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„BIOSECURITY" - JOINT ACTION IN EMERGENCY SITUATIONS IN CASE OF THE IDENTIFICATION OF DANGEROUS AND WIDESPREAD INFECTIONS IN CARPATHIAN REGION”

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STUDY

on veterinary tasks for the control of African swine fever and avianin fluenza in the border region

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1 Introduction to infectious animal diseases emergence (African swine fever, avian influenza) globally and in Hungary (general overview, origins, spread, etc.)

1.1 African swine fever

The African swine fever is a long-known disease, first described in Kenya in 1921. For years up until the late 1950s, the disease remained confined to Africa, specifically to the areas south of the Equator. Outside Africa, the disease was introduced to Portugal in 1957 and to Spain in 1960. As the virus found its way into both ticks and wild boars in these countries, the disease remained endemic there until the mid-1990s. Subsequent introductions occurred in various European countries, such as France (1961, 1967, 1974), Italy (1967, 1983, 1997, 1998), Malta (1977), Sardinia (1987), Belgium (1985), and the Netherlands (1986). On the Western Hemisphere, the disease first emerged in Cuba (1971) and later in Brazil in 1978, the Dominican Republic, and Haiti, with a recurrence in Cuba in 1980.

The current outbreak also originated in Africa. A more virulent, genotype II virus spread from Madagascar and Zambia to Georgia in 2007. Then, the disease proliferated to various countries including Azerbaijan, Armenia, and Russia. In Russia, the virus spread among wild boars in the North Caucasus, subsequently becoming endemic.

By 2012, the outbreak extended to Ukraine and Belarus in 2013. It surfaced in Lithuania and Poland in 2014, followed by Latvia, and Estonia in 2015. Despite determined countermeasures, the disease re-emerged in the Baltic countries in subsequent years.

In June 2017, the first case of African swine fever was reported in the Czech Republic; Romania and Bulgaria in 2018 and in Slovakia by July 2019. In September 2018, African swine fever was found amongst wild boars in Belgium; presumably, the virus was introduced by boars imported by hunters from Eastern Europe. In September 2020, Germany reported the pathogen in a dead wild boar near the Polish border.

For the first time, China detected African swine fever in August 2018. Despite stringent measures, the outbreak spread soon across the country and even reached Cambodia, Laos, Vietnam, and Thailand.

Recently, a number of European countries have confirmed the disease's presence. An outbreak was identified in domestic pigs in Croatia on June 23, 2023. By August 18, 2023, Italy diagnosed the disease in kept swine.

In Hungary, the disease was fixed in a deceased wild boar in Heves County on April 21, 2018. Later, it was diagnosed in Szabolcs-Szatmár-Bereg county on May 16, 2018, also in the sample of a deceased wild boar. Thereafter, more and more ASF-positive wild boars were found in multiple counties. On October 2, 2018 the list of regions affected was expanded by Borsod-Abaúj–Zemplén county. The disease was spreading. It appeared in Nógrád on October 28, 2018, Hajdú-Bihar – April 29, 2019, Jász-Nagykun-Szolnok – August 30, 2019, Pest – September 28, 2019, Békés – December 9, 2019, Komárom-Esztergom – February 15, 2020, and Fejér – August 10, 2021.

Following the adverse trends previously described, 2023 saw a positive shift regarding areas affected by African swine fever. In Csongrád-Csanád County, all high-risk zones have been

eradicated. Significant portions of the infected regions in Békés and Jász-Nagykun-Szolnok counties were reclassified to high-risk. Alongside this, vast areas in Jász-Nagykun-Szolnok and Bács-Kiskun counties, previously deemed high-risk, transitioned to medium-risk status.

1.2 Avian influenza

Domestic poultry and various wild bird species often remain asymptomatic, but in other cases can exhibit severe symptoms such as high fever, marked debilitation, respiratory and, sometimes, neurological signs, along with diarrhoea.

This disease is prevalent worldwide. Wild birds can carry the infection, typically without showing symptoms. The disease can manifest in zoo and fancy birds as well as in domestic poultry. The virus remains persistent in Europe, and outbreaks in certain countries can lead to significant economic losses. Between September 1, 2022 and August 31, 2023, experts identified the highly pathogenic avian influenza virus in a total of 901 poultry farms, 301 institutions housing captive birds, and 19,021 wild birds across Europe.

In Hungary, the highly pathogenic avian influenza virus periodically emerges, predominantly linked to the migration periods of wild birds. During the most recent outbreak, we recorded 168 positive cases, comprising 12 primary and 156 secondary cases, affecting five counties: Bács-Kiskun, Csongrád-Csanád, Békés, Hajdú-Bihar, and Nógrád. The outbreaks affected a total of 1,873,191 birds. The majority of these were ducks of various utilizations, but the epidemic also had an impact on populations of geese, turkeys, domestic chickens, pigeons, pheasants, and partridges.

2 Epidemiological status in Szabolcs-Szatmár-Bereg county over the past 5 years concerning infectious animal diseases (African swine fever, avian influenza)

2.1 African swine fever

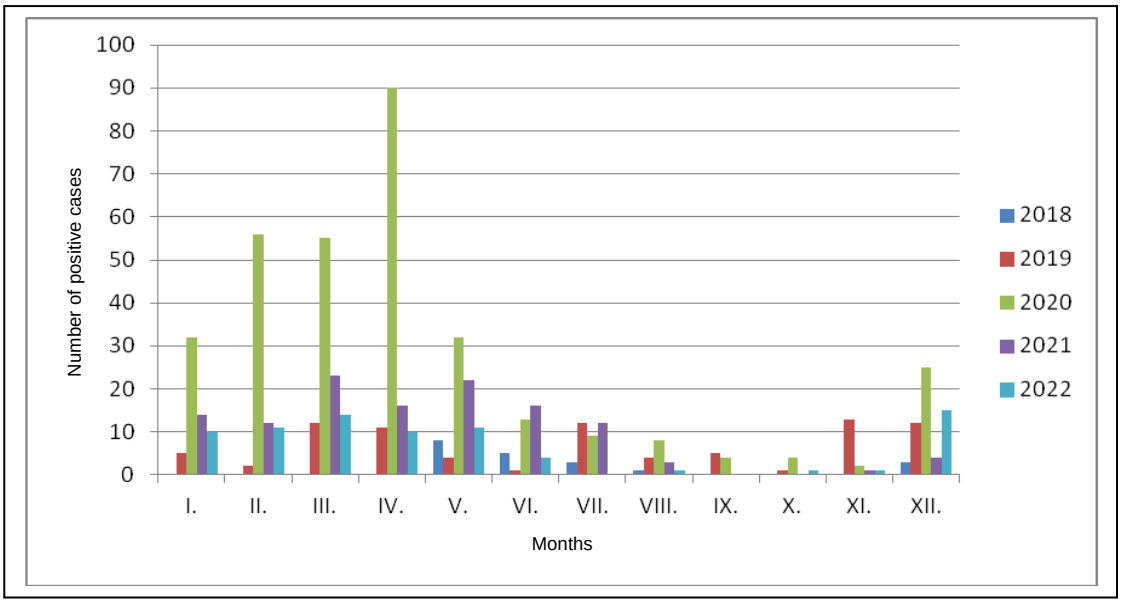
Since the wild boar incident in May 2018, African swine fever has progressively spread across Szabolcs-Szatmár-Bereg county, emerging in its vast area.

