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WOAH Standards and Recommendations on Bluetongue: Methods of Control and Prevention, Distribution Trends. Current Epidemiological Situation on Foot-and-Mouth Disease in Europe

WEBINAR

Experience of Slovakia with outbreak of FMD

30th June 2025

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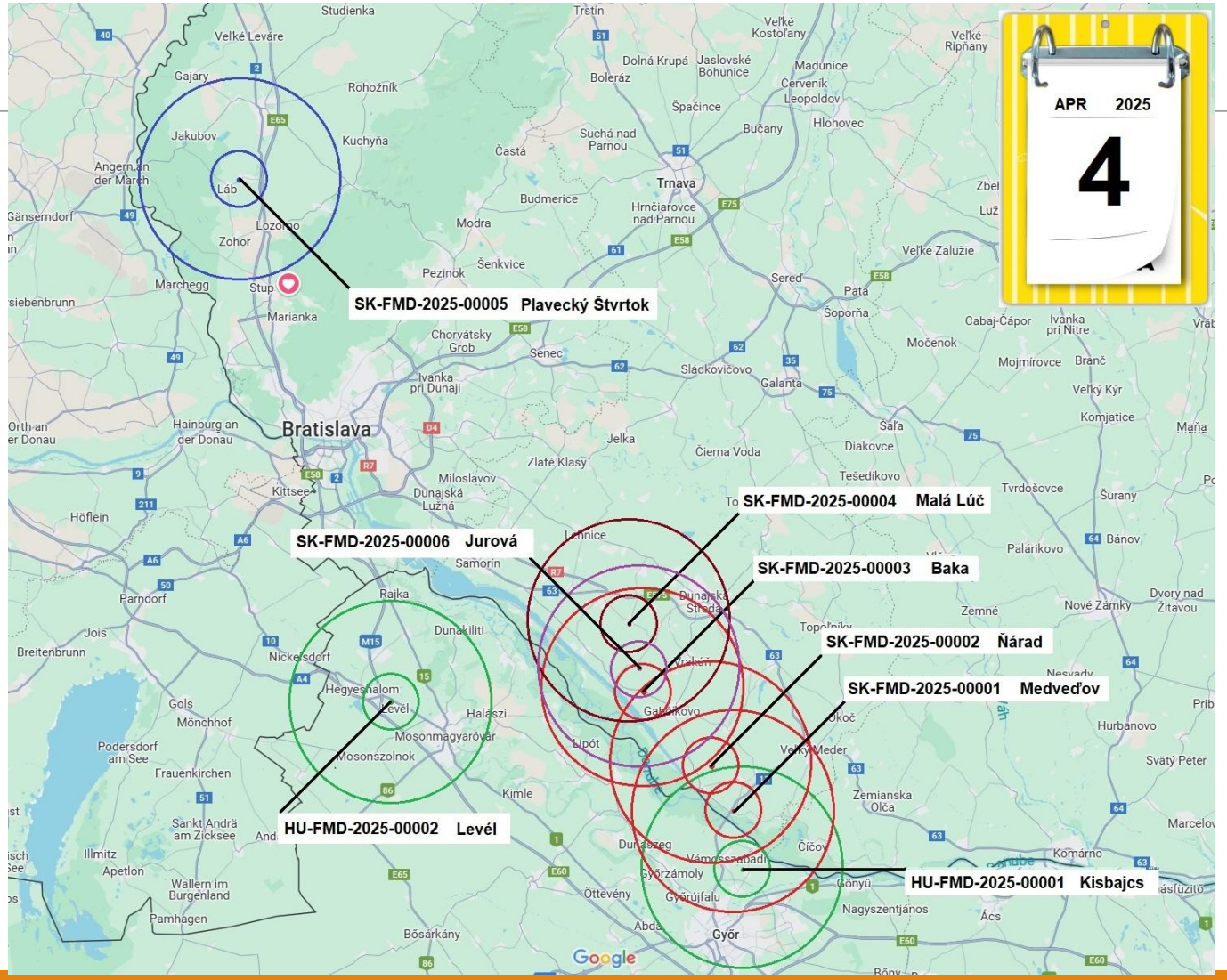
State Veterinary and Food Administration of the Slovak Republic

Brief overview of the event

- 6 confirmed outbreaks (2 primary, 4 secondary) in commercial cattle holdings.

