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FOOD CHAIN CRISIS EARLY WARNING BULLETIN



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

No. 35
April–June 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 19). 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

Widespread rains that fell in late March could allow a dramatic increase in locust numbers in East Africa, eastern Yemen and southern Iran during the coming months.

In **East Africa**, a dramatic increase in Desert Locust numbers is expected in the Horn of Africa, where more swarms are expected to form; some of these will remain and breed again, while others will move northwards.

In **West Asia**, an increase in Desert Locust numbers is expected, due to spring breeding in the interior areas of Oman, Saudi Arabia and Yemen. Swarms may form in these regions.

In **South Asia**, a substantial increase in Desert Locust numbers is expected due to spring breeding, followed by the threat of swarm invasion along the India-Pakistan border from the Islamic Republic of Iran and the Horn of Africa. This is forecasted to occur in approximately June.

■ RIFT VALLEY FEVER

Rift Valley fever (RVF) was reported for the first time in **Libya** in December 2019. This introduction may pose a threat to the surrounding **northern African** countries.

Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability for vector amplification, the entire region remains at high risk of RVF occurrence.

In **Central and East Africa**, during the past three months, above-average and heavy rainfall and flash floods have occurred in Burundi, Kenya, Rwanda, Uganda and the United Republic of Tanzania, and to a lesser extent in southeastern Ethiopia, parts of Somalia and southwestern South Sudan. Above-average rainfall also occurred in the Democratic Republic of the Congo, except for the northern region, which was drier than normal. The precipitation forecasts predict above-average rains for the coming period (April–June 2020) for the entire region, including Chad and the Democratic Republic of the Congo. According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification persist in the region, particularly in Burundi, south and central Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda and the United Republic of Tanzania, and to a lesser extent in the Democratic Republic of the Congo, Djibouti, Eritrea and the Sudan.

■ AFRICAN SWINE FEVER

In **Asia**, the risk of further spread of ASF within countries is considered high where countries have already been infected; these also pose a risk of ASF introduction into other countries in East and Southeast Asia as well as in the Pacific region, 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, not only in the region but worldwide.

In **Europe**, ASF outbreaks and transmission are likely to continue to occur in the affected countries (Belgium, Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Republic of Moldova, Serbia, Slovakia, the Russian Federation, Ukraine and, recently, Greece). Introduction of the disease into currently unaffected neighbouring countries is likely to occur (particularly in the Balkan peninsula, including Albania, Bosnia and Herzegovina, Croatia, Kosovo*, Montenegro and 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.

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



OVERVIEW FCC FORECAST FOR THE PERIOD APRIL–JUNE 2020

During the period April to June 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 (April to June 2020), FAO estimates that, globally, 44 countries (34 in Africa, eight in Asia, and two in 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 two plant and forest pests and diseases, locusts and animal and aquatic diseases were monitored and forecasted by FAO experts for the period April to June 2020. A total of **279** forecasts were conducted in **131** countries.



OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

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

Continent	FCCs Threats	Plant pests and diseases	Forest pests and diseases	Locusts	Animal diseases	Aquatic animal diseases
AFRICA	17	<ul style="list-style-type: none"> ■ Fall Armyworm (FAW) ■ Cassava Mosaic disease (CMD) ■ Cassava swollen shoot disease (CBSD) ■ Banana fusarium wilt disease (BFWD) ■ Banana bunchy top disease (BBTD) ■ Cocoa Swollen shoot disease ■ Anthracnose diseases ■ Wheat rust 	<ul style="list-style-type: none"> ■ Blue gum chalcid ■ Red gum lerp psyllid ■ Bronze bug ■ Poly phagus shot hole borer (PSHB) 	<ul style="list-style-type: none"> ■ Desert Locust ■ Migratory Locust 	<ul style="list-style-type: none"> ■ Rift Valley fever (RVF) ■ Foot-and-mouth disease (FMD) ■ Avian influenza (AI) 	-
AMERICAS	6	<ul style="list-style-type: none"> ■ Banana fusarium wilt disease (BFWD) ■ Citrus greening disease 	<ul style="list-style-type: none"> ■ Bark beetles 	-	<ul style="list-style-type: none"> ■ African swine fever (ASF) ■ Avian Influenza (AI) ■ Foot-and-mouth disease (FMD) 	-
ASIA	19	<ul style="list-style-type: none"> ■ Fall Armyworm (FAW) ■ Banana fusarium wilt disease (BFWD) ■ Cassava mosaic disease (CMD) ■ Wheat rust ■ Coffee disease ■ Rice blast Disease 	<ul style="list-style-type: none"> ■ Boxwood blight ■ Boxwood moth ■ Dry cone syndrome ■ Western conifer seed bug 	<ul style="list-style-type: none"> ■ Desert Locust ■ Italian Locust ■ Migratory locust ■ Moroccan locust 	<ul style="list-style-type: none"> ■ African swine fever (ASF) ■ Foot-and-mouth disease (FMD) ■ Avian Influenza (AI) ■ Lumpy skin disease (LSD) 	<ul style="list-style-type: none"> ■ Tilapia Lake virus disease (TiLV)
EUROPE	8	<ul style="list-style-type: none"> ■ <i>Xylella fastidiosa</i> on olive 	<ul style="list-style-type: none"> ■ Pine processionary moth ■ Bark beetles 	<ul style="list-style-type: none"> ■ Italian Locust ■ Moroccan locust 	<ul style="list-style-type: none"> ■ African swine fever (ASF) ■ Avian Influenza (AI) ■ Lumpy skin disease (LSD) 	-
OCEANIA	2	<ul style="list-style-type: none"> ■ Fall Armyworm (FAW) 	-	-	<ul style="list-style-type: none"> ■ African swine fever (ASF) 	-
TOTAL by FCC category		12	10	4	5	1



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AFRICA

In Africa, 120 FCC events in 46 countries were forecasted, comprising plant pests and diseases, locusts, animal and aquatic diseases, and forest pests. The likelihood of occurrence varies from Moderate to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

■ **Fall Armyworm** (*Spodoptera frugiperda*)

In **East Africa**, **Fall Armyworm (FAW)** presence has been officially confirmed in all East African countries except Djibouti. In most East Africa countries, the forecast period (April – June) coincides with the major growing season of maize, the pest's preferred host, and the maize crop will be at risk. Unless appropriate action is taken, the likelihood of spread and damage will be high because the pest will have full access to the susceptible maize crop.

In **North Africa**, Egypt has officially reported presence of FAW on maize fields in southern Egypt, and the pest continues to spread northwards. The Sudan has reported introduction of the pest since 2017. The climate in Egypt and the Sudan allows for the continuous planting of many host plants, which increases the likelihood of pest spread and damage. Mauritania is highly susceptible to FAW introduction, principally in its border regions with suitable climatic conditions: Trarza, Brakna, Gorgol, Guidimaka, Assaba, Hodh El Gharbi, and Hodh Ech Chargui Regions, and particularly the irrigated farms in the Senegal River basin that grow host plants.

In **Southern Africa**, during this forecast period, most countries will be in the end of the growing season; therefore, there will be a likelihood of FAW amplification and spread.

In **Central Africa**, the likelihood of FAW spread and amplification of FAW depends on the availability of the host plant in different countries. If the growing season starts or is under way during the forecast period, then there is a moderate likelihood of amplification. Otherwise, if the growing season is ending or the crop is in the harvest period, then there will be a moderate likelihood of FAW spread.

In **West Africa**, FAW is established in all 15 countries. The forecast period will coincide with the starting of the maize season in most of the countries. Therefore, FAW populations that have survived through the dry season are likely to re-emerge and amplify on the fresh crop.

- In **East Africa**, **Cassava mosaic disease** and **Cassava brown streak disease** continue to affect countries and may amplify where weather conditions are favourable. Banana diseases such as **bacterial wilt and bunchy top disease** might also occur.
- In **North Africa**, **Tomato leaf miner** (*Tuta absoluta*) will have a moderate possibility of spread as tomato host plants are grown in open fields between April and June.
- In **Central Africa**, **Banana bunchy top disease**, **Cassava brown streak** and **Cassava mosaic diseases** continue to affect the region and may escalate.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AFRICA

LOCUSTS

■ In **East Africa**, a dramatic increase in Desert Locust numbers is expected in the Horn of Africa, with more swarms forming. Some of these are expected to remain and breed again, while others will move northwards.

In **Southern Africa**, after fledging, **Red Locust** adults could form groups and small swarms from May, as vegetation will dry out or be burned.

In Madagascar, hopper development of the third generation of the **Malagasy Migratory Locust** will end from mid-April, and adult groups and swarms are expected to form, which could lead to a crisis.

ANIMAL DISEASES

■ Avian influenza (AI)

H5N1 and H5N8 Highly Pathogenic Avian Influenza (HPAI) viruses may sporadically cause new outbreaks in countries where HPAI is known to be endemic (e.g. Nigeria). However, the risk is considered low to moderate for the forecast period, given the observed seasonality of the disease. In some countries, the risk will even be nil.

H9N2 Low Pathogenic Avian Influenza (LPAI) is considered endemically circulating in some African countries (Côte D'Ivoire, Ghana and Senegal), causing losses to poultry production.

- In **North Africa**, circulation of **H5N1 HPAI, H5N2 HPAI, H5N8 HPAI and H9N2 LPAI** is expected to continue in Egypt at a moderate intensity until June 2020.
- In **West Africa**, after sustained circulation in 2016–2017, **H5N8 HPAI** re-emerged in Nigeria in February 2018. Since then, the country has reported sporadic outbreaks (January–March 2019), so that continuing circulation of the virus cannot be ruled out. In November 2019, **H5N6 HPAI** was reported for the first time in the country: it had been detected in June 2019 in birds of a live bird market located in Sokoto State. The risk of re-emergence of H5 strains for the period April–June 2020 is therefore considered low to moderate.
- In **Central and East Africa**, reports of **H5N8 HPAI virus have ceased since December 2017**, and the risk for the period April–June 2020 is considered nil.
- In **Southern Africa**, no **H5N8 HPAI** outbreaks have been observed in South Africa and Namibia since October and June 2019, respectively. Nevertheless, as the colder season is approaching in this hemisphere, the risk for the period April–June 2020 is still considered low in Namibia and 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 OIE and countries with endemic circulation of HPAI viruses are not required to report every individual Avian influenza event.

■ Foot-and-mouth disease (FMD)

FMD is likely to continue to occur in **North, West, Central, East and Southern Africa**.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AFRICA

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

Circulation of FMD serotype O (topotype EA-3) is ongoing in **North Africa** (Algeria, Libya and Morocco) and **West and Central Africa**. Virus sequences analysis shows a close relationship between the FMD strains that circulated in North Africa and West and Central Africa in 2018–2019, suggesting the importance of cross-Saharan livestock movements in FMD spread and maintenance in the region. 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, Gambia, Mali, Mauritania, Morocco, Senegal, Tunisia, etc.). The disease is likely to continue to occur in the region.

- In **Southern and East Africa**, FMD serotype O was recently detected in Ethiopia and Kenya. FMDV serotype O (topotype EA-2), reported in Zambia until July 2019 and which seems to correspond to a southern movement of the virus, can sporadically re-emerge in Zambia (in non-vaccinated areas). These events may be of concern due to the possible spread of the disease into the Southern African 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 serious.
- In **Comoros**, an FMD serotype O (topotype EA-2) outbreak was reported for the first time in March 2019, the sequences of which were most closely related to sequences from the United Republic of Tanzania. FAO and its partners are taking control measures through an emergency TCP and other actions; therefore, the risk of re-occurrence can be considered low.

■ Foot-and-mouth disease (FMD), SAT 2

In November–December 2019 in **South Africa**, in Limpopo Province, FMD SAT2 outbreaks were reported. Although control measures were applied, the origin of the outbreak remains unknown. There is a low risk of disease re-occurring in the area. Recent outbreaks due to serotype SAT2 were reported in **Zimbabwe**; however, no genotyping has been reported.