Positive cases of African swine fever in wild boars
Szabolcs-Szatmár-Bereg county
(2018-2022)

Years	Months												total
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	
2018	0	0	0	0	8	5	3	1	0	0	0	3	20
2019	5	2	12	11	4	1	12	4	5	1	13	12	82
2020	32	56	55	90	32	13	9	8	4	4	2	25	330
2021	14	12	23	16	22	16	12	3	0	0	1	4	123
2022	10	11	14	10	11	4	0	1	0	1	1	15	78
total	61	81	104	127	77	39	36	17	9	6	17	59	

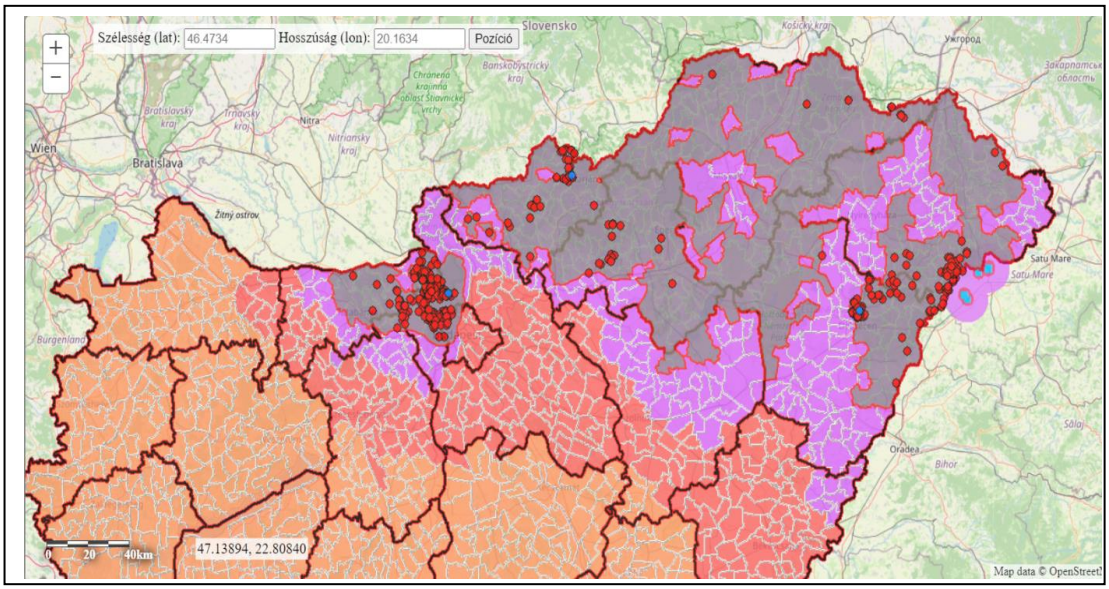
The virus remains prevalent in the wild boar population of the county at present. We are observing certain seasonal fluctuations in the number of positive cases.

Positive cases of African swine fever in wild boars
Szabolcs-Szatmár-Bereg county
(2018-2022)



Currently, a significant portion of the positive cases is confined to the southern part of the county, with sporadic single positive cases being identified in other areas of the county.

ASF cases over the past year
(interactive map, National Food Chain Safety Office)



Number of positive cases in wild boars in 2022/2023 hunting year
(Szabolcs-Szatmár-Bereg county)

	March	April	May	June	July	August	September	October	November	December	January	February
Deceased	13	4	2	0	0	1	0	0	1	2	6	5
Diagnosting culling	1	6	9	4	0	0	0	1	0	13	17	8
Symptomatic	0	0	0	0	0	0	0	0	0	0	0	0
Total	14	10	11	4	0	1	0	1	1	15	23	13

2.2 Avian influenza

The disease is diagnosed in the county from time-to-time, as like national trends, it has been occurring with increasing frequency.

In November 2021, the laboratory diagnosed the disease for the first time in a brood of domestic chickens. In the subsequent months, an egg-laying hen flock, a broiler flock, and two fattening duck flocks were affected.

The first half of 2022 saw a resurgence of the highly pathogenic avian influenza, impacting 4 large poultry flocks (3 fattening duck and 1 fattening goose). The cases required the implementation of legally mandated epidemic prevention measures, including the establishment of protection and surveillance zones. The competent district authorities coordinated the culling of the affected flocks, resulting in the slaughter and safe disposal of 321,062 birds (300,738 ducks and 20,324 geese).

Besides poultry flocks, the county also diagnosed the highly pathogenic avian influenza in wild birds, with positivity appearing in various bird species in 2022. Throughout the year, the laboratory confirmed highly pathogenic avian influenza in the carcasses of five hooded crows, five mute swans, and one snowy owl.

3 Alterations in domesticated and wild animals due to African swine fever and avian influenza

3.1 African swine fever

Pathology:

African swine fever (ASF) is caused by a DNA virus enveloped in a protective coating, belonging to the Asfivirus genus within the Asfarviridae family. ASF virus strains vary in virulence, though they cannot be differentiated into various serotypes. The virus exhibits considerable resistance; it remains infectious for at least four months in decomposing blood and flesh, 5-6 months in smoked and cured hams, and 7-8 months in bone marrow. In soil, it survives for at least 100 days in summer and 200

days in winter; in water, it persists for 70 days in summer and 120 days in winter. It loses its infectious capability within three hours under direct sunlight. The virus is destroyed at temperatures above 60°C within 30 minutes and succumbs within minutes to the effects of 5% sodium hydroxide solution.

In Europe, pigs typically contract ASF naturally through the nose and mouth, either by direct or indirect contact with infected pigs or by consuming contaminated feed. However, in regions inhabited by vectors of the pathogen (ticks of the Ornithodoros genus), vector-mediated transmission plays a critical role in maintaining and spreading the virus. ASF can also spread through indirect contact with infected materials or mechanically by biting insects. Transmission through the semen of infected wild boars is also possible. The incubation period ranges from 5 to 15 days in individual animals, though clinical symptoms may take several weeks to appear in a farm setting following virus introduction, especially in cases involving strains with weak pathogenicity.

ASF manifests in acute, sub-acute, and chronic forms, primarily depending on the virulence of the virus. Pigs that become clinically asymptomatic following infection exhibit viremia (presence of the virus in the blood) for 40-60 days, becoming carriers of the virus. ASF virus has been detected in carrier pigs even six months post-infection.

Acute Form:

The onset of high fever (above 40°C) is typically the first clinical symptom, followed by lethargy, anorexia, rapid and laboured breathing, and discharge from the nose and eyes. The pigs' movement becomes uncoordinated, and they tend to huddle together. Sows may miscarry at any stage of pregnancy. Some pigs may experience vomiting or constipation, while others may develop bloody diarrhoea. Haemorrhagic or ecchymotic areas appear on the skin, especially on the limbs and ears. The animals may fall into a coma, usually one to two days after the onset of clinical symptoms, and the mortality rate can reach 100% in a particular farm.

In acute cases, severe general disease of the blood vessels results in congestion of the skin and organs, with smaller or larger haemorrhages under the serous membranes of every organ. On the kidneys, haemorrhages are pronounced not only under the capsule but throughout the organ and in the renal pelvis. Lymph nodes, particularly those behind the stomach and at the liver hilum, appear dark red and blood-soaked. The gallbladder wall and the area around its duct are infiltrated with jelly-like material. Haemorrhages are also present in the mucosa of the gastrointestinal tract and the urinary bladder. The lungs are oedematous, with widened septa. The spleen appears dark and enlarged, with the pulp protruding on the cut surface.

The acute form of classical swine fever usually results in clinical and pathological pictures very similar to ASF. When it occurs, the haemorrhages on the skin and ears are easily noticeable, raising suspicion of acute ASF. Very few other diseases cause similar alterations.

One must also consider severe African swine fever the cases of swine erysipelas, porcine reproductive and respiratory syndrome (PRRS), coumarin poisoning, purpura haemorrhagica, postweaning multisystemic wasting syndrome (PMWS) in chosen piglets, porcine dermatitis and nephropathy syndrome (PDNS), and suspicions of salmonella or pasteurella infections, as well as any feverish enteric or respiratory symptom complexes unresponsive to antibiotic treatment.

Sub-acute Form:

The disease's sub-acute forms are more common in endemic areas. Characterized by fluctuating fever, lethargy, and pneumonia, the sub-acute infection could result in mortality due to heart failure. The changes observed in this form resemble those in the acute form but are milder. Typical changes include haemorrhages in lymph nodes, kidneys, and spleen, congestion and oedema in the lungs, and in some cases, interstitial pneumonia.

