Province, Molemole Local Municipality, close to the Vhembe outbreak that occurred in January 2019. The disease is likely to continue to occur in the area.

Peste des petits ruminants (PPR)

- **PPR** was first reported in Burundi in January 2018 and has been kept under control through mass vaccination. The first occurrence of PPR in Angola was recorded in December 2012. Namibia was declared free, on a zonal basis, south of the veterinary cordon fence. Outbreaks continued to be reported in the United Republic of Tanzania and the Democratic Republic of the Congo at the end of 2018; these countries are considered endemic for PPR. The disease is likely to spread through small ruminant movement and pastoralism along border areas; in this way, it may be introduced into neighbouring Malawi, Mozambique and Zambia. Other countries in the region are either PPR-free or have never reported the disease, including Madagascar, which was declared free from the disease in 2018. The disease is likely to continue to occur in the region.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

AFRICA

- **Rift Valley fever (RVF)**

  - **Central and Eastern Africa**: During the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southeastern South Sudan, southern Sudan, north-eastern Uganda and the eastern United Republic of Tanzania. In addition, a few hotspots are also predicted in eastern Democratic Republic of Congo and in central Chad. In October–November 2019, cases of RVF in humans and animals were confirmed in River Nile and Red Sea States (northeastern Sudan), and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum States. Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, the following countries can also be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries in the region can be considered at a lower risk of occurrence, due to the predicted suitability for RVF vector amplification of the conditions prevailing there, as well as to the movement of potential infected animals.

  - **Southern Africa**: The rainy season in Southern Africa lasts from November to March. Historically, RVF outbreaks have occurred from January to March. Nevertheless, for the coming period (January–March 2020), the precipitation forecasts predict below-average rains for the whole Southern African region, except for Malawi, northern Madagascar, northern Mozambique and northeastern Zambia. The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in northern and central Mozambique. The latter area was heavily hit by the cyclone Idai in March 2019. Extensive and protracted flooding and retention of water may have increased the vegetation cover in this area, thus enhancing its suitability for vector amplification. Small localized risk areas for vector amplification are also predicted in central South Africa and southwest Madagascar, where the risk of occurrence can be considered low.

  - **West Africa**: During the past months, wet conditions were observed over much of West Africa. The precipitation forecasts for January–March 2020, which coincides with the dry season, predict below-average rains. However, according to the FAO RVF Monitoring/Early Warning tool, given the current suitable environmental conditions for vector amplification, animal movement and the informal marketing of infected animals, a low risk of RVF occurrence may persist in eastern-central Mali, along the Senegal River between Mauritania and Senegal, in small localized areas in Niger, and in eastern-central Senegal.

FOREST PESTS AND DISEASES

- In **Eastern Africa**, **Blue gum chalcid**, **Bronze bug** and **Red gum lerp psyllid** insect pests are likely to continue spreading, causing severe damage in eucalyptus plantations. Applications of biological control agents to reduce these insect pest populations are in progress in some countries.

  In **Southern Africa**, the **Polyphagous shot hole borer** is likely to spread from South Africa to neighbouring countries.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

AMERICAS

In the Americas, five FCC events in five countries are forecasted, comprising aquatic diseases and forest pests. The likelihood of occurrence varies from Low to High. The following FCC events have significant regional implications:

ANIMAL DISEASES

- **African swine fever (ASF)**

  A risk of African swine fever (ASF) spread into America from Asian or European infected countries cannot be excluded; therefore, there is a moderate to high risk of further spread of ASF within the region, through movement of live pigs and pork products from infected countries.

- **Avian Influenza (AI)**

  H7N3 HPAI has been reported sporadically in Mexico since 2012. Since April 2019, 26 H7N3 HPAI outbreaks have been reported in domestic birds in the central-southern part of the country. Due to the approaching cold season, additional outbreaks are likely to be reported in the country.

- **Foot-and-mouth disease (FMD)**

  The circulation of FMD in Venezuela, also due to the lack of adequate veterinary control and biosecurity caused by the political instability in the country in 2018–2019, is a potential reservoir for incursions into the neighbouring countries, and a potential source for free zones in central and southern America.

FOREST PESTS AND DISEASES

- In **Central America**, severe infestations of **Bark beetles**, in particular the *Dendroctonus frontalis* species, are occurring in the dry corridor of Central America and will continue in the pine forests of Guatemala, Honduras, and Nicaragua. Pine species *Pinus caribea*, *Pinus oocarpa* and *Pinus patula* in natural forests and plantations have become more vulnerable to the beetles' attacks, because they are already stressed by prolonged drought and weakened due to poor forest management practices.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

ASIA

In Asia, a total of 92 FCC events are forecasted in 39 countries, comprising plant pests and diseases, locusts, animal and aquatic diseases, and forest pests. The likelihood of occurrence varies from Low to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

- In **South Asia**, regarding **Fall armyworm (FAW)**, the cold temperatures expected during the forecast period will restrict the development and perpetuation of the pest.

  In **West Asia**, Yemen has officially declared the introduction and presence of FAW since 2018, which increases the risk of introduction to neighbouring countries such as Oman and Saudi Arabia.

  - In **South Asia**, **Banana fusarium wilt disease** – Tropical Race 4 has been present in the region and may further spread and cause damage. **Wheat rust** disease epidemics may also occur in some locations.
  - In **South Asia**, **Banana fusarium wilt disease** – Tropical Race 4 has been present and has been reported recently in Lao People's Democratic Republic, Myanmar and Viet Nam. The disease may further spread and cause damage.

LOCUSTS

- In **Southern Asia**, swarms of **Desert Locust** from the India-Pakistan border will appear in southern Iran and southwest Pakistan, where early breeding may take place if temperatures remain warm; otherwise, breeding will start in March.

  In **West Asia**, swarms of **Desert Locust** will form on the Red Sea coast of Yemen and continue to breed. Some swarms may move north to Saudi Arabia, to supplement winter breeding there.

  In **Central Asia**, no visible development of locusts is expected during winter, as locusts are present only as eggs in the ground. In most of the countries concerned, hatching will start after this forecast period.

ANIMAL DISEASES

- **Avian Influenza (AI)**

  Based on seasonal patterns, the occurrence of major festivities (e.g. the Chinese New Year or Têt festivals) generating more demand for poultry and poultry products, and the lower temperatures prevailing during this forecast period, an increase in the numbers of **Avian Influenza (AI)** outbreaks in poultry is generally expected for the period January–March 2020. Five main **Highly Pathogenic Avian Influenza (HPAI)** subtypes and several H5 clades are endemically circulating in West, East, South and Southeast Asia. New outbreaks of these subtypes are at a low to moderate risk of occurring in the region during the forecast period, with an expected increase towards March 2020.

  H9N2 Low Pathogenic Avian Influenza (LPAI) is considered to circulate endemically in many Asian countries, causing losses to poultry production.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

ASIA

- **H5N1 HPAI** continues to circulate endemically in Bangladesh, China, India, Indonesia and Viet Nam, and has re-emerged in Cambodia, the Lao People's Democratic Republic and Malaysia (2018), and in Bhutan and Nepal (April–May 2019). This serotype was last observed in Nepal in September 2019.
- **H5N2 HPAI** is circulating in Taiwan, Province of China and was last observed in November 2019.
- In September 2019, two outbreaks of **H5N5 HPAI** was reported for the first time in Asia in domestic birds in Taiwan, Province of China. At the end of November 2019, a total of three outbreaks were reported.
- The latest reports of **H5N6 HPAI** in Asia were made in October 2019, in Viet Nam. Previously, in August 2019, one human infection was observed in China, while in Cambodia, the last outbreak was observed in March 2019.
- The **H5N8 HPAI** strain currently circulating, which emerged in China in May 2016, has spread to India, the Islamic Republic of Iran, Israel, Japan, Kuwait Nepal, Pakistan and the Republic of Korea (December 2016); Kazakhstan (January 2017); and Saudi Arabia (December 2017). In 2019, so far, H5N8 HPAI has been reported in the Islamic Republic of Iran, Iraq, Kuwait and Pakistan, and in April 2019, in Israel.

It should be noted that this assessment is based on relatively scarce data, given that, for example, LPAI viruses are not notifiable to the OIE and countries with endemic circulation of HPAI viruses are not required to report every AI event.

African swine fever (ASF)

ASF continues to be reported in the region. China (since August 2018); Mongolia (January 2019); Viet Nam (February 2019); Cambodia (April 2019); the Democratic People's Republic of Korea (May 2019); the Lao People's Democratic Republic (June 2019); Myanmar (August 2019); the Philippines, the Republic of Korea and Timor-Leste (September 2019) and Indonesia (December 2019) have all reported outbreaks in domestic pigs and sporadic cases in wild boar. As of 25 November 2019, outbreaks continue to be reported in domestic pigs in China, Indonesia, the Philippines, and Viet Nam. The disease was also reported in wild boar in Jilin and Heilongjiang provinces in China in December 2018 and in Shaanxi in December 2019, and continues to be reported in Gyeonggi and Gangwon Provinces in the Republic of Korea. In Indonesia, ASF was reported in North Sumatra Province in December 2019. Over the last few months, there have been numerous detections of the ASF virus in pork samples brought to countries in the region (e.g. Australia, Japan, Philippines, the Republic of Korea and Thailand). The risk of further spread of ASF within the countries is considered high in countries that have already been infected, which also poses a risk of ASF introduction into other countries in East and Southeast Asia through the movement of live pigs and pork products. As the majority of pigs in the world are produced in Asia, especially China, the recent escalation of the ASF epidemic is likely to have devastating consequences for animal health and food security, as well as a noticeable impact on the pig industry and related businesses generally, not only in the region but worldwide.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

ASIA

- **Foot-and-mouth disease (FMD)** is likely to continue to occur in **West Asia**. Currently, serotypes O and A are circulating in Israel, while serotype O has been reported in the Gaza Strip and in Jordan in 2017, and in April 2019 in the West Bank. In these three locations, a significant number of not-typed events were reported in 2018–2019. FMD, serotype A , O and Asia1 are also reported to be circulating in many countries in Western and South Asia; particularly, in 2019, an high incidence of these serotypes have been observed in Afghanistan, Bangladesh, Bhutan, India, Iran (Islamic Republic of), Iraq, Kuwait, Nepal, Oman, Pakistan, , Saudi Arabia, Sri Lanka, the Syrian Arab Republic and Turkey.
- **Lumpy skin disease (LSD)**
  - In **West and Central Asia**, outbreaks are unlikely to re-emerge in Turkey (which is considered endemic for the disease), in Israel and the Syrian Arab Republic (outbreaks reported in July 2019) and in neighbouring Central Asian countries (i.e. Armenia, Azerbaijan and Georgia), due to the falling temperatures, which determines unfavourable weather conditions for vector amplification during the forecast period.
    However, a new front may open in Central Asia (Kazakhstan, Kyrgyzstan and Tajikistan) after the LSD outbreaks reported in China (August 2019) at the border with Kazakhstan. However, although sporadic occurrence of the disease can be observed, its impact can be mitigated through prevention measures implemented in individual countries (i.e. vaccination).
  - In **South Asia**, LSD was reported for the first time in September 2019 in Bangladesh and in November 2019 in India. It is still unclear how the disease entered these countries. The risk of the disease spreading is considered high within Bangladesh and India and into neighbouring countries such as Nepal and Pakistan.
- ***Peste des petits ruminants* (PPR)** outbreaks were last reported in China in June 2018 and in Israel in September 2019. There is potential for further occurrence of the disease from reservoirs of infection in countries of the region that have not reported the disease.

FOREST PESTS AND DISEASES

- There will be a minimum spread and impact of **Boxwood blight** (*Calonectria pseudonaviculata*) and **Boxwood moth** (*Cydelima pesrpectalis*) in Georgia and in the Caspian Forest of the Islamic Republic of Iran due to low pest activities in winter months.
- In Lebanon, **Dry cone syndrome** and **Western conifer seed bug** will continue to cause damage at low levels. Additionally, the activities of Western conifer seed bug will be low due to low temperatures in winter months.
- In Turkey, **Chestnut gall wasp** will continue to cause damage to the chestnut trees and threatening livelihoods of local communities. It is expected that the pest pressure will decrease due to pest biological control activities.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

EUROPE

In Europe, 40 FCC events are forecasted in 26 countries, comprising locusts and animal diseases. The likelihood of occurrence varies from Low to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

The bacterium ***Xylella fastidiosa*** continues to pose a threat to olives and may spread further.