- our first outbreak: **21/03/2025**,

- our last outbreak: **04/04/2025**.



Brief overview of the event: depopulated COMMERCIAL farms 8 341 cattle

No.	*Outbreak farm*	*Depopulation*		*Number of animals*	*Vaccinated*
		Start	*Finish*		
SK 01	Medveďov	29.3.2025	30.3.2025	706	all
SK 02	Ňárad	30.3.2025	1.4.2025	806	all
SK 03	Baka	22.3.2025	26.3.2025	1 313	-
SK 04	Malá Lúč	27.3.2025	28.3.2025	268	all
SK 05	**Plavecký Štvrtok**	2.4.2025	7.4.2025	**3 521**	all
SK 06	Jurová	9.4.2025	10.4.2025	876	all
CONTACT FARM	Dolný Štál	11.4.2025	14.4.2025	851	all
			TOGETHER	**8 341**	

Brief overview of the event:

depopulated BACKYARD farms (237 animals)

- 141 pigs
- 52 sheep,
- 35 goats,
- 9 cattle

BACKYARD FARMS TOGETHER: **237** animals

COMMERCIAL FARMS TOGETHER: **8 341** animals

TOGETHER: **8 578** ANIMALS DEPOPULATED

Brief overview of the event

CURRENT SITUATION (state of play to 26/06/2025)

- sampling still in place,
- biosecurity checks on the whole SK territory during June,
- measures leading to the final C & D in outbreaks are ongoing.

Brief overview of the event

SAMPLING (state of play until 26/06/2025)

- number of tested farms/holdings: **3 225**

- number of farms tested positive: **6**

Number of samples *(animals kept for farming purposes)*	**54 593** (**17 489** PCR + **37 104** NSP ELISA)
Number of samples *(wild animals)*	**5 595** (**19** PCR + **5 576** NSP ELISA)

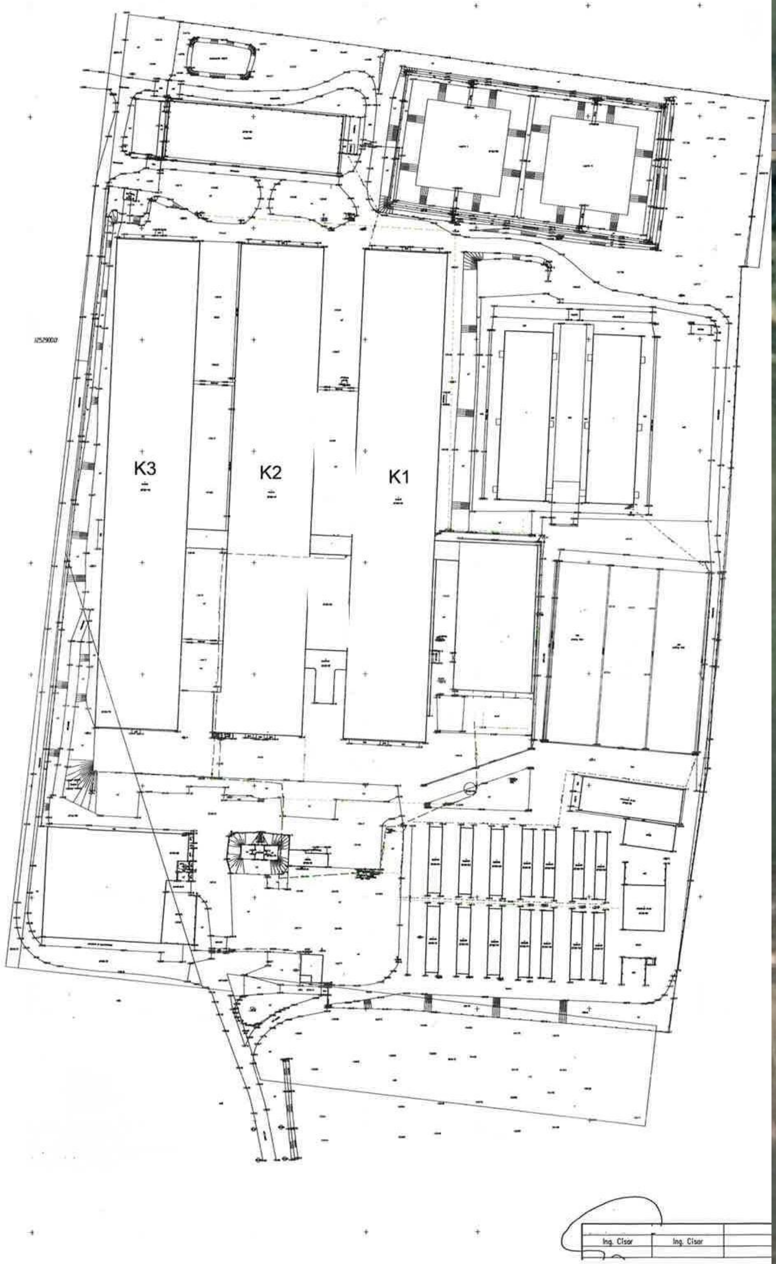
Outbreak farm SK 05 (Plavecký Štvrtok)