A new incursion of SAT2/VII lineage into **Egypt** was reported, most closely related to sequences from Ethiopia.

■ Rift Valley fever (RVF)

- **Central and Eastern Africa**: During the past three months, above-average and heavy rainfall and flash floods occurred in Burundi, Kenya, Rwanda, Uganda and the United Republic of Tanzania and, to a lesser extent, in southeastern Ethiopia, southwestern South Sudan, and parts of Somalia. Above-average rainfall also occurred in the Democratic Republic of the Congo, except for the northern region, which was drier than normal. The precipitation forecasts predict above-average rains for the coming period (April–June 2020) for the entire region, including Chad and the Democratic Republic of the Congo. According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification persist in the region, particularly in Burundi, south and central Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda and the United Republic of Tanzania, and to a lesser extent in the Democratic Republic of the Congo, Djibouti, Eritrea and the Sudan. In addition, a few hotspots are also predicted in Cameroon, the Central African Republic, southern Chad, bordering the Niger, Nigeria and the Sudan. 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.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AFRICA

RVF was reported for the first time in Libya, in December 2019. This may pose a threat to the surrounding northern African countries.

Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as the current and forecasted suitability of prevailing environmental conditions for vector amplification, the entire sub regions remains at high risk of RVF occurrence.

- **Southern Africa:** Since the beginning of the year, many areas of Southern Africa have received average and below-average rainfall. Above-average rainfall and floods have occurred in northern Malawi, northern Madagascar, and parts of Angola, southern Mozambique, South Africa and Zambia. In Southern Africa, the rainy season lasts from November to March. Historically, RVF outbreaks have occurred from January to March. For the coming period (April–June 2020), the precipitation forecasts predict rains well below average for the whole Southern African region. The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in eastern Angola, Botswana, Namibia and South Africa. Small localized risk areas for vector amplification are also predicted in Madagascar and Malawi. The risk of RVF occurrence is from moderate-to-low in Angola, Botswana, Madagascar, Namibia and South Africa.
- **West Africa:** During the past three months, average and below-average rainfall has been observed over much of West Africa, except for Mauritania and parts of Mali. The precipitation forecasts for April–June 2020, which coincides with the onset of the wet season, predict average and above-average rains, particularly in northern Mali, northern Mauritania, the Niger and northern Nigeria. Below-average rainfall is predicted in Senegal. According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification occur in central Mali, along the Senegal River between Mauritania and Senegal, in small localized areas of the Niger, and southern Senegal. These areas may be at low to moderate risk of RVF occurrence in the coming three months.

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. The Polyphagous shot hole borer is likely to spread from South Africa to neighbouring countries.

AQUATIC DISEASES

- In **Southern Africa**, Zambia is at risk of the fish disease **Epizootic Ulcerative Syndrome (EUS)** re-emerging. The United Republic of Tanzania is at risk of EUS introduction because the disease is present in neighbouring countries (the Democratic Republic of the Congo and Zambia). Water temperatures during the period April–June in these countries range between 18°C to 25°C, which are optimal temperatures for the development of the oomycete fungus that causes the disease.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AFRICA

Tilapia lake virus (TiLV) may have a wider distribution than presently known. Based on an expert knowledge elicitation risk assessment for TiLV (available at <http://www.fao.org/3/CA2864EN/ca2864en.pdf>), the risk of TiLV spreading (in the absence of any controls) within a country where it is already present was found to be very high, whereas the risk of TiLV spreading from infected countries to other countries in the African region was found to be high.

High awareness and vigilance for TiLV are required in tilapia-producing countries in North Africa (which includes Egypt, the world's third largest tilapia producer and Republic of the Sudan), East Africa (which includes major tilapia-producing countries such as Kenya, Uganda, the United Republic of Tanzania, etc.), and Southern Africa (which includes major tilapia-producing countries such as Malawi, Mozambique, Zambia, Zimbabwe, etc.). A surveillance plan may be necessary to determine the geographical extent and to prepare mitigation measures to limit its spread. Appropriate diagnostic testing is encouraged when unexplained mortalities of tilapia occur; testing is needed especially when clinical signs similar to those reported for TiLV and when permissive water temperatures (between 22°C and 32°C) are present. Public information campaigns are recommended, to advise aquaculturists on the threat posed by TiLV and on the need to report unexplained large-scale mortalities to biosecurity authorities. TiLV is likely to occur in countries where water temperatures range between 22°C and 32°C (usually between May and November, in some countries). The following farmed tilapia species are susceptible: Hybrid tilapia (*Oreochromis niloticus* x *O. aureus* hybrids), Nile tilapia (*O. niloticus*) and Red tilapia (*Oreochromis* sp.).



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AMERICAS

In the Americas, 9 FCC events in 9 countries were forecasted, comprising aquatic diseases and forest pests. The likelihood of occurrence varies from Moderate to High. The following FCC events have significant regional implications.

PLANT PESTS AND DISEASES

In **Central America**, **Citrus greening disease** (also known as Huanglongbing – HLB) continues to be a major challenge. For bananas, the outbreak of **Banana fusarium wilt disease** caused by **Tropical Race 4** is a major concern, although it has been reported only in Colombia.

ANIMAL DISEASES

■ African swine fever (ASF)

A risk of **ASF** spread in the Americas from Asian or European infected countries cannot be excluded. The major risk factors for the Americas are: (1) illegal or uncontrolled imports of pig meat products, either accidentally by tourists, farm workers, exchange students or hunters returning from endemic countries; (2) intentional smuggling of meat products for personal or commercial use; and (3) contaminated feed or feed ingredients. Producers should purchase swine feed only from trusted sources that apply appropriate biosecurity controls.

The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic); it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the weak border inspection, surveillance and control capacities in some countries in Americas must be noted.

■ Avian Influenza (AI)

Only Mexico has reported HPAI outbreaks in the Americas region over the last forecast period (January–March 2020). Given the increasing temperatures during the current forecast period (April–June 2020), decreasing numbers of Avian Influenza outbreaks in poultry are generally expected. Nonetheless, a moderate risk of occurrence of **H7N3 HPAI** in Mexico remains. Since April 2019, 41 H7N3 HPAI outbreaks have been reported in domestic birds in the central-southern part of the country, 19 of which from April to June 2019. Despite the onset of warmer temperatures 7N3 HPAI H7N, sporadic outbreaks are likely to be reported in the country given the endemicity of the disease.

■ 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 faced by the country in 2018–2020, is a potential reservoir for incursions into neighbouring countries, and a potential source for free zones in central and southern America.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

AMERICAS

AQUATIC DISEASES

- Based on an expert knowledge elicitation risk assessment for **Tilapia lake virus (TiLV)** (available at <http://www.fao.org/3/CA2864EN/ca2864en.pdf>), the risk of TiLV spreading (in the absence of any controls) within a country where it is already present was found to be very high, whereas the risk of TiLV spreading from infected countries to other countries in the South American region was found to be high.

Surveillance plans, control measures and awareness campaigns in tilapia-producing countries are required. Public information campaigns are recommended, to advise aquaculturists on the threat posed by TiLV and on the need to report unexplained large-scale mortalities to biosecurity authorities. TiLV is likely to occur in countries where water temperatures range between 22°C and 32°C. The following farmed tilapia species are susceptible: Hybrid tilapia (*Oreochromis niloticus* x *O. aureus* hybrids), Nile tilapia (*O. niloticus*), and Red tilapia (*Oreochromis sp.*). According to the scientific literature, TiLV is already present in Colombia and Ecuador, whereas an OIE notification states that it is present in Mexico, Peru and the United States of America; it may become a threat to other tilapia-producing Latin America and the Caribbean (LAC) countries.

FOREST PESTS AND DISEASES

- 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*, within 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 APRIL–JUNE 2020

ASIA

In Asia, a total of 93 FCC events were forecasted in 42 countries, comprising plant pests and diseases, locusts, animal and aquatic diseases, and forest pests. The likelihood of occurrence varies from Moderate to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

- In **South Asia**, **Fall Armyworm (FAW)** has been causing limited damage in most countries; however, even this relatively modest level of damage is economically important and a high alert has been activated. The chances of FAW spreads in the coming season is very high, given that most of the countries in South Asia and some in the Pacific region are easy to invade. The long dry spell is also favouring this pest, despite the modest level of control options and preparations put in place.
- **Tomato leaf miner (*Tuta absoluta*)** is another increasingly threatening pests in most playhouse vegetable Solanaceous crops, such as tomato. It has been becoming increasingly serious in **Nepal** and in certain parts of **India**. The pest also appears to be significantly important in protected vegetables, because of its faster multiplication. Almost all countries in South and Southeast Asia have been affected by the pest, and emergency and TCP project activities are being undertaken in 10 countries. Most recently, the pest has been detected in Australia; PNG has therefore operationalized a TCP to fund preparedness and early warning capacities.
- In **West Asia**, Yemen officially declared the introduction of **FAW** in 2018. This increases the risk of introduction of the pest into countries such as Oman and Saudi Arabia. The border between Yemen and Oman have a continuous range of vegetation featuring host plants that favour pest spread to farms in Dhofar Governorate, Oman. In addition, the suitable climatic conditions and vegetative cover along the western part of the shared border will encourage pest introduction into the Jazan, Najran and Asir Regions in Saudi Arabia.
- In **Central Asia**, **Wheat rust disease** outbreaks, particularly yellow rust, are likely in countries receiving high amounts of precipitation.
- In **Southeast Asia**, **Banana fusarium wilt disease, Tropical Race 4**, has been present in Southeast Asia. It was recently reported in Lao People's Democratic Republic, Myanmar and Viet Nam, and may further spread and cause damage.
- In **South Asia**, **Banana fusarium wilt disease, Tropical Race 4**, has been present in the region and may spread further and cause damage. **Wheat rust disease** epidemics may also occur in some locations.

LOCUSTS

- In **West Asia**, **Desert Locust** numbers are expected to increase because of spring breeding in the interior of Saudi Arabia, Yemen and Oman, where swarms could form.

In **South Asia**, a substantial increase of **Desert Locust** numbers is expected, due to spring breeding followed by a threat of swarm invasion along the India-Pakistan border from the Islamic Republic of Iran and the Horn of Africa, approximately in June.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

ASIA

- In **Central Asia**, **Moroccan Locust** hopper development will occur in April/May, with adults appearing from late May onwards, according to the countries' reports.
- Hatching of **Italian** and **Migratory Locusts** will start from April, with hopper development taking place in May/June. Overall, it is expected that the infested areas will be similar to those covered in 2019.

ANIMAL DISEASES

■ Avian Influenza (AI)

Based on seasonal patterns and the increasing temperatures during this forecast period, a decrease in the number of **Avian Influenza** outbreaks in poultry is generally expected during the period April–June 2020. However, five main **Highly Pathogenic Avian Influenza (HPAI)** subtypes (H5N1, H5N2, H5N5, H5N6 and H5N8) with different H5 clades are still circulating in West, East, South, and Southeast Asia, and the risk of new outbreaks occurring in affected countries can be considered low to moderate for the period April–June 2020; a decrease in the number of outbreaks is expected towards June 2020.