LOCUSTS

In **Eastern Europe,** no visible development of locusts is expected during winter, as locusts are present only as eggs in the ground. Hatching is expected to start after this forecast period.

ANIMAL DISEASES

- **African swine fever (ASF)**

  ASF outbreaks and transmission are likely to continue in the affected countries (Belgium, Bulgaria, Estonia, Hungary, Latvia, Lithuania, Republic of Moldova, Poland, Romania, Serbia, Slovakia, the Russian Federation and Ukraine). Introduction of the disease is likely to occur in currently unaffected neighbouring countries (particularly in the Balkan peninsula, such as Albania, Bosnia and Herzegovina, Croatia, Kosovo*, Montenegro and the Republic of North Macedonia), without ruling out longer jumps such as those observed in Czechia or Belgium. Czechia was the first country in the EU to be officially declared free from ASF in February 2019, after no new outbreak had been found in the country since April 2018. In September 2018, the virus affected the wild boar population in Belgium, where the last infected carcasses was found in August 2019. In November 2019, some ASF-infected wild boar were found in Lubuskie province in Poland, approximately 40 km from the border with Germany. This increased the possibility of introduction of the disease into neighbouring Western European countries (e.g. France, Germany and Luxembourg). In all affected countries, ASF is likely to persist and become endemic due to the presence of wild boar populations.

- **Avian Influenza (AI)**

  - Two **H5 Highly pathogenic avian influenza (HPAI)** subtypes are circulating in Europe. In accordance with seasonal patterns (decreasing temperatures and incipient wild bird migration movements), the overall risk for the period January–March 2020 is considered moderate.
  - Given the ongoing **H5N8 HPAI** epizootic in Europe, a high risk of further spread in affected European countries exists during the forecast period and introduction into un-affected countries is likely. The first outbreak of this new epizootic was observed in Poland on 30 December 2019, involving turkeys. Since then six countries reported outbreaks in poultry or findings in wild birds. Introduction and spread are likely facilitated through wild bird movement. Note: When a similar **H5N8 HPAI** virus was introduced into Eastern Europe in mid-October 2016, also through wild birds, it subsequently spread to 30 out of 43 European countries, particularly in Western and Eastern Europe, and later to Africa.

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

EUROPE

- In 2018, a local reassortant strain of the **H5N6 HPAI** virus, and thus different from the strain circulating in Asia, was detected in wild and domestic birds in Denmark, Finland, Germany, Ireland, the Netherlands, the Russian Federation, Slovakia, Sweden, Switzerland and the United Kingdom of Great Britain and Northern Ireland. This strain may continue to be sporadically detected during the period January–March 2020 given the decreasing temperatures expected during the approaching winter season in Europe and associated movements of wild bird. The last report of this H5N6 HPAI strain occurred in Denmark, in January.

- **Lumpy skin disease (LSD)** is unlikely to occur in the affected countries of Southern Europe (i.e. Albania, Greece, Kosovo[1], Montenegro, the Republic of North Macedonia, Serbia,) because during the forecast period, temperatures will decrease, determining unfavourable weather conditions for vector amplification. In the same period, sporadic events could be observed in the Russian Federation, where the last outbreak was observed in October 2019. However, control measures in place (i.e. vaccination) can mitigate the impact of the disease.

- ***Peste des petits ruminants*** **(PPR**), which occurred in Bulgaria in 2018, is considered less likely to occur considering that FAO [European Commission for the Control of Foot-and-Mouth Disease (EuFMD)] now supports a Tripartite (FAO/OIE/WHO) surveillance programme for early detection of the disease in the neighbouring region of Turkey.

[1] *References to Kosovo shall be understood to be in the context of UN Security Council Resolution 1244 (1999).*

REGIONAL OVERVIEW FORECAST FOR THE PERIOD JANUARY–MARCH 2020

OCEANIA

PLANT PESTS AND DISEASES

In **Melanesia,** spread of the **Fall armyworm (FAW)** threat is imminent in the sub region, given the diffusion of the pest in Southeast Asian countries.

ANIMAL DISEASES

- **African swine fever (ASF)**

  A risk of **African swine fever (ASF)** spread into the region from Asian or European infected countries cannot be excluded. Therefore, there is a moderate to high risk of further spread of ASF within the region, through movement of live pigs and pork products from infected countries.

FOOD CHAIN CRISIS THREATS FORECASTING AT COUNTRY LEVEL

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

The country section includes countries for which information are available. This section assigns countries and areas to geographic regions on the basis of the current composition of macro geographical (continental) regions of the United Nations Statistics Division (United Nations Statistics Division – Standard Country and Area Codes Classification (M49); http://unstats.un.org/unsd/methods/m49/m49regin.htm).

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

Legend

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

FOOD CHAIN CRISIS THREATS FORECASTING AT COUNTRY LEVEL

AFRICA

ALGERIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has been reported in neighbouring countries (Mali and Niger), but the Sahara desert will be a natural barrier for introduction through that route, and therefore the possibility of introduction is low. However, due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly once introduced.

Context: FAW has not yet been reported in Algeria. The pest has been reported in North Africa (Egypt) since May 2019 and was able to cross the natural barrier of the Sahara Desert. Therefore, North African countries are at risk of FAW introduction.

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Small-scale breeding may occur near irrigated perimeters of the Central Sahara; no significant developments are expected.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O, has circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks having been reported in Algeria, Libya, Morocco and Tunisia). The virus has been circulating in Algeria since 2014 (topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the entire region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

ANGOLA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative and harvesting stages. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: FAW was reported in 2017. More than 19 000 ha of maize, millet and sorghum crops were devastated, causing approximately US$ 1.8 million in damages, according to official reports.

BOTSWANA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: FAW presence was first reported during the 2016/17 season, and the pest continued to cause serious damage to the maize crop during the 2017/18 production season.

BOTSWANA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, is likely to occur in the country through introduction from a neighbouring country.

Context: FMD, serotype O outbreaks have occurred in Zambia since March 2018. The last FMD, serotype O outbreak in the country was reported in April 2019. These events are of concern because the disease may spread into the southern African region, which has never been affected by this particular serotype before. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

BURKINA FASO

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

BURUNDI

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be at the very young vegetative stage (between V5 to V8), the stage most vulnerable to the attack of FAW. Rain is normally low during this period. The probability of attack will therefore be high.

Context: In Burundi, FAW presence has been confirmed in all 17 provinces of the country.

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

CAMEROON

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be in the harvesting stage. Therefore, there is a possibility of FAW spreading.

Context: The presence of FAW was detected in maize farms in the western region of Cameroon in December 2015. FAW has been recorded in all ten regions of Cameroon. Initial yield losses due to *Spodoptera frugiperda* in Cameroon are estimated at 0.3–0.8 million tons, for a value of US$ 0.1–0.8 billion.

CAMEROON

Threat category: Plant pests and diseases

Threat name: Banana bunchy top disease (BBTD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): BBTD is likely to spread.

Context: The disease is currently present in the northern part of the country and has already affected banana production in recent years. BBTD is transmitted through infected cuttings or aphids, and causes stunting and a bunchy appearance. Any fruit produced is deformed.

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: In Comoros, an FMD, serotype O outbreak occurred in March 2019. The disease may have spread from the neighbouring United Republic of Tanzania (where it is endemic); this event is of concern because the disease can spread within Comoros itself or into neighbouring countries, such as Mozambique or Madagascar, through movement of animals. Indeed, Comoros imports livestock for domestic consumption mainly from the United Republic of Tanzania. Therefore, the current FMD outbreak in Comoros may have originated from the United Republic of Tanzania, through livestock trade. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

CHAD

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): RVF occurrence is considered likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

CHAD

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

CONGO

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be in the harvesting stage. Therefore, there is a possibility of FAW spreading.

Context: In July 2017, FAW was reported in the country. The pest was identified in four maize production areas in the northern, central and southern parts of the country. It has also been observed in sugar cane. Smallholder farmers, experimental farms in agricultural centres and large private farms have been affected.

DEMOCRATIC REPUBLIC OF THE CONGO

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative and harvesting stages in some areas. Therefore, there will be a possibility of FAW spreading, re-emergence and amplification.

Context: FAW was reported for the first time in the country in December 2016. Actions to manage the pest are ongoing.

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): RVF occurrence is considered likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

DJIBOUTI

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW is likely to be introduced into the country from neighbouring Ethiopia. Nevertheless, its spread will be limited because of the arid conditions prevailing and the limited availability of its preferred host (maize).

Context: In Djibouti, the pest is suspected to be present; however, this has not been confirmed.

DJIBOUTI

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Swarms may appear on the southern and northeastern coasts, where they are likely to transit through the country and travel onwards to Somalia and Ethiopia.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

EGYPT

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): The pest will continue to spread northwards from point of entry in the south of Egypt.

Context: FAW was officially reported in Egypt in May 2019.

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Small-scale winter breeding could lead to locust groups forming on the southeastern coastal plains of the Red Sea.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N1 and H5N8 Highly pathogenic avian influenza (HPAI) and H9N2 Low pathogenic avian influenza (LPAI) outbreaks are expected to continue to occur.

Context: H5N1 HPAI is endemic in Egypt. H5N8 HPAI has been present in the country since November 2016. In addition, H9N2 LPAI is sporadically reported in the country. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

EQUATORIAL GUINEA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The major season for maize, FAW's preferred host, will be over and FAW is likely to survive on alternate hosts. FAW has been observed on maize in the insular region (Malabo and Musola). It has yet to be formally identified in the continental region.

Context: No official government notification has been made so far.

ERITREA

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Breeding will cause hopper bands and swarms to form on the Red Sea coast, supplemented by a few swarms arriving from Ethiopia.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Maize and sorghum will be in the late growing stage. Therefore, there will be a moderate risk of FAW in both crops during the forecasting period.

Context: The presence of FAW was confirmed in all regions of the country in 2018. The great efforts made by the Government and communities to manage the pest resulted in a decline in 2019, compared to 2018.

ETHIOPIA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Continued breeding in the Ogaden, supplemented by swarms from Somalia, may cause a dramatic increase in locust numbers with hopper bands and swarms forming. Some may travel southwards.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): In Ethiopia, maize is being planted in southern Afar, as well as in Amhara and Oromia regions, using irrigation water. FAW pressure on irrigated maize has been serious in the last two cropping seasons (2018 and 2019). The same threat may recur in 2020.

Context: In Ethiopia, FAW attacks maize planted in all seasons: the main rainy season, the short rainy season and irrigated maize. In the country, more than 458 maize-growing districts (*woredas*) were affected by FAW.

GABON

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be in the harvesting stage, so there is a possibility of FAW spreading

Context: In late July 2017, FAW infestations were reported in the Estuaire and Haut Ogooué Provinces. However, no official declaration was made by the Government and no control measures have been undertaken so far. The country is implementing a TCP-F project to map FAW distribution and to confirm the status of the country.

Threat category: Plant pests and diseases

Threat name: Banana bunchy top disease (BBTD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): BBTD is likely to spread.

Context: The disease is currently present in the northern part of the country and has already affected banana production in recent years. BBTD is transmitted through infected cuttings or aphids, and causes stunting and a bunchy appearance. Any fruit produced is deformed.

GHANA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

GUINEA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

GUINEA-BISSAU

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

KENYA

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): There is a high risk of swarms arriving in the northeast from adjacent areas of Ethiopia and Somalia.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast (January-March 2020): January and February are usually the dry season in Kenya. In Eastern Kenya the maize crop is usually at the harvest stage. Planting maize will begin in early March. The level of FAW infestation will be devastating if it attacks the maize crop early, at the seedling stage.

Context: FAW has been reported in 43 counties. Generally, FAW infestation during 2019 is expected to be lower compared to the same season last year because of enhanced preparedness resulting from farmer trainings, monitoring and improved FAW management practices for early action.