Chronic Form:

The chronic form of the disease is rare. Secondary bacterial infections are observable in this phase. As the clinical symptoms of chronic African swine fever (ASF) are not specific, one must consider numerous other diseases during differential diagnosis. Elevated body temperatures are not necessarily measurable in all animals, but fever can be detected in at least a few pigs within an infected farm. Clinical symptoms of chronic ASF may include respiratory symptoms, miscarriage, arthritis, chronic skin ulcers, or necrosis, which does not resemble the typical clinical ASF picture. The pathological changes can be mild or even absent. Enlarged lymph nodes, an enlarged spleen, Plevritis, fibrinous pericarditis, and interstitial pneumonia characterize pathology reports. Reports also exist of focal caseous necrosis and calcification in the lungs. In typical acute cases, the animals are feverish, lethargic (lying down), anorexic, and may display uncoordinated movement. They may have red or cyanotic spots on the ears and belly, haemorrhages in the skin, and pass faeces containing clotted blood streaks. If the disease progresses less rapidly, conjunctivitis, nasal discharge, vomiting, and nosebleeds can also develop. Miscarriages are common in pregnant animals.

3.2 Avian influenza

The disease can manifest in a highly varied forms, affecting the respiratory, digestive, reproductive, and nervous systems. Following a short incubation period of 1-3 days, the affected animals become lethargic, are reluctant to move, may experience diarrhoea, and can die even before the appearance of respiratory symptoms. Respiratory signs include nasal discharge, conjunctivitis, sneezing, coughing, and often sinusitis. Observations in infected animals can also include oedematous swelling of the throat and appendages, and cyanosis of the appendages. Neurological symptoms are common in ducks. A noticeable sign in laying flocks is a reduction in egg production, along with a deterioration in hatchability. A decrease in feed consumption is also observable during infection.

Symptoms:

Generally: animals appear to be lethargic, anorexic, reluctant to move, and in many cases, may die before respiratory symptoms present themselves. Respiratory symptoms: these include nasal discharge, conjunctivitis (petechial haemorrhaging may occur), sneezing, and coughing. Inflammation of the air sacs under the eye sockets (sinusitis), edematous swelling of the throat and appendages, cyanosis of the appendages, diarrhea, frequently neurological symptoms, significant reduction in egg production in flocks and laying hens, deterioration in hatchability, and lightening of brown eggshells.

Highly pathogenic avian influenza (HPAI)

Highly pathogenic avian influenza (HPAI) presents with varying symptoms across different poultry species.

Domestic Chickens (broilers, breeding pairs kept in breeding pens):

- Mortality rates can reach up to 100% within 48-96 hours after the onset of clinical symptoms; and,
- Symptoms include lethargy, reduced appetite, oedema of the head and neck, followed by neurological signs such as torticollis and ataxia.

Caged Layers:

- The disease spreads more slowly: initially, severe lethargy and subsequent death occur in just a few cages and animals.
- The building becomes infected over a period of 10-14 days.
- Soft-shelled eggs appear, followed by a cessation of egg production.
- The head appendages of the birds become oedematous and cyanotic.
- Profuse, watery diarrhoea occurs, leading to increased thirst in the affected animals.
- Respiratory and neurological symptoms may also be present.

Turkeys:

- Mortality rates can reach up to 100% within 48-72 hours.
- Symptoms include a sudden decrease in appetite, a significant reduction in water consumption, lethargy, cyanosis, and neurological signs such as trembling, incoordination, head shaking, and wing paralysis.
- The flock becomes silent ("silence in the barn").

Ducks and Domestic Geese:

- Symptoms include mortality, anorexia, neurological signs, rarely diarrhoea, and swollen sinuses.
- During the H5N8 outbreaks in 2016-2017 and 2020:
- ducks: Significant decrease in feed and water consumption, neurological signs (trembling, circling, opisthotonus), and high mortality rates.
- geese: Mild reduction in feed consumption, lethargy, depression, silence, and neurological signs.

Ostriches:

- Clinical symptoms appear only in young animals (7-9 months old).
- Symptoms include lethargy, respiratory, and neurological signs.
- Mortality rates reach 30%.

Pheasants:

- Less susceptible, with a probable long incubation period.
- During the H5N8 outbreaks in 2016-2017 and 2020: increased mortality without symptoms (water and feed consumption remained unchanged), rarely neurological signs.

Pathological signs: in the nasal passages and sinuses, one observes serous exudate, which may progress to a sero-purulent state. The mucous membrane of the upper respiratory tract and trachea appears swollen, potentially harbouring small haemorrhages, and one notes the presence of mucus in the trachea. Inflammatory areas mark the lungs. The air sac walls have thickened and appear cloudy, possibly filled with a cheesy-fibrinous material. One detects mild enteritis, small haemorrhages in the glandular stomach, and on the serous and mucous membranes. The follicles in the ovaries show signs of degeneration, while inflammation marks the ovaries and oviducts, with haemorrhages in these organs occurring frequently. Pancreatitis is present, along with haemorrhages within the organ. Conditions such as neurosis and nephritis may develop. In most cases, one can detect encephalitis and meningitis.

4 Infection prevention and action plan in case of infection detection

As is the case with many other diseases, we must place a great emphasis on prevention, when dealing with African swine fever and avian influenza. We must do everything in our power to prevent the occurrence of these diseases on commercial livestock farms. By doing so, we can avoid not only the direct losses (such as the culling of affected stock) but also the indirect losses (such as the imposition of export restrictions).

4.1 Protecting domestic pig and poultry stocks

Whether dealing with swine or poultry populations, it is imperative to employ high-level biosecurity measures to ensure their protection. Ensuring biosecure containment to prevent the spread of infectious diseases is crucial. Additionally, it is vital to apply disinfection methods using appropriate disinfectants. This proactive approach helps in safeguarding the health of the livestock and mitigating the risk of potential disease outbreaks.

4.1.1. Conditions for large-scale animal farms

For large-scale livestock facilities (defined as those housing at least 100 pigs, 2000 broilers, or 500 mature poultry), the economic role and significance are substantially greater, necessitating increased attention to their protection. Numerous current measures serve this purpose, and they are listed below.

- It is vital to have at least one high-pressure disinfecting machine, preferably operating with hot water, available on the livestock facility for cleaning and disinfection purposes.
- The facility should be fenced to prevent the intrusion of humans or stray animals.
- There must be a black-and-white changing room system, with a washroom and shower area separating the outer changing room, where street clothes are stored, from the inner changing room for work clothes.
- At the gate, the road surface should be designed to allow for cleaning and disinfecting of vehicle wheels (e.g., a wheel disinfection pool) or a suitable vehicle disinfection machine should be installed.
- There must be a facility suitable for post-mortem examinations, with walls and floors that are washable and disinfectable, and supplied with both hot and cold water and drainage.

- There should be a container storage area or room and/or an incinerator for collecting and transporting animal carcasses.
- All buildings associated with external personnel and vehicle traffic (e.g. changing rooms, animal loading areas, and carcass facilities) should be situated along the fence line.
- The floors and walls of the livestock buildings should be easily cleanable and disinfectable. All generated wastewater, manure, and manure liquids must be completely removable, with appropriate slip resistance, ventilation, and lighting ensured. The equipment should be easily operable, cleanable, and disinfectable, without posing any risk to the health or physical well-being of the animals or being hazardous.
- The facilities should be capable of protecting animals from the harmful effects of weather, when necessary.

4.1.2. Small-scale animal farms

Small-scale livestock facilities, by their nature, need to comply with significantly fewer regulations in non-epidemic situations.

- Facilities for changing clothes, washing, and personal disinfection are available.
- The arrangement of livestock buildings enables the organization of people and vehicle traffic in accordance with protection principles in case of an epidemic risk.

Specific biosecurity measures for small-scale domestic pig populations in relation to African swine fever are in place.

However, defending against African swine fever in small-scale livestock facilities demands adherence to numerous stricter regulations to enhance biosecurity, diverging from the previous few requirements.

- Every pig owner must maintain a livestock registry, including at least minimum data: the number of pigs held on any given calendar day, broken down by age groups, and data related to animal movement (deaths, home slaughter, sales, etc.).
- Records must be kept of every individual (veterinarian, inseminator, pig sector area representative, butcher, relative, acquaintance, etc.), who has come close to or may be in contact with the pigs.
- Only the animal owner or caretaker may regularly enter the yard used for housing the animals.
- Special work clothes and footwear must be used, when taking care of the animals.
- One may enter or exit from the yard (or be in proximity to the pigs) only after using hand and footwear disinfectants.
- Visitors (neighbours, hunters, etc.) may only approach the pigs in very justified cases and after donning special work clothes, footwear, or disposable protective gowns and protective footwear provided by the animal keeper, all of which must be documented.
- Any vehicle may only enter the yard of the pig farm after wheel and vehicle disinfection.
- The service veterinarian must record all veterinary treatments in the livestock registry.
- In cases, where animals are kept permanently or temporarily in a pen, it is imperative to ensure that domestic pigs are separated from wild animals by a double fence. The distance between the

fences must be at least 0.5 metres, and they must be designed to allow regular maintenance and weeding of the fenced area. Their height must exceed the shoulder height of the animals kept inside by at least 1 metre. In the case of closed housing, the integrity of the fencing around the property, suitable to prevent the intrusion of people, stray animals, or wildlife, must be continuously ensured.