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

- **H5N1 HPAI** continues to endemically circulate in Bangladesh, China, India, Indonesia and Viet Nam, and re-emerged in Bhutan and Nepal in April–May 2019. As of March 2020, this subtype continues to be reported in China, India and Viet Nam, and is known to circulate endemically in Bangladesh and Indonesia.
- **H5N2 HPAI** is circulating in Taiwan, Province of China and was last observed in February 2020.
- In September 2019, **H5N5 HPAI** was reported in domestic birds in Taiwan, Province of China. It was the first time Asia reported an H5N5 HPAI virus. By the end of February 2020, a total of 14 outbreaks were reported in Taiwan, Province of China alone.
- The latest observations of **H5N6 HPAI** occurrence in Asia were in February 2020, in both domestic and wild birds in China and in domestic birds in Viet Nam.
- The **H5N8 HPAI** virus, which emerged in China in May 2016, has spread to India, the Islamic Republic of Iran, Israel, Japan, Kuwait, Nepal and the Republic of Korea (October–December 2016); Kazakhstan (January 2017); Saudi Arabia (December 2017); and Iraq and Pakistan (January 2018). The latest reports of H5N8 HPAI in Asia (Middle East) were recorded in February 2020, in a wild bird in Israel and in poultry in Saudi Arabia.

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 where HPAI viruses circulate endemically are not required to report every individual AI event.

■ African swine fever (ASF)

ASF continues to be reported in Asia. In particular, 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);



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

ASIA

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). In January–February 2020, outbreaks continued to be reported in domestic pigs in China, Myanmar, the Philippines, and Viet Nam. A new front of LSD may open in Central Asia, particularly Kazakhstan, Kyrgyzstan and Tajikistan, after the LSD outbreaks reported in China, right on the border with Kazakhstan. In Indonesia, ASF was reported in domestic pigs in North Sumatra Province in December 2019 and in East Nusa Tenggara in February 2020. 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. particularly Kazakhstan, Kyrgyzstan and Tajikistan, after the LSD outbreaks reported in China, right on the border with Kazakhstan front of LSD may open in Central Asia, particularly Kazakhstan, Kyrgyzstan and Tajikistan, after the LSD outbreaks reported in China, right on the border. 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, Japan, the Republic of Korea, the Philippines and Thailand). The risk of further spread of ASF within countries is considered high in countries that have already been infected. This also poses a risk of ASF introduction into other countries in East and Southeast Asia as well as the Pacific region, 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, not only in the region but worldwide.

■ Foot-and-mouth disease (FMD)

FMD is likely to continue to occur in **West, East and Southeast Asia**. FMD, serotype O (topotype ME-SA/Ind-2001e) has been reported in three provinces of Pakistan in December 2019, where emergency and preventive vaccinations were carried out. These outbreaks raise concern because it is the first time that this lineage has been detected in a West Eurasian country, from which it may spread into countries such as the Islamic Republic of Iran and Turkey. FMD serotypes A, O and Asia1 are also reported to circulate in many countries in West and South Asia; in particular, in 2019, a high incidence of these serotypes was observed in Afghanistan, Bangladesh, Bhutan, India, the Islamic Republic of Iran, Iraq, Kuwait, Myanmar, Nepal, Oman, Pakistan, Saudi Arabia, Sri Lanka, the Syrian Arab Republic and Turkey.

■ Lumpy skin disease (LSD)

- In **West and Central Asia**, outbreaks of **LSD** are likely to re-emerge in Turkey (which is considered endemic for the disease), in Israel and the Syrian Arab Republic (where the last outbreaks were reported in July 2019), and in neighbouring Central Asian countries (i.e. Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan and Georgia), due to the increasing temperatures, which determines favourable weather conditions for vector amplification during the forecast period. In particular, in Central-East Asia, sporadic events may re-emerge, as observed in China, at the border with Kazakhstan, in August 2019.

Though sporadic occurrence of the disease can be observed, the impact of the disease is considered low, because it can be mitigated through prevention measures (i.e. vaccination).



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

ASIA

- In **South Asia**, **LSD** was reported for the first time in September 2019 in Bangladesh and in November 2019 in India. The means through which the disease was introduced into the country remains unknown. The risk of the disease spreading is considered high within Bangladesh and India, as well as in neighbouring countries such as Nepal and Pakistan.

AQUATIC DISEASES

- Based on an expert knowledge elicitation risk assessment for **Tilapia lake virus** (TiLV) (available at <http://www.fao.org/3/CA2864EN/ca2864en.pdf>), the risk of TiLV spreading (in the absence of any controls) within a country where it is already present was found to be very high, whereas the risk of TiLV spreading from infected countries to other countries in the Asian region (including East and South Asia, which include the world's major tilapia-producing countries such as Bangladesh, China, Indonesia, Myanmar, the Philippines, Thailand, Viet Nam, etc.) was found to be high.

TiLV is likely to occur in countries where water temperatures range between 22°C and 32°C (usually between May and November). The following farmed tilapia species are susceptible: Hybrid tilapia (*Oreochromis niloticus* x *O. aureus* hybrids), Nile tilapia (*O. niloticus*), and Red tilapia (*Oreochromis sp.*).

FOREST PESTS AND DISEASES

- **Boxwood blight** (*Calonectria pseudonaviculata*) and **Boxwood moth** (*Cydolima perspectalis*) will spread and bear an impact in Georgia and in the Caspian forest of the Islamic Republic of Iran.
- In Lebanon, **Dry cone syndrome** and **Western conifer seed bug** pest damage will continue at moderate and high levels; additionally, the activities of Western conifer seed bug will increase.
- In Turkey, **Chestnut gall wasp** is causing damage to chestnut trees and threatening the livelihoods of local communities. It is expected that pest pressure will decrease due to pest control activities. Biological control to reduce pest populations is in progress.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

EUROPE

In Europe, 48 FCC events are forecasted in 26 countries, comprising locusts and animal diseases. The likelihood of occurrence varies from Moderate to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

- In **Southern Europe**, **Wheat rust disease** outbreaks, particularly yellow rust, are likely in countries receiving high amounts of precipitation. Olive decline caused by the *Xylella fastidiosa* bacterium continues to be a threat to olives in the Mediterranean coasts of Italy and France.

LOCUSTS

- In **Eastern Europe**, in the Russian Federation, **Italian, Migratory and Moroccan locusts** will start hatching from late April. Hopper development followed by fledging will occur from May onwards. Overall, a slight increase in locust-infested areas is expected in 2020, compared to 2019.

ANIMAL DISEASES

■ African swine fever (ASF)

ASF outbreaks and transmission are likely to continue to occur in the affected countries (Belgium, Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Republic of Moldova, Serbia, Slovakia, the Russian Federation, Ukraine and, recently, Greece). Introduction of the disease into currently unaffected neighbouring countries is likely to occur (particularly in the Balkan peninsula, including 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 infected carcasses were last 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)

The **H5N8 Highly pathogenic avian influenza (HPAI)** subtype continues to circulate in Europe. In accordance with seasonal patterns (increasing temperatures and northwards wild bird spring migrations), the overall risk for the period April–June 2020 is considered **moderate**, with an expected decrease to **low** towards June 2020. Since the virus was first introduced into Eastern Europe in mid-October 2016, it has been detected in 30 out of 43 European countries, particularly in West and Eastern Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. So far, the disease has affected mainly domestic poultry in eight European countries, including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period.

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



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

EUROPE

■ Lumpy skin disease (LSD)

LSD is likely to re-emerge in previously affected countries in Southern Europe (i.e. Albania, Greece, Kosovo*, Montenegro, the Republic of North Macedonia and Serbia) and to continue to occur in the Russian Federation (where last outbreak was reported in November 2019). In fact, during the forecast period, temperatures will increase, determining favourable weather conditions for vector amplification. Control measures in place (i.e. vaccination) can mitigate the impact of the disease.



REGIONAL OVERVIEW FORECAST FOR THE PERIOD APRIL–JUNE 2020

OCEANIA

In Oceania, 9 FCC events are forecasted in 8 countries, comprising locusts and animal diseases. The likelihood of occurrence varies from Moderate to High. The following FCC events have significant regional implications:

PLANT PESTS AND DISEASES

Banana fusarium wilt disease, Tropical Race 4 has been found in two locations in Australia and continues to be a major concern.

ANIMAL DISEASES

■ African swine fever (ASF)

A risk of **African swine fever (ASF)** spreading into Oceania from Asian or European infected countries cannot be excluded. The major risk factors for the Pacific islands and Australia are: (1) illegal or uncontrolled imports of pig meat products, either accidentally by tourists, farm workers, exchange students or hunters returning from endemic countries; (2) intentionally by smuggling meat products for personal or commercial use; and (3) contaminated feed or feed ingredients. Producers should only purchase swine feed from trusted sources that apply appropriate biosecurity controls.

The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic). It survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the weak border inspection, surveillance and control capacities in some countries in Oceania must be noted.



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
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



FOOD CHAIN CRISIS THREATS FORECASTING AT COUNTRY LEVEL

AFRICA

ALGERIA

Threat category: Animal and zoonotic diseases

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



Likelihood of occurrence: Moderate

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

Context: FMD, serotype O, circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks 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 affecting 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: Rift Valley fever (RVF)



Likelihood of occurrence: High

Forecast (April–June 2020): The risk of RVF occurrence is considered very likely, given animal movement and informal marketing of infected animals from neighbouring countries.

Context: In December 2019, RVF was reported for the first time in southern Libya, mostly due to movement of infected animals from neighbouring countries. This event is of concern, because the disease can spread to other North African countries (such as Algeria, Egypt and Tunisia) through movements of infected animal. *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: Fall armyworm (FAW)



Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a low probability of the pest being introduced into Algeria because of the natural barrier of the Sahara desert. In addition, no North African countries sharing borders with Algeria have reported the pest. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has been reported in Mali and the Niger (countries neighbouring Algeria). However, the warm semi-arid zone in the south of Mali and the Niger, and the semi-arid and Mediterranean climatic zone in northern Algeria, are separated by an arid desert climate area (over 1 500 km wide), that forms a natural barrier against spread of the pest. No other North African country sharing borders with Algeria has reported the pest.

Threat category: Locusts

Threat name: Desert Locust



Likelihood of occurrence: Moderate

Forecast (April–June 2020): Small-scale breeding may occur near irrigated perimeters and areas of rainfall in central Sahara; no significant developments are expected.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.



ANGOLA

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in eastern Angola, Botswana, Namibia and South Africa. Small localized risk areas for vector amplification are also predicted in Madagascar and Malawi. *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.*

BENIN

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): The main maize season should start by the beginning of May. The availability of maize in the vegetative stage increases the likelihood of FAW re-emergence and amplification.

Context: Benin was among the first countries to be affected by FAW, in April 2016. Actions to monitor and manage the pest are ongoing through various projects.

BOTSWANA

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

Forecast (April-June 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 until July 2019 and may sporadically re-emerge in non-vaccinated areas. These events are of concern because the disease may spread into Southern Africa (for example, in Botswana, Namibia and Zimbabwe, which has never been affected by this particular serotype). *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in eastern Angola, Botswana, Namibia and South Africa. Small localized risk areas for vector amplification are also predicted in Madagascar and Malawi. *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: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Maize will be at the end of the growing, and then of the harvesting, stages. Therefore, there is a possibility of FAW spreading.

Context: The presence of FAW was first reported during the 2016/2017 season. The pest continued to cause serious damage to the maize crop during the 2017/2018 production season.

BURKINA FASO

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa, (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the Niger, Nigeria, Senegal and Sierra Leone). 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. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of the environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): There will be sufficient maize to sustain high FAW populations. FAW is also likely to survive on alternate hosts and to spread to other parts of the country.

Context: In Burundi, the pest has infested all 17 provinces of the country. In agricultural season B (from March to June), maize is grown in some parts of the country.

CAMEROON

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa, (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the Niger, Nigeria, Senegal and Sierra Leone). 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. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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 bunchy top disease (BBTD)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: The disease is currently present in the southern part of the country and has already affected banana production in recent years. Banana bunchy top disease (BBTD) is transmitted through infected cuttings or aphids, causing stunting and a bunchy appearance. If any fruit is produced, it would be deformed.

CHAD

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa, (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 entire region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of the environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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.*



CONGO

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Maize will be in the vegetative, and then in the harvesting, stages in some areas, Therefore, there will be a possibility of FAW spread, re-emergence and amplification.