KENYA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of CMD is likely.

Context: The disease is present in the northern part of the country on a limited scale. CMD is considered one of the most damaging diseases of cassava in Africa. It is caused by a virus that causes chlorosis and distortions of the leaves, resulting in yield reductions. It is transmitted by infected cuttings and whiteflies.

LESOTHO

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be growing in all neighbouring countries. Therefore, there is a risk of introduction of the pest into Lesotho.

Context: FAW has not been reported in the country yet.

LIBYA (STATE OF)

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW was reported in southern Egypt – a neighbouring area –, and the possibility of introduction is therefore moderate. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly once introduced.

Context: FAW has not yet been reported in Libya. The pest has been reported in North Africa (Egypt) since May 2019 and was able to cross the natural barrier of the Sahara Desert. Therefore, North African countries are at risk of FAW introduction.

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O, has circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks having been reported in Algeria, Libya, Morocco and Tunisia). The virus has been circulating in Algeria since 2014 (topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the entire region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

MADAGASCAR

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The pest was first reported to be causing damage on crops in November 2017, and its presence has since been officially confirmed.

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Low

Forecast (January-March 2020): The risk of RVF occurrence is considered low in some localized areas, due to the presence of suitable environmental conditions for vector amplification.

Context: In southern Africa, the rainy season lasts from November to March, and RVF outbreaks have historically occurred from January to March. Nevertheless, for the coming period (January–March 2020), the precipitation forecasts predict below-average rains for the whole southern Africa region, except for northern Madagascar, Malawi, northern Mozambique and north-eastern Zambia. The FAO RVF Monitoring/Early Warning tool highlights some hotspots at moderate risk of RVF vector amplification in northern and central Mozambique. Small localized risk areas for vector amplification are also predicted in central South Africa and southwest Madagascar. Here, the risk may be considered low. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are likely to re-emerge through possible introduction from neighbouring countries.

Context: Madagascar was declared free of the disease in 2018. PPR outbreaks continue to occur in the United Republic of Tanzania and in the Democratic Republic of Congo, which are considered endemic for the disease. The disease may spread through the movement of animals. *PPR is a highly contagious disease affecting sheep and goats that is caused by a morbillivirus. It is considered to be one of the most damaging livestock diseases in Africa.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, is likely to occur in the country through introduction from a neighbouring country.

Context: In Comoros, an FMD, serotype O outbreak occurred in March 2019. The disease may have spread from the neighbouring United Republic of Tanzania (where it is endemic); this event is of concern because the disease can spread into neighbouring countries, such as Mozambique or Madagascar, through movement of animals. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Locusts

Threat name: Migratory Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Second-generation breeding during the 2019/2020 rainy season may cause an increase in locust numbers.

Context: Madagascar is prone to frequent Migratory Locust crises that affect the livelihoods and food and nutrition security of the population. The last crisis occurred from April 2012 to July 2016 and posed 13 million persons at risk.

Threat category: Locusts

Threat name: Red Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): The breeding period will take place during the forecast period, and will likely lead to an increase in the pest population.

Context: Red Locust is the other locust pest prevailing in Madagascar. It produces less frequent outbreaks that the Malagasy Migratory Locust.

MALAWI

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 main rainy season (November–March). The pest has caused serious damage to maize across the country, off-season irrigated maize (April–October), and other crops such as wheat. The Government declared a state of disaster due to the pest during the 2017/18 rainy fed cropping season (November to March).

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are likely to occur through possible introduction from neighbouring countries.

Context: To date, no outbreaks of PPR have been officially reported in the country. PPR outbreaks continue to occur in the neighbouring United Republic of Tanzania and Democratic Republic of Congo, which are considered endemic for the disease. *PPR is a highly contagious disease affecting sheep and goats that is caused by a morbillivirus. It is considered to be one of the most damaging livestock diseases in Africa.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country in non-vaccinated areas.

Context: FMD, serotype O, outbreaks have occurred in Zambia since April 2018. The last FMD, serotype O, outbreak was reported in Zambia in February 2019. These events are of concern because the disease may spread into the southern African region, which has never been affected by this particular serotype before. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Forest pests and diseases

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The Blue gum chalcid insect pest is likely to continue causing damage in eucalyptus nurseries and plantations.

Context: Blue gum chalcid continues to cause severe damage in nurseries and young eucalyptus plantations in Malawi. Blue gum chalcid (*Leptocybe invasa*) is a major insect pest of young eucalyptus trees and seedlings.

Threat category: Forest pests and diseases

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Red gum lerp psyllid is likely to spread in eucalyptus plantations.

Context: The combination of climate change, the general decline of forest conditions and the occurrence of Red gum lerp psyllid continues to damage plantations and small woodlots in Malawi. Red gum lerp psyllid (*Glycaspis brimblecombei*) nymphs and adults feed on sugar-rich phloem. Excessive feeding pressure causes premature leaf drop. Extensive and repeated defoliation events caused by psyllid weaken trees and cause premature death in the highly susceptible eucalyptus species.

Threat category: Locusts

Threat name: Red Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The residual parental populations in Lake Chilwa/Lake Chiuta plains and Mptasanjoka Dambo started breeding at the onset of the rains. Successful breeding in these outbreak areas will take place if ecological conditions continue to be favourable.

Context: Red Locust plagues are a major threat to agriculture in southern Africa. Failure to control locust outbreaks during the early stages of development can result in highly mobile swarms, which invade the agricultural areas and can cause important crop damage.

MALI

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Low

Forecast (January-March 2020): The risk of RVF occurrence is considered low in some localized areas, due to the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: During the past months, wet conditions were observed over much of West Africa. The precipitation forecasts for January–March 2020, which coincides with the dry season, predict below-average rains. However, according to the FAO RVF Monitoring/Early Warning tool, given the current suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals, a low risk of RVF occurrence may persist along the Senegal River between Mauritania and Senegal, in eastern-central Mali, in small, localized, areas in Niger and in east-central Senegal,. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Low numbers of adults are likely to persist in the Adrar des Iforas.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

MAURITANIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): The pest was reported in Senegal and Mali, countries neighbouring Mauritania. It was also able to cross the desert natural barriers. Therefore, the country is at high risk of FAW introduction.

Context: FAW has not yet been officially reported in Mauritania.

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Small-scale breeding may occur in some places in the northwest; this would cause locust numbers to increase slightly.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

MAURITANIA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Low

Forecast (January-March 2020): The potential risk of RVF occurrence is considered low in some localized areas, due to the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: During the past months, wet conditions were observed over much of West Africa. The precipitation forecasts for January–March 2020, which coincides with the dry season, predict below-average rains. However, according to the FAO RVF Monitoring/Early Warning tool, given the current suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals, a low risk of RVF occurrence may persist along the Senegal River between Mauritania and Senegal, in eastern-central Mali, in small, localized, areas in Niger and in east-central Senegal,. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

MOROCCO

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Morocco, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly once introduced.

Context: FAW has not yet been reported in Morocco. The pest has been reported in North Africa (Egypt) since May 2019 and was able to cross the natural barrier of the Sahara Desert. Therefore, North African countries are at risk of FAW introduction.

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Low numbers may appear south of the Atlas Mountains in March, and breed on a small scale.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O, has circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks having been reported in Algeria, Libya, Morocco and Tunisia). The virus has been circulating in Algeria since 2014 (topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the entire region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

MOZAMBIQUE

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 season. It continued to cause damage to the maize crop in the 2017/18 rainfed production season from November to March.

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): RVF occurrence is considered likely, given the presence of suitable environmental conditions for vector amplification.

Context: In southern Africa, the rainy season lasts from November to March, and RVF outbreaks have historically occurred from January to March. Nevertheless, for the coming period (January–March 2020), the precipitation forecasts predict below-average rains for the whole southern Africa region, except for northern Madagascar, Malawi, northern Mozambique and north-eastern Zambia. The FAO RVF Monitoring/Early Warning tool highlights some hotspots at moderate risk of RVF vector amplification in northern and central Mozambique. Small localized risk areas for vector amplification are also predicted in central South Africa and southwest Madagascar. Here, the risk may be considered low. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are likely to occur through possible introduction from neighbouring countries.

Context: To date, no outbreaks of PPR have been officially reported in the country. PPR outbreaks continue to occur in the neighbouring United Republic of Tanzania and Democratic Republic of Congo, which are considered endemic for the disease. *PPR is a highly contagious disease affecting sheep and goats that is caused by a morbillivirus. It is considered to be one of the most damaging livestock diseases in Africa.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease, serotype O, is likely to occur in the country through introduction from a neighbouring country.

Context: In Comoros, an FMD, serotype O outbreak occurred in March 2019. The disease may have spread from the neighbouring United Republic of Tanzania (where it is endemic); this event is of concern because the disease can spread into neighbouring countries, such as Mozambique or Madagascar, through movement of animals. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of the disease is likely.

Context: A new race of the causal fungus of the disease (Tropical Race 4, or TR4) has affected two farms in Nampula province. Banana fusarium wilt disease is a soil-borne disease caused by a fungal pathogen that cannot be eradicated once established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Thus, use of certified planting materials and prevention of spread is crucial.

Threat category: Forest pests and diseases

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Low

Forecast (January-March 2020): Red gum lerp psyllid outbreaks are likely to continue occurring in eucalyptus plantations.

Context: Monitoring of the pest spread is in progress. Red gum lerp psyllid (*Glycaspis brimblecombei*) nymphs and adults feed on sugar-rich phloem. Excessive feeding pressure causes premature leaf drop. Extensive and repeated defoliation events caused by psyllid weaken trees and cause premature death in the highly susceptible eucalyptus species.

MOZAMBIQUE

Threat category: Locusts

Threat name: Red Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The residual parental populations in Dimba and Buzi-Gorongoza plains started breeding at the onset of the rains. Successful breeding in these outbreak areas will take place if ecological conditions continue to be favourable.

Context: Red Locust plagues are a major threat to agriculture in southern Africa. Failure to control locust outbreaks during the early stages of development can result in highly mobile swarms, which invade the agricultural areas and can cause important crop damage.

NAMIBIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 season. It continued to cause damage to the maize crop in the 2017/18 rainfed production season from November to March.

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, is likely to occur in the country through introduction from a neighbouring country.

Context: FMD, serotype O, outbreaks have occurred in Zambia since April 2018. The last FMD, serotype O, outbreak was reported in Zambia in February 2019. These events are of concern because the disease may spread into the southern African region, which has never been affected by this particular serotype before. FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.

NIGER

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Low numbers of locusts will persist in the Air Mountains.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Low

Forecast (January-March 2020): The risk of RVF occurrence is considered low in some localized areas, due to the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: During the past months, wet conditions were observed over much of West Africa. The precipitation forecasts for January–March 2020, which coincides with the dry season, predict below-average rains. However, according to the FAO RVF Monitoring/Early Warning tool, given the current suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals, a low risk of RVF occurrence may persist along the Senegal River between Mauritania and Senegal, in eastern-central Mali, in small, localized, areas in Niger and in east-central Senegal,. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

NIGER

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

NIGERIA

Threat category: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): CMD is likely to spread.

Context: The disease is already affecting cassava production in the country, especially in Bauchi and Delta states. CMD is considered one of the most damaging diseases of cassava in Africa. It is caused by a virus that causes chlorosis and distortions of the leaves, resulting in yield reductions. It is transmitted by infected cuttings and whiteflies.

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks may occur.

Context: H5N1 HPAI virus has been circulating in Central and West Africa since December 2014. Nigeria was the most affected country, with over 790 outbreaks reported in poultry across 26 states. However, the most recent outbreak of H5N1 HPAI was reported at the end of May 2017. H5N8 HPAI has been spreading globally, following bird migratory routes, since November 2016. In Nigeria, four outbreaks of H5N8 HPAI were reported between November 2016 and January 2018 (Kano, Nassarawa, and Ogun States). In November 2019, H5N6 AI was reported for the first time in the country: it was detected in June in birds in a live bird market in Sokoto State. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

RWANDA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Forest pests and diseases

Threat name: Bronze bug

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The Bronze bug insect pest is likely to spread in eucalyptus plantations.