- Pig farmers in the infected area must report home slaughtering to the district chief veterinarian at least 48 hours before the slaughter.

Responsible persons operating facilities dealing with pigs in I, II, and III types of restricted zones of member states affected by African swine fever ensure that facilities dealing with pigs implement the following enhanced biosecurity measures, both within and outside the mentioned zones, when allowed movement occurs:

a) the pigs kept in the facility must not come into direct or indirect contact with the followings:
   i. other pigs from different facilities, except those permitted by the responsible person for movement into the facility, and for which the competent authority has granted permission for such movement if required by the relevant regulations; and,
   ii. wild pigs;
b) implementation of proper hygiene measures, such as changing clothes and footwear upon entering and leaving pig housing areas;
c) hand washing and disinfection, as well as disinfection of footwear at the entrance to the pig housing areas;
d) avoiding all contact with pigs for at least 48 hours following completion of hunting activities involving wild pigs or any other contact with wild pigs;
e) prohibiting unauthorized persons or vehicles from entering the facility, including the pig housing areas and buildings;
f) maintaining proper records of persons and vehicles entering the pig housing facility;
g) the pig housing areas and buildings of the facility must meet the following requirements:
   i. their design must prevent the entry of any other animals capable of transmitting the African swine fever virus into the areas and buildings, and must prevent such animals from coming into contact with the pigs, their feed, and bedding. In particular, the structure and buildings of the facility must ensure that the pigs do not come into contact with wild pigs;
   ii. the areas and buildings must provide facilities for hand washing and disinfection;
   iii. when appropriate, one must ensure the possibility of cleaning and disinfecting facilities and buildings, excluding areas near the buildings designated for outdoor pig keeping, where such cleaning and disinfecting would not be feasible;
   iv. at the entrance of the pig housing facilities and buildings, there must be suitable changing facilities available for changing footwear and clothing; and,
   v. appropriate protection must be provided against insects and ticks, should the competent authority of the concerned member state require it, based on a risk assessment tailored to the specific epidemiological situation regarding African swine fever in that member state;

h) secure fencing is mandatory around the pig housing facilities as well as buildings used for storing feed and bedding materials, ensuring that the kept pigs, along with their feed and bedding, do not come into contact with unauthorized persons and, where applicable, other pigs; and,
i) there must be an effective biological security plan in place, approved by the competent authority of the concerned member state, taking into account the profile of the facility and national regulations.

4.1.3. Action plan for epidemic control

From a preventive standpoint, it is imperative that livestock keepers consistently employ adequate biosecurity measures for their premises. The legal foundation for this is established by the 41/1997. (V.28.) FM Decree on the Issuance of Animal Health Regulations (hereafter referred to as AHR). Section 2 (2) of the AHR mandates that livestock keepers on large-scale farms must formulate an epidemic prevention and control plan, which includes a list and quantity of disinfectants and equipment readily available in the farm. Hungarian regulations, however, do not provide for detailed instructions for the composition and content of the epidemic prevention and control plan.

Nevertheless, European Union legislation provides specific guidance on how this plan should be structured for pig farms. The relevant provisions of Regulation 2023/594 state:

a) an effective biological protection plan (epidemic prevention and control plan) approved by the competent authority of the concerned member state must be in place, taking into account the profile of the facility and national laws. This biological protection plan must include at least the followings:
   - designation of “clean” and “dirty” areas according to the type of farm, such as the establishment of changing rooms, showers, and dining facilities;
   - development and, where necessary, revision of logistical procedures for admitting newly arrived pigs to the facility;
   - procedures for cleaning and disinfecting facilities, transport vehicles, equipment, and staff hygiene;
   - rules for on-site staff dining and, where necessary (if required), the imposition of restrictions on pig farming for the staff;
   - targeted, regular information training sessions for staff working in the facility;
   - introduction and, where necessary, revision of logistical measures to ensure that different epidemiological units are properly isolated, and that pigs do not come into direct or indirect contact with animal by-products or other units;
   - procedures and instructions to ensure the implementation of biosecurity requirements during construction or repair work on premises or buildings; and,
   - internal controls or self-assessment to review the implementation of biosecurity measures.

In every case, it is crucial that this plan must be tailored for the farm. Consideration should be given to the farm’s unique characteristics and local conditions.

4.1.4. Disposal of animal by-products

Animal by-products such as livestock carcasses generated during the operation of animal husbandry facilities can play a significant role in the spread of pathogens. Therefore, it is imperative to ensure their proper disposal even during epidemic-free periods. During "peacetime," it is the livestock keeper's responsibility to ensure this, in accordance with the applicable legal regulations. This can be done through companies specialized in this activity. From a biosecurity standpoint, an even better solution is to perform the disposal on-site, within the animal husbandry facility, using a small-capacity incinerator that holds the necessary permits.

Among the measures implemented due to the detection of African swine fever in wild boar, it is stipulated that for small-scale pig farms, the animal health authority must take responsibility for the state-funded disposal of deceased domestic pigs. Naturally, before transportation for disposal, it is essential to perform sampling required for the investigation aiming to detect African swine fever.

4.1.5. Monitoring animal movements

Live animals themselves can play a vital role in the spread of pathogens, which can occur within a country, but with today's extensive trade, there is also potential for rapid cross-border transmission of pathogens. It is crucial that only healthy animals, free from the pathogens of infectious diseases, are selected for transportation. There are numerous regulations relating to the transport of live animals even during epidemic-free periods, all of which are mandatory. Prior to issuing the transportation documentation, the attending veterinarian is obliged to verify the identity of the animals, their fitness for transport, their health status, as well as the adequacy of the accompanying documentation and the transport vehicle. The veterinarian must also ensure that the transport conditions prescribed for each disease by direction of utilization are met.

In the case of African swine fever, there are additional requirements that the animals being transported and the farms of origin must satisfy. Live pigs can be transported out of or within the infected area, for further keeping or immediate slaughter only if the farm's epidemiological system complies with the heightened epidemiological regulations and measures. The farm must demonstrate compliance with these regulations during two official veterinary inspections per year, documented accordingly.

Pigs intended for further keeping must have been kept at the sending facility for at least 30 days prior to shipment or since birth if they are younger than 30 days. During this period, it is forbidden to bring pigs from an infected area into the facility or the epidemiological unit, where the pigs for transport are being isolated. Pigs arriving from an infected area must remain in the destination facility for the specified tracking period for African swine fever, which is 15 days.

From each epidemiological unit at the farm, samples for PCR testing must be sent weekly. These samples should be taken from the first two pigs older than 60 days, or if not available, from pigs that have died after weaning. Within 15 days prior to shipment, coagulation-inhibited blood samples must be taken for virological (PCR) testing from enough animals to detect a 10% prevalence with 95% confidence, according to the number of animals held in the facility. Half of the blood samples should come from animals kept in the same airspace as the pigs to be transported, and the other half from other epidemiological units in the facility.

Within 24 hours, prior to shipment, an official or otherwise designated veterinarian must conduct a clinical examination of the animals in the facility and those intended for movement, including temperature checks of a specified number of pigs.

The movement should only be planned and executed along a route specified by the person responsible for the animals, as recorded in the transport documents, favouring major road and rail routes. The transport vehicles must meet the minimum requirements specified for them.

4.1.6. Prohibition of feeding food waste

Decades ago, it became evident how vital is the role contaminated food waste could play in the spread of African swine fever. In several outbreaks, it has been confirmed that food waste from international passenger traffic was the source of infection. Almost always, the virus entered Europe via raw pork products (such as sausages, smoked, and cured raw meats) originating from infected countries, with the initial typically observed in pig populations fed on food leftovers from airports and ports. Food waste can also contribute to the spread of the classical swine fever virus, hence regulations have long prohibited the feeding of food waste to pigs. An additional requirement is that food waste generated from international road, rail, air, and sea passenger and freight transport must be collected and rendered harmless under official supervision. This regulation is also crucial in preventing African swine fever.