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.



CÔTE D'IVOIRE

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): The maize season will start by the beginning of May. FAW recorded from the previous seasons will re-emerge and amplify on the new maize crop.

Context: FAW prevalence in the country has been assessed, and some regions may have not been infested by FAW yet. However, FAW is highly likely to spread to the entire country.



DEMOCRATIC REPUBLIC OF THE CONGO

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): The potential risk of 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: Considering the past and recent RVF outbreaks in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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 category: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Maize will be in the vegetative and harvesting stages in some areas. Therefore, there will be a possibility of FAW re-emergence, amplification and spreading,

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



DJIBOUTI

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 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.



Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of the environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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 (April-June 2020): Swarms may appear in the south and along the northeast coast, where they are likely to transit through the country.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be 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: Animal and zoonotic diseases



Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April–June 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.*

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April–June 2020): The risk of RVF occurrence is considered very likely, given animal movement and informal marketing of infected animals from neighbouring countries.

Context: In December 2019, RVF was reported for the first time in southern Libya, mostly due to movement of infected animals from neighbouring countries. This event is of concern, because the disease can spread to other North African countries (such as Algeria, Egypt and Tunisia) through movements of infected animal. *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: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The season for growing the main host crop – maize – has started in southern Egypt, which increases the possibility of pest spread. In addition, the warm weather conditions prevailing in April–May will encourage the reproduction cycle of the pest.

Context: The pest was reported officially in Egypt in May 2019, in three governorates in the south (latitude: 26°12'N), with a low to medium infestation rate in maize fields. The pest has not been reported to attack other crops. However, it has been reported to spread northward, reaching latitude line 26°17'N. The Government has imposed measures based on monitoring and delivering recommendations to farmers.

ERITREA

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April–June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of the environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Although no maize will be available during the forecast period, FAW could be introduced from Ethiopia and feed on other hosts.

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.

Threat category: Locusts



Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Breeding will decline on the Red Sea coast. However, there is a threat of swarms from the Horn of Africa arriving in the western lowlands in June.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.



ETHIOPIA

Threat category: Plant pests and diseases

Threat category: Fall armyworm (FAW)



Likelihood of occurrence: High

Forecast (April-June 2020): During this period, maize will be present (at different vegetative stages except in Southwestern Ethiopia and FAW infestation of maize is expected to be high.

Context: In Ethiopia, FAW attacks maize planted in all seasons: during the short rainy season (*belg*) and the main rainy season (*meher*), as well as irrigated maize. In the country, over 458 maize-growing districts (*woredas*) were affected by FAW. These months fall within the main rainy season (*meher* season), and are thus characterized by widespread sowing of maize, covering most of the country. Irrigated maize will also be in the reproductive growth stage; maize planted earlier may reach the mature green cob stage.

Threat category: Animal and zoonotic diseases

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



Likelihood of occurrence: Moderate

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

Context: FMD, serotype O was recently detected in Ethiopia and Kenya. These events are of concern because the disease may spread into the Eastern African region, which has never been affected by this particular serotype before. *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)



Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of the environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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 (April-June 2020): Egg-laying, hatching, and formation of hopper bands and swarms will continue. A re-invasion is expected from the south, by swarms that will spread northwards throughout the country in May/June.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.

GABON

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)



Likelihood of occurrence: Moderate

Forecast (April-June 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: In late July 2017, FAW infestations were reported in the Estuaire and Haut Ogooué Provinces. However, no official declaration has been made by the Government and no control measures have been undertaken to date. 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 (April-June 2020): Spread of the disease is likely.

Context: The disease is currently present in the northern part of the country and has already affected banana production in recent years. Banana bunchy top disease (BBTD) is transmitted through infected cuttings or aphids, causing stunting and a bunchy appearance. If any fruit is produced, it would be deformed.



GHANA

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa, (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 entire region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: High

Forecast (April-June 2020): The main maize season will start by the end of March, in the coastal and rainforest areas. It is expected that FAW will attack new maize crops that are in the vegetative stage, which will increase the likelihood of FAW amplification.

Context: FAW was first spotted in the Yilo Krobo District in the Eastern Region of Ghana in 2016. Reports indicate that the country has lost US\$64 million due to FAW infestation, which covered 20 000 ha of farmland in 2018 alone.

Threat category: Plant pests and diseases



Threat name: Cocoa swollen shoot disease

Likelihood of occurrence: High

Forecast (April-June 2020): Cocoa swollen shoot disease is likely to spread and cause further damage.

Context: Cocoa swollen shoot disease caused by a viral agent is currently present in the country. It has spread widely and has affected over 17 percent of cocoa producers. The virus spreads with infected planting materials and mealybugs. Therefore, crop sanitation, eradication and use of virus-free planting materials are critical for disease management.

GUINEA

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 entire region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: High

Forecast (April-June 2020): FAW is likely to amplify during the forecast period as the maize season will start in most agro-ecological zones of Guinea.

Context: The country has benefitted from various projects to strengthen its capacities in FAW management. A recently signed project, which is funded by the African Development Bank and is due to start soon, includes a significant component on FAW surveillance and management.

GUINEA-BISSAU

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 entire region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): FAW is likely to amplify during the forecast period as the maize season will start in most agro-ecological zones.

Context: The country's FAW management capacities have been developed through a TCP and a project funded by the African Development Bank. Its capacities for biological control are being developed thanks to cooperation with EMBRAPA.



Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April-June 2020): New swarms will form, supplemented by another invasion from the north in April, and threaten crops. Some of the swarms are expected to move north while others remain in place, mature and lay eggs that would hatch and cause hopper bands to form.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.



KENYA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): The forecast period (April to June) coincides mostly with the main maize cropping season, and FAW infestation of maize is expected to be high.

Context: FAW has been reported in all 47 counties (100 percent) of the country.



Threat category: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: The disease is present in the northern part of the country on a limited scale. Cassava Mosaic Disease (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. Thus, use of virus free planting materials is critical for disease control.



Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

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

Context: FMD virus, serotype O was recently detected in Ethiopia and Kenya. These events are of concern because the disease may spread into the Eastern African region, which has never been affected by this particular serotype before. *FMD is a highly contagious disease affecting 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.*



LIBERIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): FAW was found in the country in maize crops at the end of 2017. Recently, FAW has caused serious damage to various vegetable crops. The pest populations are likely to increase during the forecast period as the main maize season will be ongoing in all agro-ecological zones.

Context: The country has had to face serious infestations of vegetable crops (cabbages, eggplants, etc.). Although maize is not an important crop, it will be necessary to continue surveillance of FAW infestation of vegetables.



Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of the environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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.*





LIBYA

Threat category: Animal and zoonotic diseases

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



Likelihood of occurrence: Moderate

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

Context: FMD, serotype O circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks 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 affecting 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: Rift Valley fever (RVF)



Likelihood of occurrence: High

Forecast (April–June 2020): The risk of RVF spread is considered very likely, given the current outbreak in the southern region, presence of suitable environmental conditions for vector amplification, animal movement and informal marketing of infected animals.

Context: In December 2019, RVF was reported for the first time in the country, in southern Libya, mostly due to movement of infected animals from neighbouring countries. This event is of concern, because the disease can spread to other North African countries (such as Algeria, Egypt and Tunisia) through movements of infected animal. *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: Fall armyworm (FAW)



Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a moderate probability of the pest being introduced into Libya because Egypt – which shares a border with Libya – has reported it. However, to date, the pest has been reported only in southern Egypt. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest may spread from the location in Egypt (Suhag Governorate) to Libyan farms in Butnan District (approximately 1 000 km away), through the Nile Valley and then to the Mediterranean coast. This is not as likely to happen, because of the wind direction (north and northwest). However, the *khamasen* wind blowing in April/May (towards south and southeast) may have favour pest spread to Libya.

MADAGASCAR

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)



Likelihood of occurrence: Moderate

Forecast (April–June 2020): The risk of RVF occurrence is considered moderate in some localized areas, due to the presence of suitable environmental conditions for vector amplification.

Context: The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in eastern Angola, Botswana, Namibia and South Africa. Small localized risk areas for vector amplification are also predicted in Madagascar and Malawi. *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: Migratory Locust



Likelihood of occurrence: High

Forecast (April–June 2020): Adults of the third generation of the 2019/2020 rainy season should start to appear during the second half of April. It is expected that these adults will form groups and swarms, which could lead to a crisis.

Context: Madagascar is prone to frequent Migratory Locust crises, which affect the livelihoods as well as the food and nutrition security of the population. The last plague occurred from April 2012 to July 2016 and threatened 13 million persons.

MALAWI

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)



Likelihood of occurrence: Moderate

Forecast (April–June 2020): Maize will be at the end of the growing, and then of the harvesting, stages. Therefore, there is a possibility of FAW spreading.

Context: The presence of FAW was first reported during the 2016/2017 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 2017/2018 rainfed cropping season (November–March).

Threat category: Forest pests and diseases

Threat name: Blue gum chalcid



Likelihood of occurrence: High

Forecast (April–June 2020): Outbreaks of the Blue gum chalcid insect pest are likely to continue causing damage in eucalyptus nurseries and young 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.



MALAWI

Threat category: Forest pests and diseases

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast (April–June 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: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The maize season will start by mid-April, which could increase the likelihood of the FAW re-emergence and amplification.

Context: The presence of FAW in the country was officially declared in early 2018. A FAO emergency project is being implemented to enhance the country's FAW management capacities.



MALI

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 entire region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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.*



MAURITANIA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa, (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 entire region, where livestock is not immunized against this particular strain of the virus. FMD has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification are in central Mali, along the Senegal River between Mauritania and Senegal, in small localized areas of the Niger, and in southern Senegal. These areas may be at low to moderate risk of RVF occurrence in the next three months. *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: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification are in central Mali, along the Senegal River between Mauritania and Senegal, in small localized areas of the Niger, and in southern Senegal. These areas may be at low to moderate risk of RVF occurrence in the next three months. *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.*





MAURITANIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): The pest is reported to be present in countries sharing borders with Mauritania: Senegal and Mali. The pest has high migratory and reproductive abilities that will allow for fast spread.

Context: The pest has not been officially reported in Mauritania yet. However, the climatic zones in southern Mauritania (which are warm semi-arid) continue across the borders with the infested countries of Senegal and Mali.



Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low probability of the pest being introduced into Morocco because no neighbouring North African countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers. Morocco cultivates over 150 000 ha of maize every year, mostly by small-scale farmers.



MAYOTTE

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the Banana fusarium wilt disease is likely.

Context: Tropical race 4 (TR4) of the Banana fusarium wilt disease was recently reported on the island of Mayotte (a French overseas territory), off the coasts of Mozambique. The 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 and 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: Moderate

Forecast (April-June 2020): Wheat rusts are likely to spread, as per the seasonal pattern.

Context: Wheat rust diseases, particularly yellow rust, are recurrent threats to wheat. Stem rust has also become a problem in recent years. The disease infects especially the vegetative parts of the plant, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



MOROCCO

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O, circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks 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 affecting 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: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: A new race of the causal fungus of the disease (Tropical Race 4 – TR4) has affected two farms in Nampula Province. Banana fusarium wilt disease is a soilborne disease caused by a fungal pathogen that 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. Thus, use of certified planting materials and prevention of spread is crucial.





NAMIBIA

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O outbreaks have occurred in Zambia until July 2019 and may sporadically re-emerge in non-vaccinated areas. These events are of concern because the disease may spread into Southern Africa (for example, in Botswana, Namibia and Zimbabwe, which has never been affected by this particular serotype). *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in eastern Angola, Botswana, Namibia and South Africa. Small localized risk areas for vector amplification are also predicted in Madagascar and Malawi. *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 category: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Maize will be in the vegetative stage, so there will be a high possibility for FAW re-emergence and amplification as well as spreading at the end of season on June.