Context: The results of a survey conducted to identify damage caused by the Bronze bug indicate that this insect pest poses a serious threat to eucalyptus forestry in Rwanda. The Bronze bug (*Thaumastocoris peregrinus*) is a sap-sucking insect pest native to Australia. It is currently infesting eucalyptus plantations in Europe, southern Africa and South America. Severe infestations of this pest result in leaf senescence, leaf loss, thinning tree canopies and branch dieback.

Threat category: Forest pests and diseases

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Blue gum chalcid is likely to spread further in eucalyptus nurseries and plantations.

Context: The pest is currently causing severe damage in eucalyptus nurseries, woodlots and plantations. Pest management options are being provided to farmers. These include good nursery hygiene practices to reduce the pest population. Blue gum chalcid (*Leptocybe invasa*) is a major insect pest of young eucalyptus trees and seedlings.

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast (January-March 2020): In Rwanda, FAW infestation is not expected during this period. However, towards the end of March, FAW may be expected in some areas where maize is planted early and the plants would be at the emergence stage.

Context: FAW has infested all 30 districts of the country.

Threat category: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of CMD is likely.

Context: The disease is present in the country on a limited scale. CMD is considered one of the most damaging diseases of cassava in Africa. It is caused by a virus, which causes chlorosis and distortions of the leaves, resulting in yield reductions. It is transmitted by infected cuttings and whiteflies.

Threat category: Plant pests and diseases

Threat name: Mango mealybug

Likelihood of occurrence: High

Forecast (January-March 2020): The Mango mealybug is very likely to spread.

Context: Mango mealybug (*Rastrococcus invadens*) has been reported for the first time in the country. This is also the first report for eastern Africa. The insect may be present over a wider area than currently recorded. Further surveys in the region are needed.

SAO TOME AND PRINCIPE

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): At the beginning of the forecast period, FAW will continue to spread throughout the country, as conditions are favourable (the period will coincide with the ongoing cropping season).

Context: In April 2016, this became the first country in central Africa to report FAW infestations. Actions have been implemented, and they have been successful in managing the pest population. FAW damage will continue to affect maize farms, particularly those sown late. During the forecast period, FAW damage is likely to be moderate.

SENEGAL

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Low

Forecast (January-March 2020): The potential risk of RVF occurrence is considered low in some localized areas, due to the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: During the past months, wet conditions were observed over much of West Africa. The precipitation forecasts for January–March 2020, which coincides with the dry season, predict below-average rains. However, according to the FAO RVF Monitoring/Early Warning tool, given the current suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals, a low risk of RVF occurrence may persist along the Senegal River between Mauritania and Senegal, in eastern-central Mali, in small, localized, areas in Niger and in east-central Senegal,. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

SIERRA LEONE

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O has circulated widely in West and Central African countries since July 2018 (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria Senegal and Sierra Leone). The virus observed seems to be genetically very close to the virus that has been circulating in Algeria since 2014 (serotype O, topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the whole region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. FMD has also been observed in small ruminants (in Senegal, Mali and Mauritania). *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

SOMALIA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Swarms will continue to breed in northern and central areas of the country, supplemented by swarms from eastern Ethiopia. This may lead to a dramatic increase in the locust population.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast (January-March 2020): January to March marks the dry season in Somalia and crop production is limited to the irrigation basins in the north of the country (Somaliland and Puntland). Maize and sorghum will not be in season; thus, the risk of FAW infestation will be lower.

Context: FAW is now fully established across the country; however, farmers have neither adequate knowledge nor resources to manage the pest in their crops.

SOUTH AFRICA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 season. The pest caused serious damage to maize across the country and it continued during the 2017/18 cropping season (November to March). South Africa has institutional response capacities, which are expected to moderate the impact of the pest in the short term.

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Low

Forecast (January-March 2020): The risk of RVF occurrence is considered low in some localized areas, due to the presence of suitable environmental conditions for vector amplification.

Context: In southern Africa, the rainy season lasts from November to March, and RVF outbreaks have historically occurred from January to March. Nevertheless, for the coming period (January–March 2020), the precipitation forecasts predict below-average rains for the whole southern Africa region, except for northern Madagascar, Malawi, northern Mozambique and north-eastern Zambia. The FAO RVF Monitoring/Early Warning tool highlights some hotspots at moderate risk of RVF vector amplification in northern and central Mozambique. Small localized risk areas for vector amplification are also predicted in central South Africa and southwest Madagascar. Here, the risk may be considered low. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

SOUTH AFRICA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD) is likely to occur within the country.

Context: An outbreak of FMD was recorded in the Molemole local municipality, Limpopo Province on 1 November 2019, close to the Vhembe outbreak of January 2019. The Department of Agriculture, Forestry and Fisheries is expected that the agreement, reached with trading partners following the January 2019 outbreak, to continue trade in safe commodities will not affect international trade. The Department has banned live auctions in Limpopo, Mpumalanga, Gauteng and North West Provinces and has advised farmers to observe strict biosecurity measures. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Low

Forecast (January-March 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks are unlikely to occur.

Context: In June 2017, H5N8 HPAI virus was detected for the first time in South Africa. Since then, additional outbreaks and infections have been observed, both in wild and domestic birds, in seven different regions of the country. The last outbreaks were reported in September 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Forest pests and diseases

Threat name: Polyphagous shot hole borer (PSHB)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The Polyphagous shot hole borer (PSHB) insect pest is likely to show low levels of activity in fruit orchards, urban landscapes and plantation forests, due to the low temperatures prevailing in the winter.

Context: PSHB is an ambrosia beetle in the *Curculionidae* family. The insect pest has a mutualistic relationship with the fungal pathogen species *Fusarium euwallace*, which is introduced by female beetles into the larval gallery and acts as the primary food source of both adults and larvae. The growth of *F. euwallaceae* and other fungi causes dieback of host trees due to clogging of the xylem vessels. PSHB is a highly polyphagous species and has a wide range of host trees and shrubs. The most severe economic effects may be seen in avocado production in Israel, where PSHB is now described as a serious threat to the industry. It was reported for the first time in South Africa in early 2017. By July 2018, it was reported to have spread to all major cities of South Africa and to neighbouring southern African countries. Early survey and destruction of heavily infested trees would help reduce local populations of PHSB and their spread.

SOUTH SUDAN

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW will have access to maize and sorghum during the growing period in March and infestation is expected to be high. Field observations and farmer reports this year indicate that FAW infestation is severe when the crop is under water stress.

Context: FAW presence has been confirmed throughout the country (in all former ten states of the country).

SUDAN

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Winter breeding along the Red Sea coast will cause locust numbers to increase, with groups and perhaps bands forming.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

SUDAN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): The pest was first reported in 2017. Given the suitability of the environmental conditions prevailing and the pest's wide host range, it will continue to spread.

Context: FAW was officially reported in Sudan in 2017.

SWAZILAND

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 season. The pest caused serious damage to sorghum, millet and maize across the country, into the 2017/18 season.

TUNISIA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O, has circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks having been reported in Algeria, Libya, Morocco and Tunisia). The virus has been circulating in Algeria since 2014 (topotype EA3). Further spread of the disease is likely to occur within the infected countries and in the entire region, where livestock is not immunized against this particular strain of the virus. Animal mobility is the main risk factor in the spread of FMD in the region. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Tunisia, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly once introduced.

Context: FAW has not yet been reported in Tunisia. The pest has been reported in North Africa (Egypt) since May 2019 and was able to cross the natural barrier of the Sahara Desert. Therefore, North African countries are at risk of FAW introduction.

UGANDA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely, given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

UGANDA

Threat category: Plant pest and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast (January-March 2020): In Uganda, as it will be the off-season, there will be limited maize to sustain large FAW populations. FAW is likely to survive on alternative hosts, with limited spread to other parts of the country.

Context: In Uganda, the presence of the pest has been confirmed in all 121 districts (100 percent of the territory).

Threat category: Plant pests and diseases

Threat name: Cassava brown streak disease (CBSD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of CBSD is likely.

Context: Cassava brown streak virus (CBSD) is already present in the country. The disease can cause brownish rots in tubers, rendering them inedible. This leads to severe economic losses. Farmers may be unaware of infections until they harvest and see the tuber lesions, because the leaves may appear asymptomatic. The virus is transmitted through infected cuttings and whiteflies. Use of virus-free planting materials and the adoption of integrated management is essential for control.

UNITED REPUBLIC OF TANZANIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative and harvesting stages in some areas. Therefore, there will be a possibility of FAW spread, re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 season, and the pest continued to cause damage to maize during the 2017/18 production season (November to March).

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (January-March 2020): RVF occurrence is considered very likely given the presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In the past three months, above-average and heavy rainfall and flash floods occurred in the region, particularly in November 2019. The precipitation forecasts predict above-average rains for the coming period (January–March 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda, and the United Republic of Tanzania, and to a lesser extent, to the Democratic Republic of Congo. According to the FAO RVF Monitoring/Early Warning tool, there are large areas at risk of RVF vector amplification in Burundi, Eritrea, southern Ethiopia, Kenya, Rwanda, Somalia (large areas in the south and small hotspots in the north), southern Sudan, southeastern South Sudan, northeastern Uganda and the eastern United Republic of Tanzania. In October-November 2019, cases of RVF in humans and animals were confirmed in the River Nile and Red Sea States (in northeastern Sudan) and sporadic cases in humans were reported in White Nile, Gedaref, Kassala and Khartoum. Considering the past and recent RVF outbreaks in the region, as well as animal movement and the informal marketing of infected animals, in January–March 2020, the following countries can be considered at risk of RVF occurrence: Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda and the United Republic of Tanzania. The other countries of the region may be considered at a lower risk of disease occurrence, due to their predicted suitability for RVF vector amplification as well as animal movement of potential infected animals. *Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans, causing significant economic losses due to death and abortion of RVF-infected livestock.*

Threat category: Plant pests and diseases

Threat name: Cassava brown streak disease (CBSD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of CBSD is likely.

Context: Cassava brown streak virus (CBSD) is already present in the country. The disease can cause brownish rots in tubers, rendering them inedible. This leads to severe economic losses. Farmers may be unaware of infections until they harvest and see the tuber lesions, because the leaves may appear asymptomatic. The virus is transmitted through infected cuttings and whiteflies. Use of virus-free planting materials and the adoption of integrated management is essential for control.

UNITED REPUBLIC OF TANZANIA

Threat category: Forest pests and diseases

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Blue gum chalcid is likely to spread in eucalyptus nurseries and plantations.

Context: This pest continues to cause damage in eucalyptus nurseries, woodlots and plantations. Blue gum chalcid (*Leptocybe invasa*) is a major insect pest of young eucalyptus trees and seedlings.

Threat category: Locusts

Threat name: Red Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The residual parental populations in Ikuu-Katavi plains started breeding on over 10 000 ha after rains. Successful breeding in these outbreak areas will take place if ecological conditions continue to be favourable.

Context: Red Locust plagues are a major threat to agriculture in southern Africa. Failure to control locust outbreaks during the early stages of development can result in highly mobile swarms, which invade the agricultural areas and can cause important crop damage.

ZAMBIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification.

Context: The presence of FAW was first reported during the 2016/17 season, and the pest continued to cause damage to maize during the 2017/18 production season (November to March).

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are likely to re-emerge through possible introduction from neighbouring countries.

Context: The last antibody PPR detection in the country occurred in December 2017. PPR outbreaks continue to occur in the neighbouring United Republic of Tanzania and Democratic Republic of Congo, which are considered endemic for the disease. *PPR is a highly contagious disease affecting sheep and goats that is caused by a morbillivirus. It is considered to be one of the most damaging livestock diseases in Africa.*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The further spread of Foot-and-mouth disease (FMD), serotype O, is likely to occur within the country.

Context: FMD, serotype O, outbreaks have occurred in Zambia since April 2018. The last FMD, serotype O, outbreak was reported in Zambia in February 2019. These events are of concern because the disease may spread into the southern African region, which has never been affected by this particular serotype before. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of CMD and Cassava brown streak virus is possible.