4.1.7. Veterinary care of animal stocks

From a preventative perspective, it is crucial that livestock farms and the animal populations they house remain under constant veterinary surveillance. Legal regulations (laws, decrees) mandate that farmers, in the case of large-scale livestock operations, must ensure veterinary supervision of their animals through a written contract with a providing veterinarian. This longstanding measure has expanded due to African swine fever; the requirement now applies not only to large-scale pig farms but also to small-scale operations. In infected areas, every pig farmer must enter into a written veterinary and epidemiological care contract with a servicing veterinarian.

4.1.8. Wild boar and African swine fever

Wild boars play a crucial role in the maintenance and spread of African swine fever (ASF). From this perspective, understanding the population within the territory is essential for both prevention and defence in the event of a confirmed infection. The likelihood of ASF occurrence in wild boars strongly depends on the population density. High wild boar density increases the chances of ASF occurrence, its spread rate, and persistence. Therefore, reducing the wild boar population density is crucial, both for prevention (in high-risk areas) and for defence (in infected areas). In some regions, hunting can resolve this issue. However, hunting is not permitted in infected areas, where only diagnostic culling is permissible to reduce the population.

Currently, there is no clear, evidence-based data to confirm that there is a population density at which ASF infection, once introduced to an area, will not establish itself or spread further in the wild boar population. However, the data in several cases recommend achieving and maintaining a density of 0.5 wild boars/km^2 for wild boar populations.

Another crucial element in the strategy for preventing and eradicating ASF in wild boars is the organised search for deceased wild boars. Experience shows that ASF virus is detected in a large portion (70-80%) of the found carcasses. The virus can persist in the carcasses for a long time, playing an important role in maintaining and spreading the infection. Therefore, it is vital to find and neutralise wild boar carcasses in hunting areas as soon as possible. To this end, those authorised to hunt must search for deceased wild boars within the hunting territory. If they find a dead wild boar during the search, they must report it to the veterinary authorities promptly.

4.1.9. Preventing wild boar-domestic pig interaction

The wild boar population in the infected area poses a threat to domestic pig stocks. It is crucial to prevent contact between the two populations, which can be direct or indirect.

Double Fencing

One of the most effective ways to prevent direct contact is to ensure that domestic pig farms are properly fenced to reliably prevent any interaction between wild boars and domestic pigs. Current Hungarian regulations stipulate that this fencing must be double-layered.

Prohibition of Green Feeding

Wild boars in the area can contaminate the local vegetation through their secretions. If someone collects these plants and directly uses them to feed domestic pigs, it could become a source of infection. Therefore, it is prohibited to feed domestic pigs with fresh greens in infected areas. To prevent the spread of infection, before using mown grass or grain directly from the field for pig feed, one must treat it to effectively neutralise the ASF virus or store it for 30 days in a place inaccessible to wild boars.

Bedding Material and Feeding

Harvesting crops in the area can also yield straw, which can be utilised in pig stocks. Similar to greens, these materials can become sources of infection if contaminated with secretions from infected animals. Therefore, before using straw directly from the field for pig bedding in infected areas, it must be treated to effectively neutralise the ASF virus or stored for 90 days in a location inaccessible to wild boars.

Hunting

Hunters can also play a role in spreading the disease. If they do not adhere to hunting hygiene standards, they may contribute to the spread of the pathogen through contact with the secretions of possibly infected wild boars. The blood of an infected animal contains the virus in high quantities, so one must pay attention to packaging the animal's body to prevent any leakage during transport. Even greater care is required for hunters, who might have domestic pigs at home. They should not use the same clothing and footwear for pig care that they wore during hunting.

4.1.10. Wild birds

Just as wild boars can play a significant role in the spread of African swine fever, we must highlight the role of wild birds in the transmission of avian influenza. Generally, as described previously, wild birds can be asymptomatic carriers of the virus and may transmit the infection, when they come into

contact with farmed poultry. While the aim in the case of African swine fever includes preventing contact between wild boars and domestic pigs, in the case of avian influenza, we need to eliminate both direct and indirect contact with wild birds. This requires particular attention during the migration periods of migratory birds. We must keep poultry flocks in such a way as to prevent wild birds from gaining access to them, and also to block any indirect contact. Store feed in a closed, covered area, ensuring that no animals of different species can access the feed. For bedding storage, create a solution that avoids contact with wild birds, preferably storing it in a covered, fenced area, or covering it with foil.

4.1.11. All-in/all-out technology

In every case, the objective is to minimise personnel and vehicle traffic to and from the site as much as possible. Adopting the 'all in, all out' approach during the operation of poultry farms can assist in achieving this goal. This involves stocking the properly cleaned and disinfected farm simultaneously (or within a short period) with animals of the same age. A significant risk arises, when a poultry farm houses flocks of different ages, necessitating the related rearing operations (stocking, potentially moving, packing related to shipping, manure removal, cleaning, disinfection) to be carried out at different times.

4.1.12. Early disease detection

Understanding the prevalence of susceptible wildlife on the territory is crucial for both African swine fever and avian influenza. This can be ensured through the implementation and operation of monitoring programs.

African Swine Fever

Early detection of African swine fever (ASF) is paramount for curbing the spread of the disease and protecting domestic pig populations. Without a well-functioning surveillance system, early detection is inconceivable. We can divide the surveillance system into two professional categories: passive surveillance, based on the examination of individuals showing signs of the disease, and active (targeted) surveillance, based on the planned examination of healthy animals. In the case of ASF, the majority of infected individuals die, making active (targeted) surveillance much less effective than in cases of classical swine fever. Hence, the key to early detection of ASF lies in passive surveillance. However, the classic understanding of passive surveillance, which relies solely on the examination of suspicious animals, is insufficient. To achieve proper efficacy, we must strengthen passive surveillance by also examining individuals, where suspicion is not confirmed but whose clinical symptoms or pathological changes may be associated with the presence of ASF. In domestic pigs, if suspicion of ASF is ruled out, but the pig has suddenly died without prior symptoms, or its fever above 40°C does not subside after three days of treatment, or if the febrile animal dies despite treatment, the veterinarian must send samples from such individuals for laboratory examination within the framework of confirmed ASF passive surveillance. Additionally, a certain number of dead pigs must be sent from farms in medium-risk, high-risk, and infected areas, including individuals where ASF suspicion is not confirmed and which have not died suddenly without prior symptoms.

At slaughterhouses, all animals from the infected areas (type II, restricted zone) that die during transportation or at the facility must undergo post-mortem examination, and samples must be sent for laboratory examination as part of passive surveillance. For pigs arriving from disease-free (medium-risk zone) and high-risk (type I, restricted zone) areas, the decision on whether to send samples for the mentioned post-mortem examination of dead pigs and clinical examination reports of living pigs in the affected consignment rests with the veterinary authority supervising the slaughterhouse. If suspicion of African swine fever can be unequivocally ruled out, sending samples is not necessary.

For wild boars, confirmed passive surveillance primarily involves examining every found carcass. Additionally, in medium-risk, high-risk, and infected areas, organized active searching for dead wild boars is mandatory. The stringency of the relevant rules increases in line with the risk.

Avian influenza

As part of the national avian influenza monitoring program, a specified number of wild bird carcasses or samples from them [cloacal or tracheal swabs, possibly tissue samples (brain, heart, lungs, trachea, kidneys, and intestines)] must be sent for laboratory examination to detect avian influenza. Samples can also be taken from moribund birds. For Szabolcs-Szatmár-Bereg county, this number is 59 for the year 2023.