Outbreak farm SK 05 – Dairy farm

- big commercial dairy farm – very modern facility

- **more than 3 500 animals in total:**
- 2 780 cows and late-pregnant heifers
  - (multiple sections of dairy cows with 150 and 300 dairy cows)
- 720 calves up to 6 months

- two circular milking parlors with a capacity of 40 and milking 2x a day,
- the part of the farm with the individual calf pens was structurally and personnel-separated.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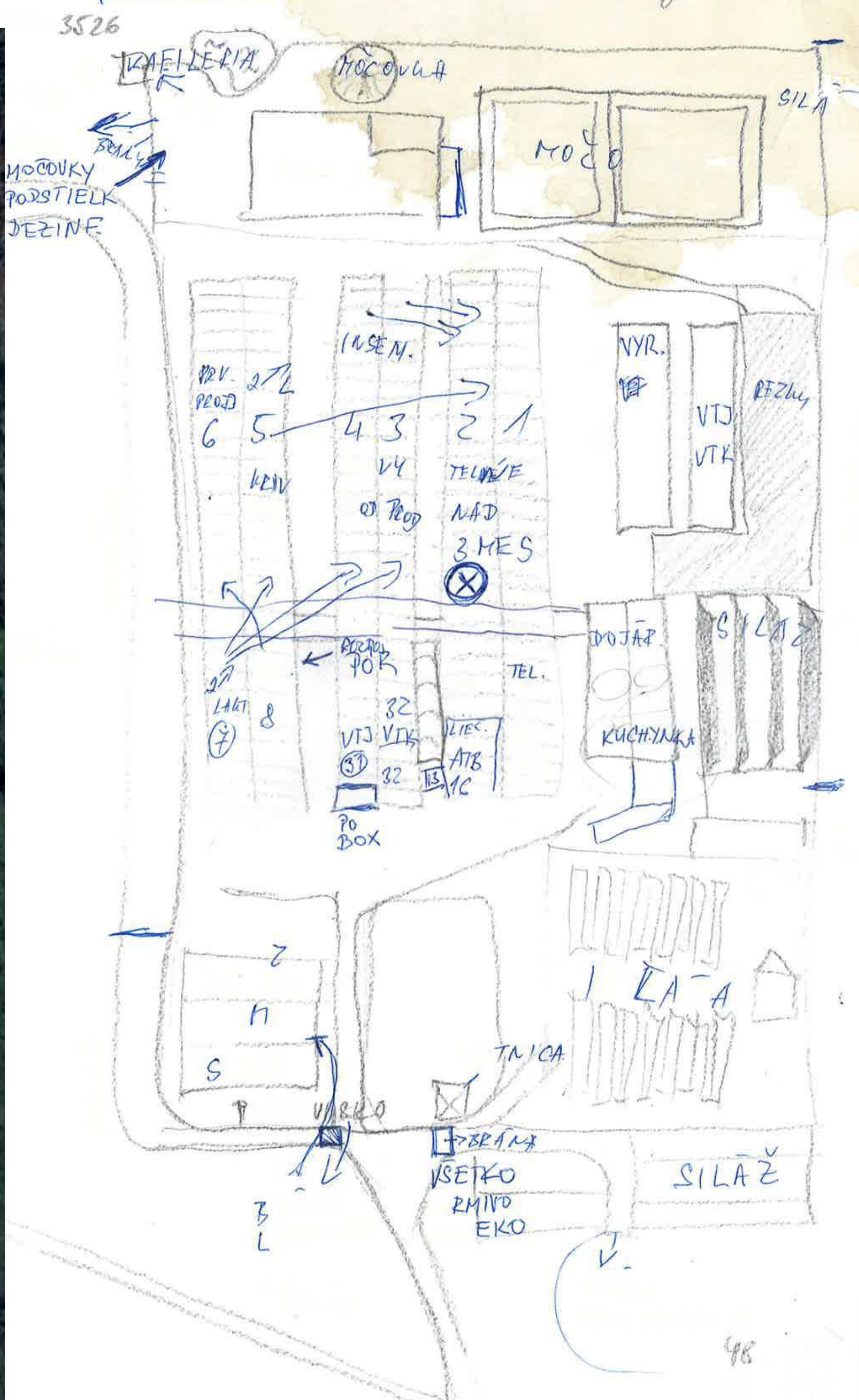
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First clinical suspicion of FMD