Context: CMD poses a major challenge to cassava production in the country. CMD is considered one of the most damaging diseases of cassava in Africa. It is caused by a virus that causes chlorosis and distortions of the leaves, resulting in yield reductions. In addition, Cassava brown streak virus has been detected recently and may escalate. Both viruses are transmitted by infected cuttings and whiteflies. Use of virus-free planting materials in sowing is critical.

Threat category: Forest pests and diseases

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of the Blue gum chalcid insect pest is likely to continue in eucalyptus nurseries and plantations.

Context: Pest management activities based on silvicultural practices, breeding programmes and quarantine measures to reduce insect populations are in progress. Biological control agents to reduce Blue gum chalcid (*Leptocybe invasa*) populations are currently being introduced. Blue gum chalcid is a major insect pest of young eucalyptus trees and seedlings.

ZAMBIA

Threat category: Forest pests and diseases

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of Red gum lerp psyllid is likely to continue in eucalyptus plantations.

Context: Pest management activities based on silvicultural practices are in progress. Red gum lerp psyllid (*Glycaspis brimblecombei*) nymphs and adults feed on sugar-rich phloem. Excessive feeding pressure causes premature leaf drop. Extensive and repeated defoliation events caused by psyllid weaken trees and cause premature death in the highly susceptible eucalyptus species.

Threat category: Locusts

Threat name: Red Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): The residual parental populations in Kafue Flats started breeding at the onset of the rains. Successful breeding in these outbreak areas will take place if ecological conditions continue to be favourable.

Context: Red Locust plagues are a major threat to agriculture in southern Africa. Failure to control locust outbreaks during the early stages of development can result in highly mobile swarms, which invade the agricultural areas and can cause important crop damage.

ZIMBABWE

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): During the forecast period, maize will be in the vegetative stage, so there will be a possibility for FAW re-emergence and amplification.

Context: FAW presence was first reported during the 2016/17 season, and the pest continued to cause damage to maize during the 2017/18 production season (November to March).

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease, serotype O, is likely to occur in the country through introduction from a neighbouring country.

Context: FMD, serotype O, outbreaks have occurred in Zambia since April 2018. The last FMD, serotype O, outbreak was reported in Zambia in February 2019. These events are of concern because the disease may spread into the southern African region, which has never been affected by this particular serotype before. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production, in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Forest pests and diseases

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of Red gum lerp psyllid is likely to continue in eucalyptus plantations.

Context: Pest management activities based on silvicultural practices are in progress. Red gum lerp psyllid (*Glycaspis brimblecombei*) nymphs and adults feed on sugar-rich phloem. Excessive feeding pressure causes premature leaf drop. Extensive and repeated defoliation events caused by psyllid weaken trees and cause premature death in the highly susceptible eucalyptus species.

AMERICAS

COLOMBIA

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of the disease is likely.

Context: The most recent race of the causal fungus of the disease (Tropical Race 4, or TR4) has been detected in the region of La Guajira in north of the country. This was the first report on the continent. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

GUATEMALA

Threat category: Forest pests and diseases

Threat name: Bark beetles

Likelihood of occurrence: High

Forecast (January-March 2020): Bark beetles (mainly *Dendroctonus frontalis*) are likely to continue causing damage to pine plantations. The high summer temperatures and low precipitation levels during the summer are likely to weaken the pine trees and make them susceptible to Bark beetle attacks.

Context: Silvicultural practices to reduce pest populations are in progress. Training of foresters on prevention and management practices is ongoing. The adults and larvae of *Dendroctonus* spp. are bark-feeding. The flight activities of *D. frontalis* are almost continuous throughout the year in Mesoamerica. Generally, the pest attacks stressed trees.

HONDURAS

Threat category: Forest pests and diseases

Threat name: Bark beetles

Likelihood of occurrence: High

Forecast (January-March 2020): Bark beetle (mainly *Dendroctonus frontalis*) is likely to continue causing damage in pine plantations. The low precipitation levels prevailing from October to December are likely to weaken the pine trees and make them susceptible to Bark beetle attacks.

Context: Bark beetles affect approximately 500 000 ha of coniferous forests in Honduras. Training of foresters on prevention and management practices is in progress. The adults and larvae of *Dendroctonus* spp. are bark-feeding. The flight activities of *D. frontalis* are almost continuous throughout the year in Mesoamerica. Generally, the pest attacks stressed trees.

MEXICO

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H7N3 High pathogenic avian influenza (HPAI) outbreaks are expected to increase towards March 2020.

Context: H7N3 HPAI has been sporadically reported in Mexico since 2012. Since April 2019, 26 H7N3 HPAI outbreaks have been reported, in domestic birds in the central-southern part of the country. Due to the approaching cold season, additional outbreaks are likely to be reported. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some avian influenza viruses can affect humans.*

NICARAGUA

Threat category: Forest pests and diseases

Threat name: Bark beetles

Likelihood of occurrence: High

Forecast (January-March 2020): It is highly likely that Bark beetles (mainly *Dendroctonus frontalis*) will continue to cause damage in pine plantations.

Context: Pest management activities based on silvicultural practices are in progress. The adults and larvae of *Dendroctonus* spp. are bark-feeding. The flight activities of *D. frontalis* are almost continuous throughout the year in Mesoamerica. In general, the pest attacks stressed trees.

ASIA

AFGHANISTAN

Threat category: Locusts

Threat name: Moroccan Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Hatching should start in March.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, thus jeopardizing the food security and livelihoods of rural populations. This species is one of the three locust pests in Central Asia. The Italian Locust is also present in Afghanistan; however, it was not reported as a pest for the second consecutive year.

BAHRAIN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Bahrain, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly once introduced.

Context: FAW has not yet been reported in Bahrain. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian Peninsula – are at risk of FAW introduction.

BANGLADESH

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): There is high infestation – occurrence of the pest and damage to maize have already been reported.

Context: FAW was first detected in Bangladesh in August 2018. Since then, it has spread to several parts of the country.

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: High

Forecast (January-March 2020): Lumpy skin disease (LSD) outbreaks are likely to occur.

Context: In September 2019, LSD was reported for the first time in Bangladesh, in Chittagong District. This is also the first time the disease has been reported in a South Asian country. As of November 2019, the disease had also spread to Dhaka District. *LSD is a severe disease, transmitted by vectors, that affects mainly cattle, causing important meat and milk production losses.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N1 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: The last events of H5N1 HPAI reported in Bangladesh occurred in May 2018 in domestic birds, and in December 2018 in wild crows. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some avian influenza viruses can affect humans.*

BHUTAN

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N1 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: H5N1 HPAI has been reported in Bhutan since 2010. The last event of H5N1 HPAI in domestic birds occurred in August 2019. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some avian influenza viruses can affect humans.*

CAMBODIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018, and then in Viet Nam in February 2019. ASF was first reported in domestic swine in Cambodia on 3 April 2019. As of 25 November 2019, 11 outbreaks have been reported in five of the country's 25 provinces. The first ASF outbreaks also occurred in Lao People's Democratic Republic (20 June 2019) and Myanmar (14 August 2019). Because of the value-chain links of swine and their products among the countries in the region (for example, through associated routes (TARs), illegal imports of food and movement of people), there is a high risk of ASF spread towards East and Southeast Asia. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. To date, no effective treatment nor vaccine is available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N1 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: In 2018, seven outbreaks caused by the virus were reported in six different provinces; the latest occurred in March 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of Cassava mosaic virus is likely.

Context: The disease is present in northern part of the country on a limited scale. CMD is considered an emerging threat of cassava in the region. It is caused by a virus, which causes chlorosis and distortions of the leaves, resulting in yield reductions. It is transmitted by infected cuttings and whiteflies. Avoiding sharing of infected materials and use of clean cuttings is key for prevention.

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: low

Forecast (January-March 2020): There will be a low risk of FAW amplification during the forecast period, on the rice of the dry season.

Context: As of 11 June, a total of 11 142 hectares of corn crop had been destroyed, consisting of 2 544 ha in Pailin Province, 3 033 ha in Battambang, 4 715 ha in Banteay Meanchey and another 850 ha in Tboung Khmum Province.

CHINA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. As of 25 November 2019, 163 ASF outbreaks have been reported in 32 provinces/administrative divisions out of 34. In addition, in early November 2018, the disease was also detected in wild boar in Jilin Province, close to the borders with the Democratic People's Republic of Korea, and in Heilongjiang province. This enhances the likelihood of ASF spread to neighbouring countries due to wild boar movement, in addition to risks posed by illegal imports of possibly contaminated pork products from China. An African Swine Fever Contingency Plan and Emergency Response Level II is under implementation in the country. Further spread of the disease within the region would have devastating consequences for animal health, food safety and food security. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 and H7 HPAI and LPAI virus outbreaks in poultry, as well as cases in humans (although sporadic), are expected to continue.

Context: Several serotypes of HPAI and LPAI viruses are circulating and being detected in China. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

CHINA

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Low

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are unlikely to continue to occur in the country.

Context: PPR is reported yearly in China. In particular, between January and June 2018, the disease occurred in the North-Eastern and Eastern Provinces of the country. *PPR is a highly contagious disease affecting sheep and goats. It is caused by a morbillivirus and is considered to be one of the most damaging livestock diseases in Asia.*

Threat category: Plant pests and diseases

Threat name: Wheat rust disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of wheat yellow rust disease is likely

Context: Wheat yellow rust disease is already present in the country. It recently appeared severely in northwest part of the country and is expected to spread due to presence of heavy inoculum loads. Yellow rusts infects mostly the leaves reducing photosynthesis area resulting in reduced number of and shriveled grains. Regular surveys and timely response are essential for management.

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: The most recent race of the fungus causing the Banana fusarium wilt disease (Tropical Race 4) was recently reported in the country and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): There will be a high risk of FAW introduction and amplification on available host plants.

Context: FAW has not been officially reported in the country yet.

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. The disease was first reported in domestic swine in the Democratic People's Republic of Korea on 23 May 2019, in Chagang Province. Since then, no other ASF events were reported in the country. Because of the value-chain links of swine and their products among the countries in the region (for example, through associated routes (TARs), illegal imports of food and movement of people), there is a high risk of further ASF spread in East and Southeast Asia, and in particular to the Republic of Korea. *ASF is a highly contagious viral disease of swine, both domestic and wild, which cause high mortality. No effective treatment nor vaccine is available.*

GAZA STRIP*

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, is likely to occur.

Context: FMD, serotype O, was last reported in the region in August 2019, in Israel. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

* *According to the FAO names of countries and territories system (NOCS). The designations used in the system follow or are based on UN practice.*

GAZA STRIP

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW is spreading in Egypt, which shares a border with the Gaza Strip. The possibility of introduction is therefore moderate. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly once introduced.

Context: FAW has not yet been reported in the Gaza Strip. The pest has been reported in North Africa (Egypt) since May 2019 and was able to cross the natural barrier of the Sahara Desert. The pest has also been reported in Western Asia (Yemen) since 2018 and was able to cross the Red Sea from East Africa.

GEORGIA

Threat category: Forest pests and diseases

Threat name: Boxwood blight

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Boxwood blight will continue to be present. However, it is likely to show low levels of activity, due to the low temperatures prevailing from October to December.

Context: Monitoring of the spread of the disease is in progress. Boxwood blight (also known as Box blight) is a widespread fungal disease caused by the pathogen *Calonectria pseudonaviculata*, and affects boxwood trees.

INDIA

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: High

Forecast (January-March 2020): Lumpy skin disease (LSD) outbreaks are likely to occur.

Context: In November 2019, LSD was reported for the first time ever in India, in Orisha State. The onset date of the outbreaks was in August 2019. LSD was reported for the first time in South Asia in Bangladesh, in September 2019. *LSD is a severe disease, transmitted by vectors, that affects mainly cattle, causing important meat and milk production losses.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N1 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: The last events of H5N1 HPAI reported in India occurred in March 2019 in domestic birds, and in February 2019 in wild crows. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some avian influenza viruses can affect humans.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): There will be a low to moderate risk of FAW amplification during the forecast period.