Apart from wild birds, samples must also be taken from a certain number of individuals in farmed poultry flocks as part of the monitoring program. The aim of the active surveillance program is the early detection of the disease in poultry, detection of HPAI in species showing fewer symptoms, and detection of the circulation of low pathogenic viruses in areas with high poultry density. When selecting farms for sampling, consider the risk factors listed in sections 5 and 6 of Annex II of *Commission Delegated Regulation (EU) 2020/689*:

a) previous and current epidemiological situation and temporal trend of the disease in both poultry and wild birds;
b) proximity of facilities to water bodies and other sites, where migratory birds, especially waterfowl, can gather and rest during their migration in and across the Union;
c) periods of more intense arrival and migration of wild birds belonging to the target species in the Union;
d) structure of poultry farming, including the wider sector involved in different farming systems;
e) geographical location of facilities in areas with high poultry density;
f) biosecurity practices applied at the facilities;
g) type and frequency of movements of poultry, poultry products, and vehicles transporting poultry, as well as the structure of trade; and,
h) risk assessments and scientific advice relating to the relevance of spread of HPAI viruses by migratory birds.

At the facility level, the following risk factors should be considered:

a) species kept;
b) breeding cycle and duration;
c) presence of multiple poultry species;
d) presence of mixed-age poultry populations;

e) presence of long-lived poultry;
f) application of the all-in-all-out principle;
g) ength of the waiting period between batches; and,
h) biosecurity practices and housing conditions.

Ramsar sites are considered high-risk areas for avian influenza, while a 10 km belt around Ramsar sites is considered medium-risk. Where possible, 50% of the farms should be chosen for sampling from these areas.

4.1.13. Vaccination

Regarding African Swine Fever, there is currently no specific preventative or mitigative method (vaccine) available. At present, the only feasible approach to defence involves preventing the introduction of the disease, as well as promptly identifying and swiftly eradicating the disease focus in the event of an outbreak. This involves culling all infected and suspected animals, followed by their safe disposal. Numerous trials aimed at developing an effective vaccine are underway globally, but to date, production of a fully satisfactory vaccine has not occurred.

In the case of avian influenza, Commission Delegated Regulation (EU) 2023/361 of 28 November 2022 supplements Regulation (EU) 2016/429 of the European Parliament and of the Council with regard to the rules applicable to the use of certain veterinary medicinal products for the prevention of listed diseases and for the control of infections with those diseases. This allows Member States to vaccinate against highly pathogenic avian influenza for prevention and disease control purposes. The decision to use vaccination lies within the competence of the Member States. The aforementioned legislation details the supervision of vaccination and vaccinated flocks. Detailed rules for the preventive vaccination of zoo animals can be found in Annex 9 of Regulation 143/2007 FVM.

4.1.14. Bearing costs, compensation

For the prevention and swift eradication of the disease, it is crucial that the state plays a proper role in bearing the emerging costs. State involvement can manifest in various areas, and this applies to examinations carried out in the context of prevention and eradication. The state should bear the costs of various diagnostic examinations.

The main areas of expenditures include:

- wages and material costs arising out of operations beyond normal functioning due to the outbreak of the disease;
- costs of purchased equipment and consumables;
- costs of culling, disposal, and disinfection;
- state compensation costs paid for the deceased and culled animals, as well as destroyed objects and equipment;
- costs of land, vehicles, buildings, equipment, materials, and supplies used;
- costs related to obliging legal entities and natural persons to actively participate; and,
- public work execution costs.

A critical factor in implementing various epidemiological measures is ensuring that the affected livestock keeper is entitled to compensation in connection with the measures taken (e.g. culling of animals).

4.2 Identifying suspected disease, measures

Upon reporting suspicion of the disease, it is imperative for the authorities to conduct promply a veterinary inspection. The official veterinarian must conduct an examination on the affected premises while strictly adhering to biosecurity measures. Depending on the condition of the animals involved, this could entail:

- a post-mortem examination in the case of a deceased animal; and,
- a clinical examination for live animals.

During the examination, the official veterinarian must compile an inventory of pigs of various age groups present in the premises. They need to create a rough plan of the pig barns in the premises, indicating the number of animals of different age groups in each building, with the aim of selecting pigs for clinical examinations. During the clinical examination, it is necessary to measure the body temperature, and the examination should focus on the following pigs or groups of pigs:

- pigs, which are sick or having no appetite;
- pigs recently introduced from a source suspected of infection;
- pigs that have been visited by external visitors, who may have recently come into contact with African swine fever-infected or suspected pigs;
- contact pigs; and,
- pigs that have recently recovered from the disease.

It is advisable to begin the examination of the herd in those parts of the farm where, according to the livestock keeper or their representative, the pigs are healthy, leaving the suspected pigs until last.

4.2.1 Pathological examination

Upon completing the clinical examinations, the veterinary officer must carefully inspect the deceased pigs on the site and document all abnormalities experienced.

Specific pathological symptoms are as follows:

- Bloody fluid in the thoracic and abdominal cavities;
- Enlarged, dark spleen;
- Haemorrhagic lymph nodes; and,
- Haemorrhages on kidneys, peritoneum, mucous membranes of the stomach, intestines, and bladder, as well as on the heart and pleura.

The following cases should be considered as substantiated suspicion of African swine fever:

If in the herd, several pigs have a fever exceeding 40 °C that persists beyond three days of antibiotic treatment, and:

- there are lethargic, with appetite loss, and/or feverish individuals in multiple age groups of the herd; or,

- at least one feverish individual exhibits skin haemorrhages and/or cyanotic skin changes; or,
- at least one feverish individual produces bloody faeces; or,
- the presence of other epidemiological circumstances cannot be excluded.

A deceased pig, whose autopsy reveals at least one of the following pathological changes, should raise significant concern:

a) an enlarged and dark spleen;

b) haemorrhages:
- in the skin;
- under the mucous membranes of the stomach and/or intestines;
- under the pleura and/or pericardium;
- on the mucous membrane of the bladder;
- in the lymph nodes; and,
- under the capsule of the spleen.

c) serous-haemorrhagic free fluid in the thoracic and/or abdominal cavities and/or in the pericardium; and,
d) edema of the gallbladder wall with ulcer formation.

If the autopsy examination of a deceased individual or individuals in the herd does not reveal pathological changes indicative of African Swine Fever (ASF), but:
- deaths have occurred across multiple age groups in the herd; or,
- the herd consists of only one age group and multiple individuals have died within 24 hours; or,
- several pigs have a fever exceeding 40 °C that persists beyond three days of antibiotic treatment; or,
- the presence of other epidemiological circumstances cannot be ruled out.

4.2.2 Sampling

In the event of suspected disease, one of the most important steps is to promptly collect samples from symptomatic live or deceased animals.

Sampling for Virological Examination

For the detection of the ASF virus (antigen, genome), the most suitable samples are from the tonsils of deceased or humanely euthanized pigs, at least one intestinal valve and one other (e.g., retropharyngeal, parotid, submandibular) lymph node, as well as the spleen and kidneys. For the spleen and kidneys, a 10 g sample is required, while for other organs, pieces the size of a sugar cube are sufficient. In cases of self-digested carcasses, a whole long bone or sternum should be sent to the laboratory.

Upon authority instruction, coagulation-inhibited blood (e.g., in an EDTA tube) and/or blood clot samples must be collected for virological examination from pigs showing signs of fever or other symptoms of the disease.

Vectors: if vectors are suspected of playing a transmitting role, samples from them should also be sent to the laboratory for virological examination.

One must take tissue samples adhering to aseptic principles without any contact with disinfectants, then place it in a clean container and label for identification. From one animal, the sample should be placed in a single collection container (e.g., a SARSTEDT tonsil collection cup). The samples should be stored at +4°C and sent to the laboratory at this temperature.

In the case of suspected avian influenza, one should sent at least 5 sick/deceased birds (and/or at least 20 tracheal/oropharyngeal swab samples and 20 cloacal swab samples) per age group for examination.

The accompanying documentation for the samples must include the epidemiological situation and details of the animals, which the samples were taken from, including clinical and pathological symptoms. The official veterinarian should retain one copy of the enclosed document to attach it to other files and records of the case, and another copy should be sent to the Local Disease Control Centre.

Sampling for serological examination

In order to confirm the diagnosis or to exclude the infection by African swine fever, it may be necessary to perform serological tests. For this purpose, blood should be drawn from pigs suspected of having the disease or those housed with suspected animals in the period between 8-21 days following the presumed infection.

For serological examination, it is essential to send a blood sample without anticoagulant to the laboratory. The number of samples taken for serological tests should be sufficient to detect a 10% seroprevalence with 95% confidence.