Context: The presence of FAW was first reported during the 2016/2017 season. The pest continued to cause serious damage to the maize crop during the 2017/2018 production season, from November to March.

NIGER (the)

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 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 has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification are in central Mali, along the Senegal River between Mauritania and Senegal, in small localized areas of the Niger, and in southern Senegal. These areas may be at low to moderate risk of RVF occurrence in the coming three months. *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.*



NIGERIA

Threat category: Animal and zoonotic diseases



Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks may occur.

Context: The H5N1 HPAI virus has been circulating in Central and West Africa since December 2014, and Nigeria was the most affected country. However, the most recent outbreak of H5N1 HPAI was reported at the end of May 2017. After sustained circulation in 2016–2017, H5N8 HPAI re-emerged in the region in February 2018 in Nigeria. Since then, the country reported sporadic outbreaks in 2019; therefore, continuing circulation of the virus cannot be ruled out. In November 2019, H5N6 HPAI was reported for the first time in the country, detected in June 2019 in birds of a live bird market located in Sokoto State. The risk of re-emergence of H5 strains for the period April–June 2020 is therefore considered low to moderate. *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: Foot-and-mouth disease (FMD)

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 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 has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: High

Forecast (April–June 2020): The main maize season has already started in almost all agro-ecological zones. Therefore, there will be maize crops all over the country and FAW populations are very likely to amplify during this quarter.

Context: Capacities for FAW management have been strengthened through the implementation of various projects. However, more efforts will be required as the country is one of the most important maize producers in the region.

Threat category: Plant pests and diseases



Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is likely.

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. Thus, use of virus-free planting materials is critical for disease control.

RWANDA

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): There will be sufficient maize to sustain high FAW populations.

Context: In Rwanda, the pest has infested all 30 districts of the country. In agricultural season B (from March to June), maize is grown in some parts of the country.



RWANDA

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals as well as current and forecasted suitability for vector amplification, the whole region remains at high risk of RVF occurrence. Considering that Rwanda has vaccinated 67% of livestock, the risk can be considered moderate. *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 (April–June 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. 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 (April–June 2020): Blue gum chalcid is likely to spread further in eucalyptus nurseries and young 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 pests and diseases



Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is likely.

Context: The disease is present in the country on a limited scale. Cassava mosaic disease (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 that reduce yields. It is transmitted by infected cuttings and whiteflies.

SENEGAL

Threat category: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 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 has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: According to the FAO RVF Monitoring/Early Warning tool, the areas suitable for RVF vector amplification are in central Mali, along the Senegal River between Mauritania and Senegal, in small localized areas of the Niger, and in southern Senegal. These areas may be at low to moderate risk of RVF occurrence in the next three months. *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.*



SENEGAL

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The maize season is expected to start in May. Therefore, the likelihood of FAW attacking maize in the vegetative stage will be high.

Context: Maize is not particularly important in Senegal. However, the country's capacity for surveillance of FAW must be developed, as the pest may infest other cereal crops that are of importance for the country.



SIERRA LEONE

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype EA-3) has been circulating widely since July 2018 in West and Central Africa (with more than 230 outbreaks reported in Burkina Faso, Cameroon, Chad, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, the 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 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 has also been observed in small ruminants (Mali, Mauritania and Senegal). *FMD is a highly contagious disease affecting 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: High

Forecast (April–June 2020): The maize season will start in May (in the uplands). Thus, the likelihood of FAW amplification is expected to be high.

Context: The country's capacity for FAW management and surveillance must be strengthened.



SOMALIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): FAW will therefore have access to maize and sorghum in almost all growing areas of the country during the forecast period, and infestation is expected to be high.

Context: FAW is now fully established across the country; however, farmers have neither adequate knowledge nor resources to manage the pest in their crops. In mid-April, planting will commence in the southern part of the country (Jubaland, Hirshabelle, Southwest State), which is a major rainfed-maize and sorghum-growing area. Irrigated crops will also be available.



Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April–June 2020): The potential risk of RVF occurrence is considered moderate 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 last 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 (April–June 2020) for Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Uganda and the United Republic of Tanzania and, to a lesser extent, for the Democratic Republic of the 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 part of the United Republic of Tanzania. Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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.*





SOMALIA

Threat category: Locusts



Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April-June 2020): Swarms will continue to breed in northern and central areas, supplemented by swarms coming from the south.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.

SOUTH AFRICA

Threat category: Animal and zoonotic diseases



Threat category: Rift Valley fever (RVF)

Likelihood of occurrence: Moderate

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

Context: The FAO RVF Monitoring/Early Warning tool highlights some hotspots at risk of RVF vector amplification in South Africa, Botswana, Namibia and eastern Angola. Small localized risk areas for vector amplification are also predicted in Madagascar and Malawi. *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: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification as well as spread at the end of season, in June.

Context: The presence of FAW was first reported during the 2016/2017 season. The pest continued to cause serious damage to the maize crop during the 2017/2018 production season. (November to March). South Africa has institutional response capacities that are expected to moderate the impact of the pest in the short term.

Threat category: Forest pests and diseases



Threat name: Polyphagous shothole borer (PSHB)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): The Polyphagous shothole borer (PSHB) insect pest is likely to have 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 euwallacei*, which is introduced by female beetles into the larval gallery and acts as the primary food source of both adults and larvae. *F. euwallacei* and other fungi cause 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 impact has been seen in avocado production in Israel, where PSHB is now described as a serious threat to the industry. The pest was reported for the first time in South Africa in early 2017, and 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 to reduce local populations of PSHB and its spread.

SOUTH SUDAN

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Maize and sorghum will be widely cultivated, and FAW infestation is expected to be high.

Context: In South Sudan, the pest has been reported in all 10 states of the country. April to June is the main crop-growing season in the country

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks occurring in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability of environmental conditions for vector amplification, the entire region remains at high risk of RVF occurrence. *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 SUDAN

Threat category: Locusts 

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April–June 2020): Swarms may invade the country from Kenya and Uganda and probably transit northwards. However, some may remain, mature, lay eggs that would hatch and form hopper bands.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be 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 (the)

Threat category: Animal and zoonotic diseases 

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April–June 2020): The risk of 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 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. *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: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The growing season of the main host crops – maize and sorghum – has started in the Sudan, which increases the possibility of pest spread. In addition, the warm weather conditions prevailing during April–May will encourage the reproduction cycle of the pest.

Context: The pest was officially reported in the Sudan in 2017, and has spread to all locations with suitable hosts and favourable climatic conditions. The pest can attack more than 100 plant species. However, it can cause significant losses particularly in maize and sorghum crops. The Sudan cultivates more than 7 million ha of sorghum every year.

Threat category: Locusts 

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Locusts will shift from the Red Sea to the Nile Valley, where small-scale breeding may occur. A potential swarm invasion from the south could occur in June.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.

SWAZILAND

Threat category: Plant pests and diseases 

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): Maize will be in the vegetative stage. Therefore, there will be a possibility of FAW re-emergence and amplification as well as spread at the end of season, in May.

Context: The presence of FAW was first reported during the 2016/2017 season. The pest caused serious damage to sorghum, millet and maize across the country, into the 2017/2018 season.

TOGO

Threat category: Plant pests and diseases 

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): FAW is likely to re-emerge and amplify, as in some zones, the main maize season started in March.

Context: In 2016, FAW was detected in samples from Togo. It is currently present in all maize-growing regions of the country.

TUNISIA

Threat category: Animal and zoonotic diseases 

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

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O, circulated widely in 2018 and 2019 in North African countries (with more than 350 outbreaks 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 affecting 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.*



TUNISIA

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of RVF occurrence is considered very likely, given animal movement and informal marketing of infected animals from neighbouring countries.

Context: In December 2019, RVF was reported for the first time in southern Libya, mostly due to movement of infected animals from neighbouring countries. This event is of concern, because the disease can spread to other North African countries (such as Algeria, Egypt and Tunisia) through movements of infected animal. *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: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low probability of the pest being introduced into Tunisia because no neighbouring North African country has reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has not been reported in Tunisia yet, or in any neighbouring country. The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.

UGANDA

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Given the widespread availability of the maize crop, it is forecasted that FAW infestation will be high in all districts.

Context: In Uganda, the pest has been confirmed in all 121 districts, that is, 100 percent of the territory. Within the first week of March, most parts of the country have received rain. By April, many farmers will have planted maize, which is the preferred crop for FAW

Threat category: Animal and zoonotic diseases



Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April-June 2020): The risk of 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: Considering the past and recent RVF outbreaks in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability for vector amplification, the whole region remains at high risk of RVF occurrence. *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 (April-June 2020): Swarms may invade the country from the east and probably transit to the north. However, a few swarms may remain, mature, lay eggs that would hatch and form hopper bands.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be 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: Cassava brown streak disease (CBSD)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: The disease is already present in the country. The disease can cause brownish rots in tubers that make them inedible. This leads to a severe loss of economic value. Farmers may be unaware that cassava crops are infected until they harvest and see the tuber lesions, as 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 therefore essential for control.



UGANDA

Threat category: Plant pests and diseases

Threat name: Anthracnose disease

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Further spread of the Anthracnose disease on banana is likely

Context: Anthracnose disease, caused by fungal agents belonging to the *Colletotrichum* species, has recently been reported in Ntungamo and Kabarole Districts especially. The fungus causes brownish-red lesions on fruit peels, reducing their market quality. The disease may develop as a problem in banana production, in addition to Xanthomonas wilt disease.



Threat category: Plant pests and diseases

Threat name: Cassava brown streak disease (CBSD)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is likely.

Context: Cassava brown streak virus disease (CBSD) is already present in the country. The disease can cause brownish rots in tubers that make them inedible. This leads to a severe loss of economic value. 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 therefore essential for control.



UNITED REPUBLIC OF TANZANIA

Threat category: Animal and zoonotic diseases

Threat name: Rift Valley fever (RVF)

Likelihood of occurrence: High

Forecast (April–June 2020): The risk of 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: Considering the past and recent RVF outbreaks in the region, animal movement and the informal marketing of infected animals, as well as current and forecasted suitability for vector amplification, the entire region remains at high risk of RVF occurrence. *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.*



ZAMBIA

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (April–June 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 until July 2019 and may sporadically re-emerge in non-vaccinated areas. These events are of concern because the disease may spread into Southern Africa (for example, in Botswana, Namibia and Zimbabwe, which has never been affected by this particular serotype). *FMD is a highly contagious disease affecting 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 category: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): 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 2016/2017 season, and the pest continued to cause damage to maize during the 2017/2018 production season (November–March).



Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Maize will be at the end of the vegetative, and then of the harvesting, stage. Therefore, there will be a possibility of FAW re-emergence and amplification, as well as spread.

Context: The presence of FAW was first reported during the 2016/2017 season. The pest continued to cause damage to maize during the 2017/2018 production season (November–March).



Threat category: Forest pests and diseases

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Blue gum chalcid is likely to spread further 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.





ZAMBIA

Threat category: Forest pests and diseases

Threat name: Blue gum chalcid

Likelihood of occurrence: Moderate

Forecast (April–June 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 are in progress to reduce insect populations. Biological control agents to reduce Blue gum chalcid populations are currently being introduced. 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 (April–June 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: Plant pests and diseases

Threat name: Cassava mosaic disease (CMD)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is likely.

Context: Cassava mosaic disease (CMD) poses a major challenge for 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, reducing yields. In addition, Cassava brown streak virus has recently been detected, and may escalate. Both viruses are transmitted by infected cuttings and whiteflies. Use of virus-free planting materials in sowing is therefore critical.