Context: FAW has spread to the northern and northeastern states of India. During the forecast period, the cold temperature will restrict the development and perpetuation of pests.

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Any residual locusts in Rajasthan will form swarms that will move west in early January. Thereafter, the situation will be calm.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

INDIA

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: The most recent race of the fungus causing the Banana fusarium wilt disease (Tropical Race 4, TR4) was recently reported in the country and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Low

Forecast (January-March 2020): Epidemics of yellow and leaf rust diseases are possible.

Context: Wheat rust diseases are already present in the country. Epidemics of yellow and leaf rust are possible, especially due to the presence of inoculum loads from the previous season. Severity is not expected to be high due to the dry conditions expected; however, it may escalate if the levels of rainfall increase. Wheat rusts infect mostly the leaves, reducing the photosynthesis area and resulting in a reduced number of, and shrivelled, grains. Regular surveys and timely response are essential for management.

INDONESIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): During the forecast period, there will be a moderate risk of FAW amplification and spread on the maize grown in the rainy season.

Context: FAW was first detected in Indonesia in West Sumatra, in March 2019. Within four months, the pest had spread to 12 provinces in Sumatra, Java and some parts of Kalimantan.

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: In December 2019, ASF was confirmed in the country, after the many pig mortalities reported in the province of North Sumatra in October-November 2019. ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. On 15 January 2019, the disease was first reported in neighbouring Mongolia; on 19 February in Viet Nam; on 22 March 2019 in Cambodia; on 20 June 2019 in Lao People's Democratic Republic; on 14 August in Myanmar; on 9 September in the Philippines; on 17 September in the Republic of Korea; and on 27 September in Timor-Leste. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food, movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N1 Highly pathogenic avian influenza (HPAI) outbreaks in poultry may occur.

Context: The country is endemic for H5N1 HPAI. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

IRAN (ISLAMIC REPUBLIC OF)

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza outbreaks (HPAI) are likely to occur.

Context: The last official H5N1 and H5N6 HPAI detections occurred in the country in January 2018. The H5N8 HPAI virus, which has been spreading globally following wild bird migratory routes since November 2016, has been detected in wild and domestic birds in eight governorates in the country. Last reporting of this serotype was in April 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

IRAN (ISLAMIC REPUBLIC OF)

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Adult groups and small swarms will arrive in the southeast area of the country from the India-Pakistan border and spread west along the southern provinces. Early breeding could occur if temperatures remain warm; otherwise, breeding will start around March.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): There will be a high risk of FAW introduction in the southern regions. If the pest is introduced, it will eventually spread northwards as temperatures rise in the spring.

Context: FAW has not been officially reported in the Islamic Republic of Iran yet.

Threat category: Forest pests and diseases

Threat name: Boxwood blight

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Boxwood blight will continue to be present; however, it is likely to show low levels activity, due to the low temperatures prevailing from October to December.

Context: In the country, Boxwood blight was reported for the first time in 2012. Currently, approximately 50 000 ha of boxwood forest are affected by the disease. Pest management activities in selected areas are in progress. Boxwood blight (also known as Box blight) is a widespread fungal disease caused by the pathogen *Calonectria pseudonaviculata*, and affects boxwood trees.

Threat category: Forest pests and diseases

Threat name: Boxwood moth

Likelihood of occurrence: Low

Forecast (January-March 2020): In Iran, the moth has three to four generations per year. The larvae will continue feeding on leaves, and these repeated attacks will lead to total defoliation of the trees. The last flight for the season is likely to occur in September/October. The larvae overwinters, in a hibernarium made of two Buxus leaves solidly joined by silk.

Context: The first introduction of Boxwood moth was reported in August 2016; since then, the native boxwood forests have been under threat. Early action, such as pheromone trapping for monitoring and treatment using the Btk (*Bacillus thuringiensis kurstaki*) biopesticide, is necessary to reduce further spread. FAO organized a visit from Georgia to the Islamic Republic of Iran to share experiences on Btk application and on the use of pheromone traps. When the day length drops below approximately 13.5 hrs, the larvae will "diapause" (enter the dormant stage of a developing insect), so that it can overwinter in a web spun on *Buxus* leaves. In this state, it can survive temperatures as low as -30°C. The Boxwood moth (*Cydalima perspectalis*), native to eastern Asia, is highly destructive and defoliates boxwood trees.

Threat category: Forest pests and diseases

Threat name: Charcoal disease

Likelihood of occurrence: Low

Forecast (January-March 2020): Oak charcoal disease (caused by the pathogen *Biscogniauxia mediterranea*) will continue to affect oak trees at low levels during the forecast period, due to the low temperatures prevailing.

Context: In the Zagros region, the decline of Oak charcoal disease began in 2012 and has continued. Operations to minimize the impact of the disease and abiotic stresses are in progress. The disease has a negative impact on the livelihoods of nomadic people and watershed management.

IRAQ

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Iraq, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Iraq. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks may occur.

Context: The H5N8 HPAI virus, which has been spreading globally following wild bird migratory routes since November 2016, was last detected in the country in March 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

ISRAEL

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, outbreaks are likely to continue to occur.

Context: FMD, serotype O, outbreaks occur sporadically in the country. The disease was last reported in the country in August 2019. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production in addition to mortality in young animals. It is the most restrictive animal disease for livestock trade.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Low

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks in poultry may occur

Context: H5N1 HPAI was first detected in the country in 2006 and re-emerged in 2015. The H5N8 HPAI virus, which has been spreading globally following wild bird migratory routes since November 2016, was last detected in the country in April 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are likely to continue to occur in the country.

Context: In November 2018, a PPR outbreak occurred in the Northern District, one year after the last reported outbreak. The disease continued to be reported until September 2019. The country is endemic for the disease, but vaccination is not compulsory. *PPR is a highly contagious disease affecting sheep and goats. It is caused by a morbillivirus and is considered to be one of the most damaging livestock diseases in the Middle East.*

JAPAN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): There will be a high risk of FAW introduction and amplification on available host plants.

Context: In July 2019, FAW larvae were found for the first time, in a field in southwestern Japan (Minamikyushu, Kagoshima). Later, larvae were found on 53 fields in the same prefecture growing field corn and sweetcorn.

JAPAN

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) is very likely to occur through possible introduction from affected countries in the region.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. On 15 January 2019, the disease was first reported in neighbouring Mongolia; on 19 February in Viet Nam; on 22 March 2019 in Cambodia; on 20 June 2019 in Lao People's Democratic Republic; on 14 August in Myanmar; on 9 September in the Philippines; and on 17 September in the Republic of Korea. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food, movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N6 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: In November 2017, a new reassortant strain of H5N6 HPAI has been circulating in the region (Japan, Republic of Korea, and Taiwan, Province of China). The last event in the country was observed in March 2018. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

JORDAN

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, outbreaks are likely to continue to occur.

Context: FMD, serotype O, was last reported in the region in August 2019, in Israel. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production in addition to mortality in young animals. It is the most disruptive animal disease for livestock trade.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Jordan, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Jordan. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

KUWAIT

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Low

Forecast (January-March 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks may sporadically occur.

Context: The H5N8 HPAI virus, which has been spreading globally following wild bird migratory routes since November 2016, was last detected in the country in January 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Kuwait, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Kuwait. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018; in Viet Nam in February 2019; and in Cambodia on 3 April 2019. The first ASF outbreaks in Lao People's Democratic Republic were reported on 20 June 2019 in Salavan Province. As of 25 November 2019, Lao PDR reported a total of 94 outbreaks in 15 out of 18 provinces of the country. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food, movement of people), there is a high risk of ASF spread towards East and Southeast Asia. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. To date, no effective treatment nor vaccine is available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: The H5N6 HPAI virus was last reported in October 2015. A new reassortant strain of H5N6 HPAI has been circulating in the region (Japan, Republic of Korea, and Taiwan, Province of China), since November 2017. *The H5N1 HPAI virus, which emerged in the country in 2004, was last reported in October 2018. HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: The most recent race of the fungus causing the Banana fusarium wilt disease (Tropical Race 4, or TR4) was recently reported in the country and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread.
The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

LEBANON

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Lebanon, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Lebanon. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries are at risk of FAW introduction

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Threat category: Forest pests and diseases

Threat name: Dry cone syndrome

Likelihood of occurrence: Low

Forecast (January-March 2020): Dry cone syndrome will continue at low levels in pine plantations (*Pinus pinea*), due to the low temperatures prevailing.

Context: Yield reduction of pine nuts has been reported throughout the country. Silvicultural practices to strengthen the trees are in progress.

Threat category: Forest pests and diseases

Threat name: Western conifer seed bug

Likelihood of occurrence: Low

Forecast (January-March 2020): The Western conifer seed bug is likely to display low levels of activity due to the low temperatures prevailing in winter. During this time, *Leptoglossus occidentalis* is usually found in aggregations under crevices, dead trees, in bird or animal nests, or in houses.

Context: Monitoring of the pest population using traps is in progress. Western conifer seed bug (*Leptoglossus occidentalis*) is an invasive insect pest that feeds mainly on conifer seeds. The nymphs and adults spend the summer on pine trees, where they use their piercing-sucking mouthparts to feed on twig and green pinecone sap. The adults will also eat fruits, seed pulp and flowers.

MALAYSIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) is very likely to occur through possible introduction from affected countries in the region.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. On 15 January 2019, the disease was first reported in neighbouring Mongolia; on 19 February in Viet Nam; on 22 March 2019 in Cambodia; on 20 June 2019 in Lao People's Democratic Republic; on 14 August in Myanmar; on 9 September in the Philippines; on 17 September in the Republic of Korea; and on 27 September in Timor-Leste. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food, movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

MONGOLIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: In Asia, ASF was first reported in China, in domestic pigs, in August 2018. The affected area included the autonomous region of Inner Mongolia in China, which borders with Mongolia. In January 2019, the first outbreaks of ASF in Mongolia were reported. Since then, a total of 11 ASF outbreaks were confirmed in 7 out of 21 regions of the country. There is no information concerning surveillance in wild boar, while the extensive presence of wild boars in infected areas is well known. It is unknown whether the virus is present in the country's wild boar population. On 27 March 2019, country authorities declared that the ASF epidemic in the country had ended. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

MYANMAR

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): There will be a moderate risk of FAW amplification during the forecast period, on the second season of maize and wheat.

Context: FAW has invaded maize fields in the country since the first week of January 2019, according to the Ministry of Agriculture, Livestock and Irrigation. FAW has been confirmed in Ayeyarwady region then spread to 9 states/regions within a short period of the same year. Approximately 4 046 hectares (10 000 acres) have been affected in Ayeyarwady.

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. On 14 August 2019, ASF was first reported in Myanmar. Since then, and as of 25 November 2019, four ASF outbreaks have been reported in Shan State only. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food and movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: The most recent race of the fungus causing the Banana fusarium wilt disease (Tropical Race 4, or TR4) was recently reported in the country, and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

NEPAL

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks may occur.

Context: H5N1 HPAI was last reported in the country in August 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

OMAN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): As FAW has been reported in Yemen, which shares a border with Oman, the possibility of introduction is high. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Oman. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (January-March 2020): There is a low risk of a few small swarms arriving from India-Pakistan border. Breeding will cause hopper bands and adult groups to form in the northeast.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

PAKISTAN

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: The H5N8 HPAI virus, which has been spreading globally following wild bird migratory routes since November 2016, was last detected in the country in January 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Any residual locusts in Tharparkar and Cholistan will form swarms that will move westwards to Baluchistan in early January. This will be supplemented by similar populations from India. However, breeding will not occur until temperatures warm up in spring.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Low

Forecast (January-March 2020): Epidemics of yellow and leaf rust diseases is possible.

Context: Wheat rust diseases are already present in the country. Epidemics of leaf rust are possible, especially due to the presence of inoculum loads from the previous season. Severity is not expected to be high due to the dry conditions expected; however, they may escalate if the levels of rainfall increase. Wheat rusts infect mostly the leaves, reducing the photosynthesis area and resulting in a reduced number of, and shrivelled, grains. Regular surveys and timely response are essential for management.

PAKISTAN

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of the disease is likely.