Samples should be collected according to the same regulation in the following cases:

- if pigs are culled as a preventive measure in farms suspected of infection;
- prior to the authorization of transport, slaughter, or culling of pigs from farms within the protection or surveillance zones;
- during control examinations following restocking; and,
- before lifting restrictions in farms located within the protection and surveillance zones.

Serological examinations may also be conducted in cases of avian influenza. For such examinations, a minimum of 20 blood samples should be taken from visibly sick or recovered birds.

The accompanying documentation for the samples must include the epidemiological situation and details of the animals, which the samples were taken from, including clinical and pathological symptoms. The official veterinarian should retain one copy of the enclosed document to attach it to other files and records of the case, and another copy should be sent to the Local Disease Control Centre.

Sending samples

Whether for virological or serological examination, it is essential to ensure proper packaging of the samples in every instance.

Blood and tissue samples should be sent to the competent laboratory via courier service, using the fastest available method. The examining laboratory must be notified in advance. During transportation, the samples should be kept in a refrigerated package; freezing is prohibited.

It is crucial that the accompanying documentation sent to the laboratory with the samples includes information about the recent history of the herd, the epidemiological situation, including the potential source of the infection, and the time of introduction. This information is vital for the laboratory to contextualize the samples and interpret the test results accurately.

4.2.3 Observational quarantine following the suspicion confirmation

Upon confirmation of suspicion, an observational quarantine must be imposed on the farm, encompassing the measures mentioned bellow.

a. All pigs on the farm by age groups must be recorded, the records kept up to date, including births and deaths during the suspected infection period, noting the number of sick, deceased, or presumably infected pigs in each age group;
b. The veterinary officer must check this record during each visit.
c. All pigs should be kept within their housing on the farm or isolated within the farm in an area, where those suspected of infection can be segregated.
d. No pigs may be brought into or removed from the farm. Additionally, the district office may extend this prohibition on animal movements to other species, if necessary.
e. No pork, pork products, semen, ova, embryos, feed, equipment, materials, pig carcasses, or waste potentially capable of spreading African swine fever can be removed from the farm or enter commercial circulation without permission from the veterinary officer.
f. Movement of persons and vehicles within the farm is permitted only with written consent from the veterinary officer
g. Disinfection must be performed at the entrances and exits of the farm and pig barns, and everyone entering or leaving the barns must comply with the authority's regulations to prevent the spread of the ASF virus.
h. Thoroughly disinfect all transport vehicles before leaving the farm, and employees may leave the farm only with permission from the veterinary officer, after undergoing disinfection and changing clothes.
i. An epidemiological investigation should be conducted.

Warning signs must be placed at the entrance of the farm to alert visitors about the imposed restrictions.

In the case of suspected avian influenza, identical measures should be taken, as listed above.

Epidemiological investigation

Upon establishing suspicion of an outbreak, a preliminary epidemiological investigation must be conducted. This involves reviewing movements into and out of the farm (live animals, materials, vehicles, personnel) to identify the potential origin of the disease and determine possible directions for its spread.

4.3 Disease confirmation and measures

When disease appear on a livestock farm despite the implementation of biosecurity measures, swift and effective actions are required as outlined in national regulations.

If an outbreak of an A Category disease occurs in a facility, food industry company, entity dealing with animal by-products, or any other location – including transport vehicles – the competent authority must establish immediately a restricted zone around the infected facility or site, comprising:

a. a protection zone designated based on a minimum radius specified for the particular disease of Category A, measured from the outbreak site;

b. a surveillance zone designated based on a minimum radius specified for the particular Category A disease, measured from the outbreak site; and,

c. If necessary, additional restricted zones around or adjacent to the protection and surveillance zones, as determined by the criteria set out in Article 64(1) of Regulation (EU) 2016/429, where the competent authority applies the same measures as prescribed for the surveillance zone by the relevant legislative section.

Category A disease is a listed disease, which is not generally spread within the EU territory, and for which immediate eradication measures must be taken according to Article 9 (paragraph 19 point a) of Regulation (EU) 2016/429.

For both diseases, the standard minimum radius for the zones is 3 km for a protection zone and 10 km for a surveillance zone.

4.3.1 Protection Zone Measures

The competent authority must promptly order the execution of the following measures in facilities within the protection zone, where animals of listed species are kept, but where the presence of a Category A disease has not been confirmed, for the purposes of the followings:

a. segregating animals of listed species from wild animals and those of non-listed species;

b. implementing additional surveillance to determine whether the Category A disease has spread to the farm, including increased morbidity or mortality, or significant decreases in production data; immediate notification of the competent authority about such increases and decreases;

c. where applicable, employing appropriate measures against insects, rodents, and other vectors of the disease within and around the farm;

d. using suitable disinfection tools at the entrances and exits of the farm;

e. implementing appropriate biosecurity measures on all persons, who have come into contact with animals of the listed species, entered or left the farm, as well as on transport vehicles, to completely eliminate the risk of spreading the specific Category A disease;

f. keeping records of all persons visiting the farm and securing these records up-to-date to promote disease surveillance and protection, and making these records available to the competent authority upon request;

g. proper disposal of the entire bodies or parts thereof of deceased or culled animals of the listed species, in accordance with the national regulations.

In facilities within the protection zone housing susceptible animals, the competent authority must arrange immediately for official veterinary visits. These visits aim to check the implementation of ordered measures, conduct clinical examinations of animals, and, if necessary, collect samples from the animals for laboratory examination to confirm or rule out the presence of the disease.

Further, the competent authority must prohibit activities related to animals of listed species and their products and other materials, including their movement within, into, and out of the protection zone.
This encompasses the followings:

- movement of domestic animals of listed species from facilities within the restricted zone;
- movement of domestic animals of listed species into facilities within the restricted zone;
- reintroduction of wild animals of listed species;
- transport of domestic animals of listed species to fairs, markets, shows, or other events, including gathering and dispersal of these species;
- movement of collected sperm, ova, and embryos from domestic animals of listed species within facilities in the restricted zone;
- collection of sperm, ova, and embryos from domestic animals of listed species;
- mobile artificial insemination of domestic animals of listed species;
- mobile natural mating services for domestic animals of listed species;
- movement of fresh meat – excluding offal – from domestic and wild animals of listed species from slaughterhouses or game processing facilities within the restricted zone;
- movement of offal from domestic and wild animals of listed species from slaughterhouses or game processing establishments within the restricted zone;
- movement of meat products produced from fresh meat of domestic animals of listed species from establishments within the restricted zone; and,
- movement of animal by-products from domestic animals of listed species from establishments within the restricted zone, excluding the entire bodies or parts of deceased animals.

The African swine fever contingency plan mandates the implementation of numerous measures within the protection zone.

In the protection zone, the actions mentioned bellow must be taken.

- Immediate inventory of all pig farms must be carried out.
- Within seven days, a veterinary officer must visit each pig farm to conduct clinical examinations of the pigs and verify the livestock records.
- It is prohibited to drive pigs on public and private roads on foot or transport them.
- Pigs may be transported without prior permission on designated public roads and railways specified by the National Disease Control Centre, provided they do not stop or unload in the quarantine area.
- Without undergoing cleaning and disinfection as determined by the Local Disease Control Centre and inspected by a veterinary officer vehicles and equipment used for transporting pigs, other animals, or materials within the protection zone must not leave:
    - the farm within the protection zone;
    - the protection zone itself; and,
    - the slaughterhouse.
- No animals of other species may be brought onto or leave pig farms within the protection zone without permission from the district chief veterinarian.
- Any sickness or death of pigs within the protection zone must be reported to the district chief veterinarian for potential investigation of ASF presence.
- No pig may leave its holding place within the protection zone until at least 40 days have passed following the preliminary cleaning and disinfection of the infected farm (and insect control if necessary).
- Sperm, ova, or embryos of pigs cannot leave farms within the protection zone.
- Every person entering or leaving pig farms must comply with appropriate epidemiological (biosecurity) measures necessary to reduce the risk of spreading African swine fever.
- Permission for the removal of pigs from their holding place can be granted only 40 days after the preliminary cleaning and disinfection of the infected farm.

In cases of confirmed avian influenza, similar measures are prescribed, taking into account species-specific considerations (such as measures related to eggs).