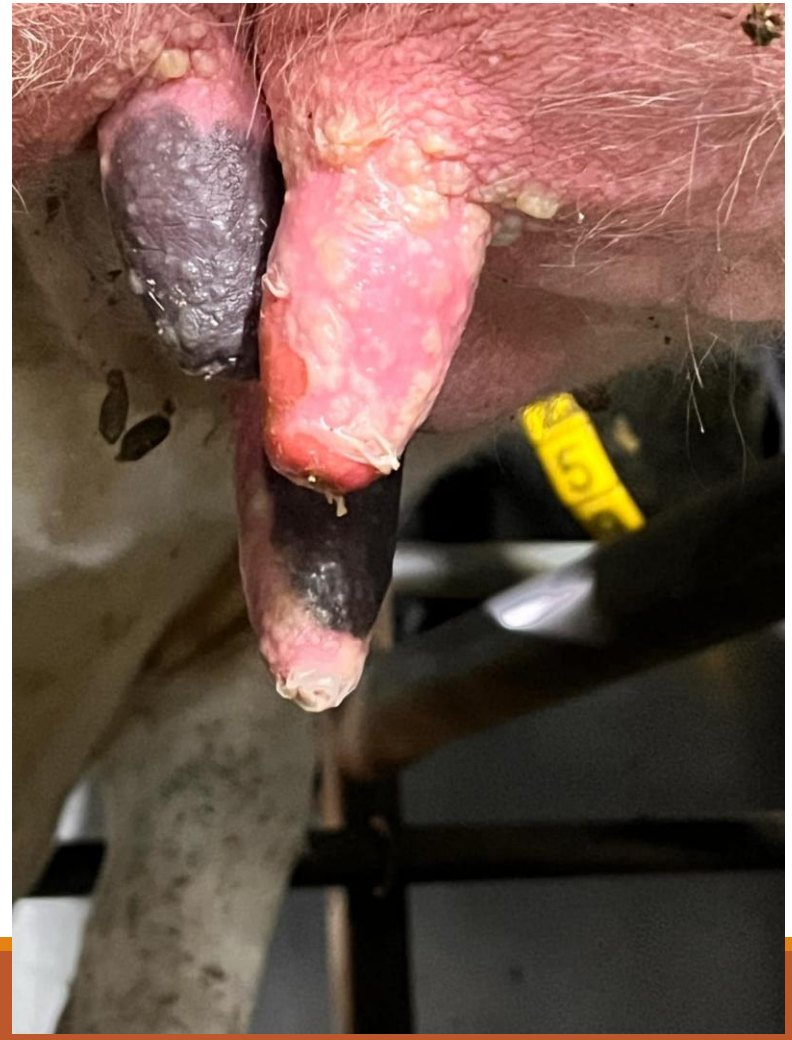
On Sunday, March 30, 2025, shortly after midnight, the milkers noticed a dairy cow with lesions on her udder.

After selecting her out, they also observed hypersalivation and a temperature of 39.8 °C.

The on-duty livestock technician contacted a private veterinarian and sent him photos of the lesions on the udder and in the oral cavity. The veterinarian then called the livestock production manager and the managing director. They came immediately to the farm, and after evaluating the clinical signs, the veterinarian raised a suspicion of FMD.

The private vet immediately informed the director of the District Veterinary and Food Administration (DVFA) Senec (around 2 AM).

First suspect animal (30. 03. 2025)



Detection of the FMD virus

At 11:00 AM samples were taken from the suspect animal and two others from the same group (section No. 2 – epithelial tissue from the lesions, nasal + buccal swabs and blood samples for serology) and sent to the NRL with a police escort.