ZIMBABWE

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (April–June 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 until July 2019 and may sporadically re-emerge in non-vaccinated areas. These events are of concern because the disease may spread into Southern Africa (for example, in Botswana, Namibia and Zimbabwe, which has never been affected by this particular serotype). *FMD is a highly contagious disease affecting 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 (April–June 2020): Maize will be at the end of vegetative stage, and then in the harvesting stage. Therefore, there will be a possibility of FAW re-emergence and amplification, as well as spread.

Context: The presence of FAW was first reported during the 2016/2017 season. The pest continued to cause damage to maize during the 2017/2018 production season (November–March).



Threat category: Forest pests and diseases

Threat name: Red gum lerp psyllid

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of Red gum lerp psyllid is likely to continue in eucalyptus plantations.

Context: Pest management activities based on the application of biological control agents to reduce pest populations are in progress. Blue gum chalcid (*Leptocybe invasa*) is a major insect pest of young eucalyptus trees and seedlings.





AMERICAS

CANADA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in the Americas from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

COLOMBIA

Threat category: Plant pests and diseases



Threat category: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is possible.

Context: The most recent race of the causal fungus of the disease (Tropical Race 4 – TR4) has been detected in the northern region of La Guajira, in northern Colombia. This was the first report of the disease in 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 and 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.

EL SALVADOR

Threat category: Plant pests and diseases



Threat name: Citrus greening disease/Huanglongbing disease (HLB)

Likelihood of occurrence: High

Forecast (April–June 2020): Spread of the Citrus greening disease (HLB) is very likely

Context: The Citrus greening disease (also known as Huanglongbing, – HLB), which is caused by the bacterium *Candidatus liberibacter*, has spread widely, prompting announcement of an emergency. The bacterium is spread by physillids and causes the greening of fruits, severely reducing their quality. Control is challenging and crop hygiene, vector control and tolerant varieties can be considered as responses to address the disease.

GUATEMALA

Threat category: Forest pests and diseases



Threat name: Bark beetles

Likelihood of occurrence: High

Forecast (April–June 2020): Bark beetles (mainly *Dendroctonus frontalis*) are likely to continue causing damage to pine plantations. The high temperatures and low precipitation levels during April–June are likely to weaken 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 category: Bark beetles

Likelihood of occurrence: High

Forecast (April–June 2020): Bark beetles (mainly *Dendroctonus frontalis*) are likely to continue causing damage in pine plantations. The increasing temperatures and low precipitation levels prevailing from April to June are likely to weaken the pine trees and make them susceptible to Bark beetle attacks.

Context: Bark beetles affect approximately 500 000 ha of conifer 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 (April–June 2020): H7N3 Highly pathogenic avian influenza (HPAI) outbreaks are expected to continue to occur.

Context: H7N3 HPAI has been sporadically reported in Mexico since 2012. In 2019, starting in April, 26 H7N3 HPAI outbreaks were reported, affecting 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 (April–June 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.

UNITED STATES OF AMERICA

Threat category: Animal and zoonotic diseases

Threat category: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries,

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in the Americas from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

VENEZUELA

Threat category: Animal and zoonotic diseases

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



Likelihood of occurrence: Moderate

Forecast (April–June 2020): Further spread of Foot-and-mouth disease (FMD) is likely to occur within the country.

Context: The circulation of FMD in Venezuela, also due to the lack of adequate veterinary control and biosecurity caused by the political instability faced by the country in 2018–2020, is a potential reservoir for incursions into neighbouring countries, and a potential source for free zones in central and southern America. *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.*



ASIA

AFGHANISTAN

Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the wheat yellow rust disease is likely as per the seasonal pattern

Context: Wheat rust diseases, particularly yellow rust, are recurrent threats to wheat. It infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



Threat category: Locusts

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hopper development and fledging should occur in April and some adult groups and swarms may form in May. The scale of infestations is expected to be similar to that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests in Central Asia. The Italian Locust is also present in the country; however, it has not been reported as a pest for the last two years.



AZERBAIJAN

Threat category: Locusts

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hatching will occur in April and will be followed by hopper development and fledging, with the likely formation of adult groups. The scale of infestations is expected to be similar to that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. The Moroccan Locust is one of the two locust pests in Caucasus.



BAHRAIN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low probability of the pest being introduced into Bahrain because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.



BANGLADESH

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: High

Forecast (April-June 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 was also the first time the disease has been reported in a South Asian country. As of November 2019, the disease has also spread to Dhaka District.



Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

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

Context: The country is considered endemic for H5N1 HPAI. Events can occur in domestic or wild birds. *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 (April–June 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 (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Cambodia on 3 April 2019. As of 4 March 2020, 11 outbreaks have been reported in five of the country's 25 provinces. *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 (April–June 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 outbreak 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 (April–June 2020): Spread of the disease is likely.

Context: The disease is present in the northern part of the country, on a limited scale. Cassava mosaic disease (CMD) is considered an emerging threat to cassava in the region. It is caused by a virus that causes chlorosis and distortion of the leaves, resulting in reduced yields. The disease is transmitted by infected cuttings and whiteflies. Thus, avoiding sharing of infected materials and use of clean cuttings is key for prevention.

CHINA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 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 4 March 2020, 166 ASF outbreaks have been reported in 32 provinces/administrative divisions out of 34. In addition, the disease has also been detected in wild boar in Jilin province, close to the borders with the Democratic People's Republic of Korea, in Heilongjiang, in Shaanxi and, in February 2020, in Hubei province. This fact enhances the likelihood of spread of ASF to neighbouring countries due to wild boar movement, in addition to the 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. *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 (April–June 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. In particular, H5N1 HPAI and H5N6 HPAI can occur 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.*

Threat category: Plant pests and diseases

Threat name: Banana fusarium wilt disease



Likelihood of occurrence: Moderate

Forecast (April–June 2020): Further spread of the disease is likely.

Context: The most recent race of 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 and 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.



CHINA

Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of yellow rust disease is likely.

Context: Wheat yellow rust is a recurrent threat to wheat in the country. It has appeared in Gansu, Ningxia and Shaanxi Provinces in northwest China. The disease infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): FAW migration from the southern part of the country to the north is expected. Further areas of crop field are also expected to be affected by FAW.

Context: On 20 February 2020 the Ministry of Agriculture and Rural Affairs issued a contingency plan for FAW control in the country. To date, 113 counties have reported cases of FAW occurrence. Compared to 2019, in 2020, China will witness a larger base of FAW population sources, both from the southern part of the country and introduced from neighbouring countries.



DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in the Democratic People's Republic of Korea (DPRK) on 23 May 2019, in Chagang province. Since then, no other ASF events have been reported in the country. *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: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): The pest may be able to spread from the location where it was reported in Egypt (Suhag Governorate) to farms in the Gaza Strip (approximately 800 km away), through the Nile Valley and then to the Mediterranean coast, towards Sinai. This is more likely to happen because of the wind direction (north and northwest). However, the *khamasen* wind blowing in April/May (towards south and southeast) may hinder pest spread to the Gaza Strip.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.



GEORGIA

Threat category: Forest pests and diseases

Threat name: Boxwood blight

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Boxwood blight will continue to be present and is likely to show high levels of activity, due to the increasing temperatures prevailing from April to June.

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*, affecting boxwood trees.



Threat category: Forest pests and diseases

Threat name: Boxwood moth

Likelihood of occurrence: High

Forecast (April–June 2020): The moth has three to four generations per year in Georgia. The larvae will continue feeding on leaves, and these repeated attacks will lead to total defoliation of the trees. The first flight of the season is likely to take place in April/May.

Context: As part of the Integrated Pest Management (IPM) programme, the biopesticide Btk (*Bacillus thuringiensis kurstaki*) and pheromone traps are being used to protect the native boxwood species. Boxwood moth (*Cydalima perspectalis*), which is native to eastern Asia, is highly destructive and defoliates boxwood trees. When the day length drops below approximately 13.5 hours, the larvae will "diapause" (enter the dormant stage of a developing insect) so that they can overwinter in a web spun on Buxus leaves. In this state, the pest can survive temperatures as low as - 30°C.





GEORGIA
Threat category: Locusts

Threat name: Italian Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hatching, followed by hopper development, should start by mid-May. The scale of infestations is expected to be higher than that of 2018.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. The Italian Locust is one of the two locust pests in Caucasus.

INDIA
Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)

Likelihood of occurrence: High

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

Context: In November 2019, LSD was reported for the first time in India, in Orisha State. The onset date of the outbreaks was August 2019. LSD was first reported 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 (April-June 2020): H5N1 Highly pathogenic avian influenza (HPAI) outbreaks are likely to occur.

Context: The country is considered endemic for H5N1 HPAI. Events can occur in domestic or wild birds. *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: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April-June 2020): A swarm invasion from the Islamic Republic of Iran/Pakistan and the Horn of Africa towards Gujarat and Rajasthan could occur in June, followed by breeding.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be 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: Banana fusarium wilt disease

Likelihood of occurrence: High

Forecast (April-June 2020): Spread of the disease is likely.

Context: The most recent race of fungus causing the Banana fusarium wilt disease (Tropical Race 4 – TR4) is present in northern parts of 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 and 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: Moderate

Forecast (April-June 2020): Spread of wheat yellow rust is likely, as per the seasonal pattern.

Context: The disease is a recurrent threat to wheat. It has recently appeared in the northern parts of Haryana State. The disease infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.

Threat category: Plant pests and diseases

Threat name: Rice blast disease

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the Rice blast disease is likely.

Context: Rice blast disease, which is caused by *Pyricularia oryza*, gave rise to problems in Rajanna and Karimnagar Districts in Hyderabad. The disease infects most parts of the plant, including panicles; in particular, it causes blast on leaves and reduces yields. Crop hygiene, the use of disease-free seeds and resistant varieties are key disease management strategies.



INDIA

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The pest is very likely to spread to regions other than the currently infested area. Its occurrence in neighbouring countries such as Nepal and Bangladesh, along with the long dry spell in the current season, have been favouring its rapid spread.

Context: The pest appeared relatively early, on 30 June 2018. There are a national-level task force and a response team. Despite the training, monitoring through pheromones and provision of recommendations on safe chemical compounds, the chances of pest spread to the northern part of the country is very high. Dry environment conditions and cropping patterns favour further spread. Several research institutes (ICAR, University, NBAIR and the Indian Institute of Maize and Millet Research) are also working on the pest. FAO India is implementing TCP/IND/3709(E): Time-critical measures to support early warning and monitoring for sustainable management of Fall Armyworm in India.



IRAN (ISLAMIC REPUBLIC OF)

Threat category: Animal and zoonotic diseases

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

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Foot-and-mouth disease (FMD), serotype O, outbreaks are likely to spread from infected countries

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: Locusts

Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April–June 2020): Spring breeding will cause hopper bands and swarms to form along the southern coast and adjacent interior areas.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.



INDONESIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: In December 2019, ASF was confirmed in the country. In addition, in October–November 2019, several pig mortalities were reported in the North Sumatra Province. On 25 February 2020, it was also confirmed in East Nusa Tenggara Province, in West Timor. *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 (April–June 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.*



Threat category: Forest pests and diseases

Threat name: Boxwood blight

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Boxwood blight will continue to be present; its spread will increase from April to June due to increasing temperatures and high humidity.

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*, affecting boxwood trees.





IRAN (ISLAMIC REPUBLIC OF)

Threat category: Forest pests and diseases

Threat name: Boxwood moth

Likelihood of occurrence: High

Forecast (April–June 2020): In Iran, the moth has three to four generations per year. The larvae will have high levels of activity from April to June. The moth's flight season is likely to start in late April/mid-May.

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 biopesticide Btk (*Bacillus thuringiensis kurstaki*), is required 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 hours, 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. Boxwood moth (*Cydalima perspectalis*), native to eastern Asia, is highly destructive and defoliates boxwood trees.



Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the wheat yellow rust disease is likely as per the seasonal pattern

Context: The disease is a recurrent threat to wheat in the country. Wheat rust infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



IRAQ

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a low probability of the pest being introduced into Iraq because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.



Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the wheat yellow rust disease is likely, as per the seasonal pattern.

Context: Wheat rust diseases, particularly yellow rust, are recurrent threats to wheat. It infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



JAPAN

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to occur, through possible introduction from affected countries in the region.

Context: ASF has not been reported in the country to date. However, it continues to occur in other Asian countries, from which it could be imported. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*



JORDAN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a low probability of the pest being introduced into Jordan because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.



KAZAKHSTAN

Threat category: Locusts

Threat name: Italian Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching, followed by hopper development, should start in late April. The scale of infestations is expected to be similar to that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.





KAZAKHSTAN

Threat category: Locusts 

Threat name: Migratory Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching and hopper development should start in May.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

Threat category: Locusts 

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching should occur in April and will be followed by hopper development. Attention should be given to the southern oblasts of the country.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

Threat category: Locusts 

Threat name: Italian Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching, followed by hopper development, should start in late April.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

Threat category: Locusts 

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching, hopper development and fledging will successively occur during the forecast period. The scale of infestations is expected to be similar to that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

KUWAIT

Threat category: Plant pests and diseases 

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a low probability of the pest being introduced into Kuwait because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.

KYRGYZSTAN

Threat category: Plant pests and diseases 

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Wheat yellow rust is likely to spread and cause damage.

Context: The disease is a recurrent threat to wheat in the country. Wheat rust infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Threat category: Animal and zoonotic diseases 

Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Lao People's Democratic Republic (PDR) on 20 June 2019, in Salavan Province. As of 4 March 2020, Lao PDR has reported at least 170 outbreaks in all 18 provinces of the country. *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: Plant pests and diseases 

Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is likely.

Context: The most recent race of 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 and 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 (April–June 2020): There is a low probability of the pest being introduced into Lebanon because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.

Threat category: Forest pests and diseases

Threat name: Dry cone syndrome



Likelihood of occurrence: Moderate

Forecast (April–June 2020): Dry cone syndrome will continue in pine plantations (*Pinus pinea*) due to frequent rainfall from April to June.

Context: Reduction in the yield 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: High

Forecast (April–June 2020): Western conifer seed bug is likely to display high levels of activity due to increasing temperatures from April to June. Oviposition on stone pines will start in late spring and the first generation will experience the larval stage until late June to early July.

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 (April–June 2020): African swine fever (ASF) is very likely to occur through possible introduction from affected countries in the region.

Context: ASF has not been reported in the country to date. However, it continues to occur in neighbouring countries. *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 (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: In January 2019, the first outbreaks of ASF in Mongolia were reported. Since then, a total of 11 ASF outbreaks have been confirmed in 7 out of 21 regions of the country. There is no information concerning surveillance in wild boar, although it is well known that wild boars have an extensive presence in infected areas. It is unknown whether the virus is present in the wild boar population in the country. On 27 March 2019, country authorities declared the end of the ASF epidemic in the country. *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: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time on 14 August 2019 in Myanmar. Since then, and as of 4 March 2020, a total of 6 ASF outbreaks have been reported in Shan State and Kachin State. *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: High

Forecast (April–June 2020): Spread of the disease is likely.

Context: The most recent race of 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 and 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.



MYANMAR

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a low likelihood of FAW threat during April and May. This likelihood will rise to moderate in June 2020.

Context: Fall Armyworm (FAW) was confirmed in August 2018 in Myanmar. There are two main maize-growing seasons in the country, monsoon and post-monsoon. Most of the areas are grown during the post-monsoon season, except Shan State, where growing starts from end May–early June. Therefore, there is a low likelihood of FAW threats emerging during April and May because almost no maize is growing during this period. However, there is a moderate likelihood of threats in end May–early June 2020.



NEPAL

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): There are very high chances of the pest spreading to other provinces and districts of the country, as it has been favoured by rainfall patterns and monocropping in the most infested area. It is therefore necessary to remain on high alert.

Context: The pest occurred in a low-hill district on 12 August 2019, in maize. Since then, it spread to other crops such as sorghum, rice and other cereals. A national-level task force team, including staff from the Government, FAO, the U.S. Agency for International Development (USAID), non-governmental organizations and the private sector, is working on response to the pest. Protocol development and work on early warning, monitoring and management activities are being undertaken.



Threat category: Plant pests and diseases

Threat name: Coffee disease

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Further spread of the coffee disease is likely.

Context: Coffee crops in Gandaki Province have encountered an undiagnosed disease, with symptoms of drying and wilting similar to those of the coffee wilt and rust diseases. The cause can be a complex of pathogens and needs to be studied further.



OMAN

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): Oman shares a border with Yemen, where the pest has been reported. The humid-hot and semi-arid climatic areas along the coast of the Gulf of Aden and of the Arabian Sea are a highly probable route of introduction.

Context: The border between Oman and Yemen has a continuous range of vegetation, as well as the presence of host plants. This may favour pest spread to farms in Dhofar Governorate in Oman from Al Mahrah Governorate in Yemen. The conflict in Yemen is limiting the official controls possible, including the collection of accurate data on pest monitoring. However, it is likely that pest prevalence will expand to the maximum natural range.



Threat category: Locusts

Threat name: Desert Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Breeding could cause hopper groups, bands, adult groups and small swarms to form in the north.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be 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 category: Foot-and-mouth disease (FMD)

Likelihood of occurrence: Moderate

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

Context: FMD, serotype O (topotype ME-SA/Ind-2001e) has been reported in three provinces of Pakistan in December 2019. Emergency and preventive vaccinations were carried out. These outbreaks raise concern because they were the first time that this lineage has been detected in a West Eurasian country; it has the potential for onward spread into countries such as Iran and Turkey. *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.*





PAKISTAN

Threat category: Locusts



Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April-June 2020): Spring breeding will cause hopper bands and swarms to form along the southwest coast and interior; a swarm invasion from the Islamic Republic of Iran and the Horn of Africa could occur in June, followed by summer breeding.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be 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: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: The new race of the fungus causing the disease (Tropical Race 4 – 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 a yellowing of the leaves, then causing wilting and plant death. Infected planting materials and 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: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: The disease is a recurrent threat to wheat in the country. Wheat rust infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.

PHILIPPINES (the)

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

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

Context: ASF was reported for the first time on 9 September 2019 in the Philippines. As of 4 March 2020, at least 180 ASF outbreaks have been reported in 16 out of the 81 administrative divisions in the country. *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 (April-June 2020): Spread of the disease is likely.

Context: Tropical Race 4 (TR4) of the causal fungus is present in Mindanao. It is likely to spread from the 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 and 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: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low likelihood of FAW threat during April and May. This likelihood will rise to moderate in June 2020.

Context: The Government's Crop Pest Management Division received reports from Regional Crop Protection Center 2 (RCPC 2) on a suspected incidence of Fall Armyworm (FAW) in Piat, Cagayan. FAW damages several stages of the corn, feeding on the corn from seedling stage up to maturity stage. The damages reported are the following: cuttings (chewed stems) of seedlings at ground level; defoliating of corn leaves at whorl stage through feeding; feeding and damage on the corn tassel; feeding and burrowing in the corn ear cobs, causing damage to the grains that can lead to rot.



PHILIPPINES (the)

Threat category: Aquatic diseases



Threat name: Tilapia lake virus (TiLV)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): During the forecast period, the production cycle of tilapia will be active.

Context: TiLV occurs when the water temperature is between 22°C and 32°C. It has also been observed in farms with large-sized fish and a high stocking density. TiLV is already present in the country. It was first observed in May 2017. Monitoring and active surveillance systems have been established.

QATAR

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low probability of the pest being introduced into Qatar because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.

REPUBLIC OF KOREA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

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

Context: On 17 September 2019, ASF was reported for the first time in the Republic of Korea, near the North Korean border. A total of 14 ASF events were confirmed in domestic pigs until 9 October 2019, affecting four administrative divisions in the country. As of 4 March 2020, 298 dead wild boar has found infected with ASF in two provinces of the country. *ASF is a contagious viral disease of swine, both domestic and wild, that causes high mortality. No effective treatment nor vaccine is currently available.*

SAUDI ARABIA

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April-June 2020): Saudi Arabia shares an extensive border with Yemen, where the pest has been reported. The climatic region and the presence of host plants favour pest spread to farms in Saudi Arabia.

Context: The pest has been reported in Yemen, a neighbouring country. The pest is likely to spread from Yemen to Saudi Arabia (in particular, the Jazan, Najran and Asir regions). Hot, humid and semi-arid climatic regions form a continuous range between Yemen and Saudi Arabia, with an abundance of host plants on both sides. This increases the likelihood of pest introduction.

Threat category: Locusts



Threat category: Desert Locust

Likelihood of occurrence: High

Forecast (April-June 2020): Breeding may cause hopper groups, bands, adult groups and small swarms to form in the northern interior areas of the country. This could be supplemented by additional locusts coming from Yemen.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.

SYRIAN ARAB REPUBLIC

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low probability of the pest being introduced into Syria because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.



TAJIKISTAN

Threat category: Locusts



Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching, hopper development and fledging will successively occur during the forecast period. The scale of infestations is expected to be lower than that of 2018.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

THAILAND

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to occur, through possible introduction from affected countries in the region.

Context: ASF has not been reported in the country to date. However, it continues to occur in neighbouring countries. *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: Aquatic diseases



Threat name: Tilapia lake virus (TiLV)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): During the forecast period, the production cycle of tilapia will be active. Additionally, the permissive temperature range for TiLV outbreaks will be present.

Context: TiLV occurs when the water temperature is between 22°C and 32°C; it has also been observed in farms with large-sized fish and a high stocking density. TiLV is already present in the country. Monitoring and active surveillance systems have been established.

Threat category: Plant pests and diseases



Threat name: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Further spread of the disease is likely.

Context: The most recent race of 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 and 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: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The chance of pest spread is very high, as the country has reported its presence along the border with Australia.

Context: FAW appeared in the country in early February 2020. Approval of financing for SFERA funds and training planned for mid-March is pending. Approval of SFERA request is also pending.

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Timor-Leste on 27 September 2019, with a total of 100 outbreaks in smallholder pig farms in the capital city, Dili. Additional ASF outbreaks have been reported in the districts of Baucau, Covalima, Ermera, Lautein, Liquiça, Maliana, Mantutu, Manufahi, and Viqueque. More than 1 600 pigs have died as a result of ASF spread. *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: Animal and zoonotic diseases



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

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Foot-and-mouth disease (FMD), serotype O, outbreaks are likely to spread from infected countries.

Context: FMD, serotype O, was last reported in the region in August 2019, in Israel. The last occurrence 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.*



TURKEY

Threat category: Plant pests and diseases

Threat category: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Spread of the disease is likely.

Context: Tropical Race 4 (TR4) of the causal fungus has recently been reported in the protected production areas on the southern coast of the country. Spread of the fungus from the initial areas where it was reported is likely. 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 and 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: Moderate

Forecast (April-June 2020): Wheat yellow rust is likely to spread and cause damage.

Context: Wheat rust diseases, particularly yellow rust, are recurrent threats to wheat. It infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



TURKMENISTAN

Threat category: Locusts

Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hopper development and fledging should occur in April and some adult groups may form in May. The scale of infestations is expected to be similar to that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.



UNITED ARAB EMIRATES

Threat category: Plant pests and diseases

Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): There is a low probability of the pest being introduced into the UAE because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.



UZBEKISTAN

Threat category: Plant pests and diseases

Threat name: Wheat rust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Wheat yellow rust is likely to spread and cause damage.

Context: The disease is a recurrent threat to wheat in the country. Wheat rust infects especially the leaves, reducing photosynthesis and grain weight. Excessive rains support disease development. Regular surveys and timely actions are essential.