Context: The new race of the fungus causing the disease (Tropical Race 4, or TR4) is present in one location in the country and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

PHILIPPINES

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018 and on 9 September it was reported for the first time in the Philippines. In the Philippines, as of 25 November 2019, at least 40 ASF outbreaks have been reported in 7 out of the 81 administrative divisions of the country. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food and movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): There will be a moderate risk of FAW amplification on maize (second season).

Context: By June 2019, the local government of Mabinay, in Negros Oriental, declared that FAW attacked 28 of the mountainous town's 32 *barangays*.

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: Tropical Race 4 (TR4) of the causal fungus is present in Mindanao. It is likely to spread from plantations where it is present. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

QATAR

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring Qatar, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Qatar. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

REPUBLIC OF KOREA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: After ASF was reported for the first time in Asia in China, in August 2018, and in the Democratic People's Republic of Korea on 23 May 2019, on 17 September 2019, ASF was reported for the first time in the Republic of Korea near the North Korean border. As of 25 November 2019, ASF events were confirmed in domestic pigs in two administrative divisions of the country, while 26 dead wild boar infected with ASF were found in two provinces of the country. Because of the value-chain links of swine and their products between the countries in the region (for example, through associated routes, or TARs, illegal imports of food, and movement of people), there is a high risk of spread of the disease towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low and compensation to farmers for depopulation of pigs is uncertain. *ASF is a contagious viral disease of swine, both domestic and wild, that causes high mortality. No effective treatment nor vaccine is currently available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: The H5N6 HPAI virus was first detected in the country in October 2016, with the last reported outbreaks occurring in April 2017. Since November 2017, a new reassortant strain of H5N6 HPAI has been circulating in the region (Japan, Republic of Korea, and Taiwan, Province of China). The last occurrence of this serotype in the country was detected in March 2018. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast (January-March 2020): Infestations will decline as temperatures become cold. There is a very low risk of FAW remaining on winter wheat and barley.

Context: Suspected FAW larvae were first detected in four corn fields on Jeju Island on 14 June 2019. They were identified as *Spodoptera frugiperda* larvae by DNA barcoding on 16 June 2019. This was the first detection of FAW in the Republic of Korea.

SAUDI ARABIA

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Breeding will continue on the southern Red Sea coast and extend northwards, causing locusts to form groups and perhaps small bands and swarms. This could be supplemented by additional locusts coming from Yemen.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): As FAW has been reported in Yemen, which shares a border with Saudi Arabia, therefore the possibility of introduction is high. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in Saudi Arabia. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

SRI LANKA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): There will be a moderate risk of FAW amplification during the forecast period on maize and rice crops.

Context: FAW has infested maize mainly in Anuradhapura, Monaragala and Ampara Districts. The pest has been detected almost all the districts in the country, in farm patches. The total maize-cultivated land infected by FAW over the three abovementioned districts measure 61 010 ha and 34 856 ha. Further, it has been reported the FAW has spread to crops such as rice, tomato, millet, green gram and some grass varieties. Out of 82 000 ha cultivated in Sri Lanka, 43 037 ha has been reported to be infected by FAW. The total estimated crop loss in the country ranges from 10 percent to 25 percent.

SYRIAN ARAB REPUBLIC

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring the Syrian Arab Republic, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in the Syrian Arab Republic. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries are at risk of FAW introduction.

THAILAND

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) is very likely to occur through possible introduction from affected countries in the region.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. On 15 January 2019, the disease was first reported in neighbouring Mongolia; on 19 February in Viet Nam; on 22 March 2019 in Cambodia; on 20 June 2019 in Lao People's Democratic Republic; on 14 August in Myanmar; on 9 September in the Philippines; on 17 September in the Republic of Korea; and on 27 September in Timor-Leste. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food, movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: The most recent race of the fungus causing the Banana fusarium wilt disease (Tropical Race 4, or TR4) was recently reported in the country and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

TIMOR-LESTE

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. On 27 September 2019, it was reported for the first time in Dili Municipality, in Timor-Leste. Because of the value-chain links of swine and their products among the countries in the region (for example through associated routes (TARs), illegal imports of food, movement of people), there is a high risk of spread of the disease towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

TURKEY

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Low

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is possible.

Context: Tropical Race 4 (TR4) of the causal fungus has been reported recently in the protected production areas in the southern coast of the country. Spread of the fungus is possible from the initial areas where it was reported. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, use of clean planting materials and prevention of spread is crucial.

Threat category: Forest pests and diseases

Threat name: Chestnut gall wasp

Likelihood of occurrence: Low

Forecast (January-March 2020): The first instars overwinter and remain in this stage until spring. At bud burst in spring, larval activity resumes, causing the formation of green or rose-coloured galls. The Chestnut gall wasp population will show limited activity in chestnut trees due to the pest control measures adopted and the low temperatures.

Context: Pest management activities based on the application of biological control agents to reduce the populations of the insect pest are in progress. The Chestnut gall wasp (*Dryocosmus kuriphilus*) is a species of gall wasp native to China. It attacks many species of chestnut, including most cultivated varieties. The galls caused by the wasp can be very damaging to the tree. They occur on the new growth of the tree, disrupting the fruiting process, and can reduce a tree's yield by up to 70 percent.

TURKMENISTAN

Threat category: Locusts

Threat name: Moroccan Locust

Likelihood of occurrence: Low

Forecast (January-March 2020): Hatching should start in March.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, thus jeopardizing the food security and livelihoods of rural populations. This species is one of the three locust pests in Central Asia. The Italian Locust is also present in Turkmenistan; however, it was not reported as a pest this year.

UNITED ARAB EMIRATES

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring the United Arab Emirates, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in the United Arab Emirates. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

VIET NAM

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Asia in China, in domestic pigs, in August 2018. The disease was first reported in domestic pigs in Viet Nam in February 2019. As of November 2019, more than 8 000 outbreaks were reported in all 63 different provinces/cities of the country. An Emergency Response Action Plan for African Swine Fever is under implementation in the country. Due to the value-chain links of swine and their products among the countries in the region (such as through associated routes (TARs), illegal imports of food and movement of people), there is a high risk of ASF spread towards East and Southeast Asia. Further spread of ASF within the region would have devastating consequences for animal health, food safety, and food security, especially in those countries where biosecurity in pig farming is low, and compensation to farmers for depopulation of pigs is questionable. *ASF is a highly contagious viral disease of swine, both domestic and wild, which cause high mortality. No effective treatment nor vaccine is available.*

VIET NAM

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: H5N1 and H5N6 HPAI outbreaks were reported in the country in 2017. A new reassortant strain of H5N6 HPAI has been circulating in the region (Japan, Republic of Korea, and Taiwan, Province of China), since November 2017. The last occurrence of this strain in the country was reported in October 2019. *HPAI is a highly contagious disease causing high mortality in poultry, resulting in severe production losses that have an impact on food security and trade. Avian influenza viruses can affect humans.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Low

Forecast (January-March 2020): There will be a low risk of FAW amplification during the forecast period, on the rice of the dry season.

Context: In early March 2019, Viet Nam submitted specimens collected in border areas to the Centre for Agriculture and Bioscience International for molecular identification of the species. It was later confirmed as FAW.

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is likely.

Context: The most recent race of the fungus causing the Banana fusarium wilt disease (Tropical Race 4, or TR4) was recently reported in the country and can spread further. Banana fusarium wilt disease is soilborne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

WEST BANK

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Foot-and-mouth disease (FMD), serotype O, outbreaks are likely to continue to occur.

Context: FMD, serotype O, was last reported in the region in August 2019, in Israel. The last occurrence of the disease in the West Bank was recorded in April 2019; however, the serotype was not noted. *FMD is a highly contagious disease among cattle, buffalo, sheep and pigs that can cause a sharp drop in milk and meat production in addition to mortality in young animals. It is the most restrictive animal disease for livestock trade.*

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): FAW has not yet been reported in countries neighbouring the West Bank, and the possibility of introduction is therefore low. Due to the pest's wide host range, its high flying capability and its high reproduction capacity, it will be able to spread rapidly as soon as introduced.

Context: FAW has not yet been reported in the West Bank. The pest has been reported in the Arabian Peninsula (Yemen) since 2018 and was able to cross the Red Sea from East Africa. Therefore, western Asian countries – particularly those in the Arabian peninsula – are at risk of FAW introduction.

YEMEN

Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (January-March 2020): Breeding will occur on the Red Sea coastal plains, causing locusts to increase and form groups, bands and small swarms.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations pose a threat to agricultural production in Africa, the Middle East and Asia, and have a negative impact on food security. The livelihoods of at least one-tenth of the world's population are at risk of being affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests, due to swarms' ability to fly quickly over long distances.

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): FAW will continue to spread during the forecast period.

Context: FAW was first officially reported in Yemen in 2018.

EUROPE

ALBANIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks might occur as the disease is present in the region.

Context: ASF has not yet been reported in the country. ASF was confirmed in August 2019 in Serbia, thus increasing the risk for the region; however, the domestic pig and wild boar population is low. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: Observed for the first time in June 2016, LSD has caused almost 850 outbreaks, affecting 32 counties. Throughout 2017, outbreaks continued to be detected but were not officially reported. An emergency vaccination campaign has been implemented, and regular vaccination campaigns are carried out. *LSD is a severe disease transmitted by vectors that affects mainly cattle, causing important meat and milk production losses.*

Threat category: Forest pests and diseases

Threat name: Pine processionary moth

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Throughout autumn and winter, the larvae develop in a collective silk nest, protected from the cold, and usually placed in the most insulated part of the canopy to receive warmth from the sunlight. The larvae abandon the nest at night to feed, except when the temperatures are too low.

Context: Mechanical removal of nests to manage pest populations is in progress.

BELARUS

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur.

Context: ASF was last officially reported in the country in 2013. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Forest pests and diseases

Threat name: Bark beetles

Likelihood of occurrence: Low

Forecast (January-March 2020): Bark beetles (mainly *Ips* spp.) may have up to three generations per year in the warmer sites of Europe. The flight of the third generation occurs in early September and the adults show lower levels of activity in October/ December. From mid-April onwards, Bark beetles start to fly and may infest weakened trees.

Context: Bark beetles are causing severe damage in pine plantations in Belarus. Sanitary felling and other silvicultural practices are in progress to reduce the insect populations. The adults and larvae of *Ips* spp. are bark-feeding, mainly attacking declining trees and freshly cut wood. Outbreaks can cause heavy tree losses and may have significant economic impacts on plantations.

BOSNIA AND HERZEGOVINA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: ASF has not been reported in the country. However, ASF was confirmed in August 2019 in Serbia, thus increasing the risk for the region. Introduction (entry) through contaminated food products is assessed to be the highest risk factor. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

BULGARIA

Threat category: Animal and zoonotic diseases

Threat name: *Peste des petits ruminants* (PPR)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): *Peste des petits ruminants* (PPR) outbreaks are likely to occur.

Context: On 24 June 2018, PPR was notified for the first time in history in Bulgaria. The disease appears to have been controlled through stamping out and the last outbreaks were reported in July 2019. However, the risk of infection spreading to European countries from neighbouring infected countries (such as Turkey) continues to be high. *PPR is a highly contagious disease affecting sheep and goats. It is caused by a morbillivirus and is considered to be one of the most damaging livestock diseases in Central Asia and the Middle East.*

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF was first reported in the country in August 2018. Since then, additional events have been reported in wild boar (most recently in October 2019). *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: H5N8 HPAI was first reported in Bulgaria in domestic birds in February 2018. Since then, more than 30 events have been reported in domestic birds only. The most recent event occurred in April 2019. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some Avian influenza viruses can affect humans.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: The last reported outbreak of LSD in Bulgaria occurred in 2016. No new outbreaks were observed after these events; however, the disease can spread from neighbouring affected countries. Regular vaccination campaigns are carried out. *LSD is a severe disease transmitted by vectors that affects mainly cattle, causing important meat and milk production losses.*

CROATIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: ASF has not yet been reported in the country. However, ASF was confirmed in August 2019 in Serbia, thus increasing the risk for the region. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

CZECH REPUBLIC

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible introduction from neighbouring countries.