4.3.2 Measures for the Surveillance Zone

The procedures established for the protection zone must be applied in all facilities within the surveillance zone that house animals belonging to listed species. This includes the implementation of various restrictions on movements.

In addition, veterinary officers must visit the designated facilities within the surveillance zone.

Measures on Farms Affected by Disease

On any farm, where the disease has been confirmed, the affected livestock population must be culled without any delay. The animal health authorities are responsible for the safe disposal of the resultant animal by-products. The primary method of disposal should be at an authorised facility for the specific category of animal by-product. Materials and objects that could potentially spread the disease must be disposed if they cannot be disinfected. Required preliminary disinfection processes at the time of disease confirmation should be followed, with cleaning after the disposal of the affected livestock, and then concluding with final disinfection.

4.3.3 Identifying African swine fever in wild boar

Identifying African swine fever (ASF) in wild boar necessitates distinct actions from those previously described. Upon confirming ASF in wild boar (wild porcines), it's imperative to establish an 'infected area' - a zone, where movement and transportation of both domestic and wild animals may be restricted and additional epidemiological or biosecurity measures implemented to prevent the spread of this A-listed disease.

According to Commission Regulation 2020/687 in order to prevent further spread of the disease, an infected zone is determined based on the followings:

a. disease description;
b. estimated population of wild animals belonging to listed species;
c. risk factors contributing to the spread of the disease, especially considering the risk of introducing the disease into facilities holding animals of listed species;
d. sampling results; and,
e. other relevant factors.

For wild animals diagnosed with ASF, regardless of whether found dead or hunted, the competent authorities must ensure the followings:

a) The disposal or processing of the entire carcass or its parts is in compliance with Regulation (EC) No 1069/2009;

b) If feasible, all materials, which were in contact with the carcass or derived by-products, and thus are likely to be contaminated, are either cleaned and disinfected or disposed of under veterinary supervision.

Once ASF is confirmed in wild boar, the county chief veterinarians are required to place all pig farms within the designated infected area under observation quarantine and take actions described below.

- Register the pig population of each farm by age groups and ensure every farm in the area is listed in the central database.
- Farmers must keep their livestock records up to date, ready for inspection by veterinary officers.
- All pigs on the farms must isolated to prevent any contact with wild boars.
- Steps must be taken to prevent wild boar from accessing substances like feed or bedding, which may later come into contact with farm pigs.
- No pig can enter or leave the farm premises unless explicitly permitted by the district chief veterinarian following guidelines from the National Chief Veterinary Officer.
- Buildings used for pig housing, as well as the farm's entry and exit points, must be disinfected.
- Consistent enforcement of regulations for examining all live or deceased pigs showing ASF-like symptoms.
- Strictly enforce the prohibition against feeding food waste or other animal-derived food waste to pigs.
- Prohibit bringing any part of hunted or found dead wild boar onto the farm.

- Enforce appropriate biosecurity measures for individuals, who have been in contact with wild boar, potentially restricting or forbidding their entry to pig farms or buildings.
- Mandate disinfection and a change of clothing for everyone entering or leaving the farm or animal housing buildings.
- Forbid the commercial distribution of pigs, their semen, embryos, or ova from the area.
- Implement any additional supplementary measures as necessary.

5 Tasks of Professional Institutions and Stakeholders in the Prevention and Eradication of Epidemics

Effective prevention and eradication of diseases can only be achieved through close collaboration among all stakeholders. If everyone fulfils their respective roles, successful defence against the spread of diseases is possible.

Duties of the Veterinary Authority

are as follows:

- to develop the legal framework, contingency plans, guidelines, and informational materials necessary for effective defence;
- to conduct scheduled inspections of animal keepers and other participants in the food chain, enforce compliance with regulations, and apply sanctions if necessary;
- to organize and manage programmes for disease prevention and detection;
- to prescribe and execute epidemiological measures related to disease prevention and eradication;
- to assign and implement epidemiological investigations;
- to monitor compliance with measures assigned;
- to coordinate the eradication of affected livestock in the event of disease confirmation;
- to provide necessary materials and equipment for executing epidemiological measures;
- to administer state compensation determined for affected parties;
- to establish and update databases and registries essential for disease prevention and eradication;
- to fulfil reporting and data provision obligations (nationally, internationally, and within the European Union);
- to organize continuing education and simulation exercises at national and local levels, and to provide information to relevant parties;
- to inform animal keepers and the public about key information related to disease prevention and eradication;
- to participate in the work of the National Expert Group; and,
- to maintain contact with partner authorities.

Duties of veterinarians

are as follows:

- to provide animal keepers with information on disease prevention;
- to monitor continuously the health of animals under care;
- to perform necessary clinical and pathological examinations upon notification of animal illness or death; and,
- to notify immediately the veterinary authority in case of suspected disease.

Duties of animal keepers

are as follows:

- to apply biosecurity measures rigorously and adhere to directives for disease prevention;
- to fulfil reporting obligations to aid in disease prevention and early detection;
- to comply with directives from food chain supervision authorities regarding examination, treatment, vaccination, transportation, and slaughtering or culling of animals;
- to adhere to and ensure compliance with epidemiological measures;
- to enhance workers' knowledge about the disease and organize regular training sessions; and,
- to collaborate in the rapid eradication of the disease and provide auxiliary personnel as needed.

Duties of hunting rights holders

are as follows:

- to comply with current laws and regulations;
- to develop annual and multi-year plans to achieve the prescribed wild boar population density; and,
- to participate in training sessions.

Duties of hunting advocacy organizations

are as follows:

- to participate in executing tasks outlined in the eradication plan;
- to maintain communication with the veterinary authority, favouring continuous collaboration between hunters, hunting rights holders, and veterinary authorities;
- to participate in the work of the National Expert Group; and,
- to inform hunting rights holders.

List of laws, regulations and directives

REGULATION (EU) 2016/429 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (March 9, 2016) on transmissible animal diseases and amending and repealing certain acts in the area of animal health ("Animal Health Law").

COMMISSION DELEGATED REGULATION (EU) 2020/687 (December 17, 2019), supplementing Regulation (EU) 2016/429 of the European Parliament and of the Council with regard to rules for the prevention and control of certain listed diseases.

COMMISSION DELEGATED REGULATION (EU) 2020/689 on the supervision, eradication programs, and disease-free status for certain listed and emerging diseases, supplementing Regulation (EU) 2016/429 of the European Parliament and of the Council.

COMMISSION IMPLEMENTING REGULATION (EU) 2023/594 (March 16, 2023) on the special control measures for African swine fever, repealing Implementing Regulation (EU) 2021/605.

COMMISSION DELEGATED REGULATION (EU) 2023/361 (November 28, 2022), supplementing Regulation (EU) 2016/429 of the European Parliament and of the Council concerning the use of certain veterinary medicinal products for the prevention and control of certain listed diseases.

COMMISSION IMPLEMENTING REGULATION (EU) 2018/1882 (December 3, 2018) on the application of certain disease prevention and control rules to categories of listed diseases, and establishing a list of species and groups of species posing a significant risk for the spread of these diseases.

COUNCIL DIRECTIVE 2002/60/EC (JUNE 27, 2002) establishing specific provisions for the control of African Swine Fever and amending Directive 92/119/EEC with regard to Teschen disease and African swine fever.

Act XLVI of 2008 on the Food Chain and its Supervisory Authority.

Decree 41/1997 (V. 28.) FM on the Issuance of the Animal Health Regulation.

Decree 113/2008 (VIII.30.) FVM on the Procedure for Reporting Animal Diseases.

Decree 74/2013 (VIII. 30.) VM on Certain Veterinary Measures and Related State Compensation.

Decree 75/2002 (VIII. 16.) FVM on the Control of Classical Swine Fever.

Decree 98/2003 (VIII.22.) FVM (hereinafter: ASP Decree) on the Control of African Swine Fever.

Decree 143/2007 (XII. 4.) FVM on the Detailed Rules for the Control of Avian Influenza (hereinafter: Avian Influenza Decree).

Resolution No. 2/2021 of the Chief Veterinary Officer.

Resolution No. 3/2017 of the Chief Veterinary Officer.

National Action Plan for the Regulation of the Wild Boar Population, in connection with the prevention, control, and eradication of African swine fever.