Threat category: Locusts

Threat name: Italian Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hatching, followed by hopper development, should start in April.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.



Threat category: Locusts

Threat name: Migratory Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hatching and hopper development should start in May in the Aral Sea area, in the western part of the country.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.





UZBEKISTAN

Threat category: Locusts



Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Hatching, hopper development and fledging will successively occur during the forecast period. The scale of infestations is expected to be higher than that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

VIET NAM

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are very likely to continue to occur.

Context: ASF was reported for the first time in Viet Nam in February 2019, in domestic pigs. As of 4 March 2020, the disease continues to occur in the country. *ASF is a highly contagious viral disease of swine, both domestic and wild, which cause 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 (April–June 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, the Republic of Korea, and Taiwan, Province of China) since November 2017. The last occurrences of this strain in the country were in February 2020. *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 category: Banana fusarium wilt disease

Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease is likely

Context: The most recent race of 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 and 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: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): There is a low probability of the pest being introduced into the West Bank because no neighbouring countries have reported it. The pest has particular biological and behavioural characteristics that allow it to spread and cause damage as soon as it is introduced.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.

YEMEN

Threat category: Plant pests and diseases



Threat name: Fall armyworm (FAW)

Likelihood of occurrence: High

Forecast (April–June 2020): The pest was officially reported in Yemen in 2018, and has spread to all locations with suitable hosts and favourable climatic conditions. The pest can attack more than 100 plant species. However, it can cause significant losses particularly in maize and sorghum crops. Yemen cultivates more than 400 000 ha of sorghum every year.

Context: The pest has a wide host range, but causes particularly high damage to maize and sorghum crops. The high migratory ability of the pest allows the adult moth to fly over 100 km per night. The pest's behaviour threatens the cultivation of maize and other crops, especially for small holder farmers.

Threat category: Locusts



Threat name: Desert Locust

Likelihood of occurrence: High

Forecast (April–June 2020): Breeding will occur in coastal and interior areas, causing locusts to increase and form groups, bands and small swarms.

Context: Numerous Desert Locust (*Schistocerca gregaria*) populations are 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 may be affected by this voracious insect. Desert Locusts are potentially the most dangerous locust pests due to swarms' ability to fly quickly over long distances.



EUROPE

ALBANIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

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

Context: ASF has not been reported in the country. However, ASF was confirmed in August 2019 in Serbia and in February 2020 in Greece, 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: Moderate

Forecast (April-June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable to 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 which 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 (April-June 2020): Pupation processions occur in early spring and pupate in the soil. The emergence of the adult moth occurs from early June.

Context: The life cycle of the pine processionary moth is typically annual but may extend over two years at high altitudes. Mechanical removal of nests is in progress, to manage pest populations.

BELARUS

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 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: High

Forecast (April-June 2020): Bark beetles (mainly *Ips* spp.) may have up to three generations per year in the warmer sites of Europe. From mid-April, 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 have a significant economic impact on plantations.

BELGIUM

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

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

Context: In September 2018, dead wild boars in Luxembourg Province were found positive to ASF. As of February 2020, a total of 831 wild boars were found to be infected in Luxembourg Province alone. The most recent findings occurred in August 2019. Wild boar population density is the most important factor in the spread of the disease. The disease may become endemic only in wild boar, even in the absence of pigs. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*



BOSNIA AND HERZEGOVINA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 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 and in February 2020 in Greece, 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.*

BULGARIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 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, February 2020). *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: Moderate

Forecast (April–June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable for the vectors.

Context: The last reported outbreak of LSD in Bulgaria was in 2016. No new outbreaks were observed after these events, but the disease may spread from neighbouring affected countries. 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.*

Threat category: Animal and zoonotic diseases



Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds 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.*

CROATIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 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 and in February 2020 in Greece, 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.*

CZECHIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 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. In February 2019, Czechia was the first country in the EU to be officially declared free from ASF after it had been infected in previous years. As no outbreak has been found in Czechia since April 2018, the country received the support of 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.*

Threat category: Animal and zoonotic diseases



Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April–June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries, including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may still be observed during the forecast period. *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.*



ESTONIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 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 continued 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 (April-June 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 the disease continued to be reported until August 2019. This represented the first introduction of the disease into Western Europe of genotype 2 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.*

GERMANY

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 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 the disease continued to be reported until August 2019. This represented the first introduction of the disease into Western Europe of genotype 2 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: Animal and zoonotic diseases



Threat category: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period. *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.*

GREECE

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 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 February 2020, in domestic pigs. *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: Moderate

Forecast (April-June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable for the vectors.

Context: The last observed outbreaks of LSD in Greece were in February 2017, in Kerkyra, an Ionian island, and in August 2017, in Thessalia Region. No new outbreaks have been 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 which 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: High

Forecast (April-June 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 continues to be reported. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*



HUNGARY

Threat category: Animal and zoonotic diseases

Threat name: Avian influenza (AI)



Likelihood of occurrence: Moderate

Forecast (April–June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period. *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.*

ITALY

Threat category: Plant pests and diseases

Threat name: *Xylella fastidiosa*



Likelihood of occurrence: Moderate

Forecast (April–June 2020): Spread of the disease 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.

KOSOVO

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 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 and in February 2020 in Greece, 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: Moderate

Forecast (April–June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable for the vectors.

Context: In June 2016, LSD was first observed in a backyard farm in Pcinja District, in neighbouring Serbia. Since then, 223 outbreaks have been 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 which affects mainly cattle, causing important meat and milk production losses.*

LATVIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 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 disease continues to be reported. *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: High

Forecast (April–June 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 continued 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 (April–June 2020): African swine fever (ASF) outbreaks are likely to occur through possible virus introduction from neighbouring countries.

Context: In September 2018, two dead wild boars were found positive to ASF in Étalle (Luxembourg Province), where the disease continued to be reported until August 2019. This represented the first introduction of the disease into Western Europe of genotype 2 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.*



MONTENEGRO

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 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 and in February 2020 in Greece, 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: Moderate

Forecast (April–June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable for the vectors.

Context: The disease was first observed in April 2016. Since then, LSD has 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 which affects mainly cattle, causing important meat and milk production losses.*

NORTH MACEDONIA

Threat category: Animal and zoonotic diseases

Threat name: Lumpy skin disease (LSD)



Likelihood of occurrence: Moderate

Forecast (April–June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable 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.*

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 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 and in February 2020 in Greece, 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.*

POLAND

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 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 disease continues to be reported. *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 (April–June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period. *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.*

REPUBLIC OF MOLDOVA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: Since ASF was first introduced into the country in November 2016, the disease continues to be reported. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No vaccines are available.*

ROMANIA

Threat category: Animal and zoonotic diseases

Threat name: African swine fever (ASF)



Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) outbreaks are likely to continue to occur.

Context: Since ASF was first introduced into the country in July 2017, 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.*



ROMANIA

Threat category: Animal and zoonotic diseases



Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period. *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.*

RUSSIAN FEDERATION (the)

Threat category: Animal and zoonotic diseases



Threat category: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 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 February 2020. *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: Moderate

Forecast (April-June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable for the vectors.

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 events were reported in October 2019. *LSD is a severe disease, transmitted by vectors which 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 (April-June 2020): H5 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: H5 HPAI events may occur in the country, despite increasing temperatures, and additional outbreaks may be observed during the forecast period. *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: Italian Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hatching and hopper development should start in May. The scale of infestations is expected to be higher than that of 2019.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

Threat category: Locusts



Threat name: Moroccan Locust

Likelihood of occurrence: Moderate

Forecast (April-June 2020): Hatching should occur in May and will be followed by hopper development.

Context: Locust pests attack a wide range of cultivated plants in Caucasus and Central Asia and can cause severe damage, jeopardizing the food security and livelihoods of the rural populations. This species is one of the three locust pests present in Central Asia and in the country.

SERBIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

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

Context: ASF was first confirmed in domestic pigs, close to the capital Belgrade, in August 2019. The disease continues to be reported. *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: Moderate

Forecast (April-June 2020): LSD outbreaks are likely to occur because the weather conditions during the forecast period are favourable for the vectors.

Context: In June 2016, LSD was first observed in a backyard farm in Pcinja District. Since then, 223 outbreaks have been 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: High

Forecast (April-June 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.*

Threat category: Animal and zoonotic diseases



Threat name: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period. *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.*

UKRAINE

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 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 January 2020. *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 category: Avian influenza (AI)

Likelihood of occurrence: Moderate

Forecast (April-June 2020): H5N8 Highly pathogenic avian influenza (HPAI) outbreaks in poultry or wild birds may occur.

Context: The H5N8 Highly pathogenic avian influenza (HPAI) subtype continues to circulate in Europe. In late December 2019, a new H5N8 HPAI epizootic started in Europe. To date, the disease has affected mainly domestic poultry in eight European countries including Bulgaria, Czechia, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Despite increasing temperatures, additional outbreaks may be observed during the forecast period. *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: Bark beetles

Likelihood of occurrence: High

Forecast (April-June 2020): Bark beetles (mainly *Ips* spp.) may have up to three generations per year in the warmer sites of Europe. The flight of the first generation is likely to start in May/June. From mid-April, bark beetles start to fly and may infest weakened trees.

Context: Bark beetles cause 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 have a significant economic impact on plantations.



OCEANIA

AMERICAN SAMOA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF was reported for the first time at the end of September in Timor-Leste and in December 2019 in Indonesia. In February 2020, ASF was reported in East Nusa Tenggara Province, in Timor island, Indonesia. 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 the disease spreading towards the Pacific Islands and Australia. 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.*

AUSTRALIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must also be noted. *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: High

Forecast (April-June 2020): FAW was first detected on two islands in the Torres Strait, before reaching the mainland, where it was found in Bamaga. It is expected to continue spreading up towards the northern regions and could attack sugar cane. Georgetown is the latest location to be affected by the invasive FAW pest.

Context: Fall armyworm (FAW) was detected in pest-specific traps on the islands of Saibai and Erub in Torres Strait, Australia, in late January 2020, as reported by the IPPC Contact Point on 7 February 2020. The specimens were confirmed to be FAW by means of morphological and molecular diagnostics. There is no evidence of an established FAW population in Torres. Surveillance and trapping is under way to delimit risk of FAW spread. Regulatory measures are in place to contain the pest, including the Biosecurity Act 2015. FAW has not been detected on mainland Australia. Commercial crops in North Queensland and mainland Australia are grown a significant distance from the detection sites.

FIJI

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April-June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must also be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*



NEW CALEDONIA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must also be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

PAPUA NEW GUINEA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF was never reported in the country so far, but a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high, the ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the quite weak border inspection, surveillance and control capacities in some countries in Americas has to be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

SAMOA

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must also be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

SOLOMON ISLANDS

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must also be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*

VANUATU

Threat category: Animal and zoonotic diseases



Threat name: African swine fever (ASF)

Likelihood of occurrence: High

Forecast (April–June 2020): African swine fever (ASF) is very likely to spread from affected countries.

Context: ASF has not been reported in the country to date. However, a risk of ASF spread in Oceania from Asian or European infected countries cannot be excluded. The level of risk is from moderate to high. The ASF virus is extremely resistant to broad ranges of temperatures and pH (acidic or basic), and it survives in the environment and pork products (and can remain viable in raw pork or cured meats for several months). In addition to the progressive spread of the virus in Asia, the rather weak border inspection, surveillance and control capacities in some countries in the Americas must also be noted. *ASF is a highly contagious viral disease of swine, both domestic and wild, which causes high mortality. No effective treatment nor vaccine is available.*



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 (FAO TERM).
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 (FAO TERM).
Outbreak	A recently detected pest population, including an incursion, or a sudden significant increase of an established pest population in an area (FAO TERM).
Zoonosis	Any disease or infection which is naturally transmissible from animals to humans (FAO TERM).



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.1, March 2020

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/>