Context: ASF was first reported in the country in July 2017. On February 2019, Czechia was the first country in the EU to be officially declared free of ASF after it had been infected in recent years. As no outbreak has been found in Czechia since April 2018, the country was supported by the EU Member States in lifting all restrictions in the country. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available*.

DENMARK

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5N6 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: H5N6 HPAI first occurred in Denmark in wild birds in February 2018. Since then, more than 30 events have been reported in wild birds only. The most recent event occurred in January 2019. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some avian influenza viruses can affect humans.*

ESTONIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: Since the first introduction of ASF into the country in September 2014, the disease continues to be regularly reported in wild and domestic pigs. The disease is considered endemic in the country and disease reports are provided only on a six-monthly basis. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

FRANCE

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible introduction from neighbouring countries.

Context: In September 2018, two dead wild boars were found positive to ASF in Étalle (Luxembourg Province), where it continues to be reported. On 4 November 2019, the disease was observed for the first time in western Lubuskie Province, approximately 80 km from the border with Germany. This was the first introduction into Western Europe of genotype 2 of the disease during the current epidemic. Wild boar population density is the most important factor in the spread of the disease in the country. ASF is most likely to persist and become endemic due to the presence of wild boar populations. In particular, the French territory close to infected areas in Belgium presents a high density of wild boars. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Plant pests and diseases

Threat name: *Xylella fastidiosa*

Likelihood of occurrence: Low

Forecast (January-March 2020): Spread of *Xylella fastidiosa* is possible.

Context: Olive decline caused by *Xylella fastidiosa* has recently been reported in two sites on the Mediterranean coast. The bacterium is transmitted by insects. Immediate eradication and quarantine practices are critical to prevent spread.

GERMANY

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible introduction from neighbouring countries.

Context: In September 2018, two dead wild boars were found positive to ASF in Étalle (Luxembourg Province), where it continues to be reported. On November 2019, the disease was observed for the first time in western Lubuskie Province, approximately 40 km from the border with Germany. This was the first introduction into Western Europe of genotype 2 of the disease during the current epidemic. Wild boar population density is the most important factor in the spread of the disease in the country. ASF is most likely to persist and become endemic due to the presence of wild boar populations. In particular, the French territory close to infected areas in Belgium presents a high density of wild boars. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

GREECE

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: The last observed outbreak of LSD in Greece related to a second wave of infection that occurred in late November 2016. Subsequently, two new outbreaks occurred in regions previously unaffected by the disease: in February 2017, in Kerkyra, an Ionian island, and in August, in Thessalia Region. No new outbreaks were observed after these events. An emergency vaccination campaign has been implemented and regular vaccination campaigns are carried out. *LSD is a severe disease transmitted by vectors that affects mainly cattle, causing important meat and milk production losses.*

HUNGARY

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF was officially reported for the first time in the country in April 2018, in wild boar. The disease was last reported in November 2019. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

KOSOVO

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: ASF has not been reported in the country. However, ASF was confirmed in August 2019 in Serbia, thus increasing the risk for the region. Although Kosovo and Serbia share borders, cross-border movement is currently limited. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: In June 2016, LSD was first observed in a backyard farm in Pcinja district, in neighbouring Serbia. Subsequently, 223 outbreaks were officially reported, the last of which was observed in October 2016. An emergency vaccination campaign has been implemented. *LSD is a severe disease transmitted by vectors that affects mainly cattle, causing important meat and milk production losses.*

ITALY

Threat category: Plant pests and diseases

Threat name: *Xylella fastidiosa*

Likelihood of occurrence: Moderate

Forecast (January-March 2020): Spread of *Xylella fastidiosa* is likely.

Context: Olive decline caused by *Xylella fastidiosa* has caused significant damage to olives in the Puglia region. The bacterium is transmitted by insects. Immediate eradication and quarantine practices are critical to prevent spread.

LATVIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF continues to be regularly reported in the country in wild and domestic pigs. The last events occurred in October 2019. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

LITHUANIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: Since the first ASF introduction in the country in January 2014, the disease continues to be regularly reported in wild and domestic pigs. The disease is considered endemic in the country and disease reports are provided only on a six-monthly basis. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

LUXEMBOURG

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: On 13 September 2018, two dead wild boar were found to be positive to ASF in Étalle (Luxembourg Province) in neighbouring Belgium. ASF continues to be reported in Luxembourg Province only. This represented the first introduction of the disease into Western Europe. Spread of the disease in Western European countries, which have never experienced ASF, would have devastating consequences for the entire pig sector. Wild boar population density is the most significant factor in the spread of the disease in the country. ASF is most likely to persist and become endemic due to the presence of wild boar populations. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

MONTENEGRO

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: ASF has not been reported in the country. However, ASF was confirmed in August 2019 in Serbia, thus increasing the risk for the region. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: The disease was first observed in April 2016. Since then, LSD spread throughout the country, causing at least 60 outbreaks in seven municipalities. The last observed outbreak occurred in October 2017. An emergency vaccination campaign has been implemented, and regular vaccination campaigns are carried out. *LSD is a severe disease transmitted by vectors that affects mainly cattle, causing important meat and milk production losses.*

POLAND

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF continues to be regularly reported in the country in wild and domestic pigs. In November 2019, the disease was observed for the first time in western Lubuskie Province, approximately 40 km from the border with Germany. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

REPUBLIC OF MOLDOVA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: Since ASF was first introduced into the country in November 2016, ASF has been continually reported (most recently in November 2019), both in wild and domestic pigs. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

REPUBLIC OF NORTH MACEDONIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: ASF has not been reported in the country. However, ASF has become endemic in Europe in some countries. The disease is present in Bulgaria and Serbia. Informal and uncontrolled animal movements and poor biosecurity conditions in pig farms at the borders pose a risk of disease introduction. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: Observed for the first time in July 2016, LSD caused almost 170 outbreaks, affecting 21 municipalities. After the outbreak in September 2016, two outbreaks were observed in northern municipalities of the country in February and April 2017. No new outbreaks were observed after those events. An emergency vaccination campaign has been implemented, and regular vaccination campaigns are carried out. *LSD is a severe disease transmitted by vectors which affects mainly cattle, causing important meat and milk production losses.*

ROMANIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF continues to be regularly reported in the country in wild and domestic pigs. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

RUSSIAN FEDERATION

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF continues to be regularly reported in the country in wild and domestic pigs. The last events occurred in November 2019. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: H5N8 HPAI first occurred in the Russian Federation in domestic birds in July 2018, and no additional outbreaks have been reported since then. In October 2018, H5N6 HPAI was also reported in a wild bird in the country. In addition, several H5 HPAI events have been reported, most recently in January 2019. *HPAI is a highly contagious disease causing high mortality in domestic birds. It generally results in severe production losses, loss of export markets and drastic disease control measures that include culling of infected and in-contact birds. This has an impact on food security and trade. Some Avian Influenza viruses can affect humans.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): LSD outbreaks may sporadically occur, although weather conditions unfavourable to the vectors are predicted during the forecast period.

Context: After its re-emergence in May 2016 in the country, LSD has spread north-, east- and westwards, affecting 20 administrative subjects and causing almost 500 outbreaks. Several outbreaks were reported in July and August 2018. The most recent outbreaks were recorded in October 2019. *LSD is a severe disease, transmitted by vectors that affects mainly cattle, causing important meat and milk production losses.*

SERBIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF was first confirmed in domestic pigs, close to the capital in August 2019. Entry of the disease may have occurred before this date. The presence of the disease in wild boar cannot be ruled out. The last reported ASF event occurred on September 2019. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: Low

Forecast (January-March 2020): LSD outbreaks are not likely to occur because the weather conditions prevailing during the forecast period are unfavourable for the vectors.

Context: In June 2016, LSD was first observed in a backyard farm in Pcinja district. Since then, 223 outbreaks were officially reported in 12 districts. The last observed outbreak occurred in October 2016; since then, no new outbreaks have been reported. An emergency vaccination campaign has been implemented, and regular vaccination campaigns are carried out. *LSD is a severe disease transmitted by vectors which affects mainly cattle, causing important meat and milk production losses*.

SLOVAKIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF was first confirmed in the country on 23 July 2019. Since then, ASF has been reported both in wild and domestic pigs in Kosice region (most recently, in October 2019). *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

UKRAINE

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: Moderate

Forecast (January-March 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: ASF continues to be regularly reported in the country in wild and domestic pigs. The last events occurred in October 2019. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

Threat category: Forest pests and diseases

Threat name: Bark beetles

Likelihood of occurrence: Low

Forecast (January-March 2020): Bark beetles (mainly *Ips* spp.) may have up to three generations per year in the warmer sites of Europe. The flight of the third generation occurs in early September and the adults show lower levels of activity in October/ December. From mid-April onwards, Bark beetles start to fly and may infest weakened trees.

Context: Bark beetles are causing severe damage in pine plantations. Sanitary felling and other silvicultural practices are in progress to reduce the insect populations. The adults and larvae of *Ips* spp. are bark-feeding, mainly attacking declining trees and freshly cut wood. Outbreaks can cause heavy tree losses and may have significant economic impacts on plantations.

OCEANIA

PAPUA NEW GUINEA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (January-March 2020): The threat of FAW introduction is imminent.

Context: FAW has been detected in neighbouring countries, such as China, Indonesia, Lao PDR Malaysia and Myanmar. FAW is highly migratory and can cause significant yield loss in maize and other crops.

AUSTRALIA

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Low

Forecast (January-March 2020): Spread of fusarium wilt disease on banana is possible.

Context: The most recent race of the causal fungus of the disease (Tropical Race 4, or TR4) has been present in two locations in the north of the country and a third infested site has been reported recently. Banana fusarium wilt disease is soil-borne and cannot be eradicated once it becomes established in the soil. The disease attacks banana plants of all ages, initially appearing with a yellowing of the leaves, then causing wilting and plant death. Infected planting materials, water and movement of infested soil particles with shoes, tools and vehicles play a major role in spread. The disease can remain viable in soil for decades and containment and management are challenging. Thus, prevention of spread is crucial.

GLOSSARY

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

INFORMATION SOURCES

TRANSBOUNDARY ANIMAL AND AQUATIC DISEASES

- African swine fever risk assessment available at: http://www.fao.org/3/i8805en/I8805EN.pdf
- Avian influenza
  - Risk assessment: http://www.fao.org/3/i8705en/I8705EN.PDF
  - EMPRES - I: http://empres-i.fao.org/eipws3g/
  - OIE/FAO Network of Expertise on animal influenzas (OFFLU): www.offlu.net
- ECDC - Communicable disease threats report (CDTR) available at: https://ecdc.europa.eu/en/threats-and-outbreaks
- 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) available at: http://empres-i.fao.org/eipws3g/
- Global Early Warning System (GLEWS) at FAO
- OIE World Animal Health Information Database (WAHID) Interface available at: http://www.oie.int/wahis_2/public/wahid.php/Wahidhome/Home
- Tilapia Lake Virus (TiLV) disease card available at: http://www.oie.int/fileadmin/Home/eng/Internationa_Standard_Setting/docs/pdf/A_TiLV_disease_card.pdf

DESERT LOCUST

FAO Desert Locust Information Service (DLIS) available at: www.fao.org/ag/locusts

Locusts (three species) in Caucasus and Central Asia

- Regional monthly bulletins on locust situations in CCA available at: http://www.fao.org/ag/locusts-CCA/en/1014/index.html
- Reports of the annual Technical Workshop on Locusts in CCA available at: http://www.fao.org/ag/locusts-CCA/en/index.html

FALL ARMYWORM

http://www.fao.org/food-chain-crisis/how-we-work/plant-protection/fallarmyworm/en/

WHEAT RUST DISEASE

Global wheat rust monitoring system

WEATHER FORECAST

https://iri.columbia.edu/our-expertise/climate/forecasts/seasonal-climate-forecasts/
http://www.noaa.gov/weather

THREATS TO FOOD SECURITY

FAO Crop Prospects and Food Situation – Quarterly Global Report – No.4, December 2019

GLOSSARY

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

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