Around 5:45 PM, the farmer was notified of a positive PCR result for FMD in the affected animal (2 other animals were negative); ELISA results from all blood samples were negative.

Based on this finding, the DVFA Senec ordered veterinary measures in accordance with the CDR 2020/687 (the depopulation of the farm, ban of movements etc.).

The restriction zones were established (3 km PZ + 10 km SZ).

Personnel present on the farm

In order to protect other herds and prevent the spread of infection, the farm operator, in agreement with the farm staff and the DVFA, decided that **all personnel present**, including the private veterinarian, **would remain on the premises until it will be safe to leave** — until the crisis units and decontamination equipment could be transferred from the southern region of Dunajská Streda to the Záhorie region.

By that time, the farms in Baka (SK 03) and Malá Lúč (SK 04) had already been depopulated, depopulation in Medveďov (SK 01) was being completed and depopulation in Ňárad (SK 02) was planned for Monday, 31st March.

Cooperation between official veterinarians and private veterinarians

Given the size of the farm (over 3 500 heads of cattle) and the seriousness of the situation (need for veterinary care, vaccination, and sample collection from a large number of animals), the **assistance of several veterinarians was necessary on-site**.

The SVFA SR contacted the president of Slovak Chamber of Veterinary Surgeons.

A **recurring issue** in such situations is that **veterinarians** who routinely oversee large animal farms **often cannot afford to enter an FMD outbreak site**, as they are prohibited from entering a "clean" farm for several weeks afterward. This can effectively exclude them from their regular work for up to a month. In this particular case, two private veterinarians volunteered to stayed in the outbreak together for an entire week, until the depopulation was completed.

They provided **valuable expert support** (not only to veterinary authorities but also to crisis units and the farmer), caring for the animals, reporting clinical signs of the disease, assisting in sample collection, and supporting the epizootological investigation and farm depopulation.

Emergency suppresive vaccination and further sampling

On the day of confirmation (30. 03. 2025), the **vaccine Aftopor** was brought in for emergency supresive vaccination of the outbreak farm; vaccination started already during the evening milking (2 ml intramuscularly – 1 ml on each side of the animal), and by Monday around 2:00 AM most of the animals were vaccinated.

Only 3 groups from which samples were to be taken the following day **were excluded**.

On Monday (31. 03. 2025) at approximately 11:00 a.m., nasal and buccal swabs and blood **samples were taken** from the group with the first sick cow (section No. 2), and from another 2 sections arranged in a **checkerboard pattern across the barns**. These groups were vaccinated during the sample collection. **None of these animals sampled showed clinical signs** of FMD.

The sampling was performed by 2 private veterinarians **in the presence of the official veterinarian of the SVFA SR.**

First sampling (30. 03. 2025)

- **3 animals tested from the section No. 2:**

- 1 with clinical signs (only 1 that time) - PCR positive, NSP ELISA negat

- 2 other from the same group – negative PCR/NSP ELISA

Sampling on 31. 03. 2025 (SK 05) - sections

Sampling on 31. 03. 2025 (SK 05)

- samples taken to detect at least 10% prevalence (with 95% confidency)
- 3 sampled sections (unvaccinated at that moment!)
- all of the other animal were vaccinated on 30. 03. 2025
- **each tested animal:**

1 swab for PCR (nasal + buccal)
+ 1 blood sample for serology

Samples collected on 31. 03. 2025

All 3 tested sections were **PCR positive** and all were simultaneously **NSP ELISA negative**
(All of the animals tested were **without clinical signs.** At that time, 4 animals were with clinical signs and they were separated in the isolation barn.)

• In section **2** (where the first positive cow was identified)
28 out of 30 tested animals were PCR positive

• In section **32**:
17 out of 29 tested animals were PCR positive

• In section **5**:
15 out of 30 tested animals were PCR positive

Further sampling = during the depopulation

- the **isolated animals with clinical signs** were culled as first – 3 of them (including the first positive cow) were serologicaly tested on Wednesday 02. 04. 2025

  – **NSP ELISA negative** (= almost 4 days after confirmation of the outbreak)

- on the **next day** (Thursday 03.04.) – **4 sections of depopulated cows tested** (sections 6, 1, 4, 32) – 11 blood samples from each section (all were NSP ELISA **negative**)

- 2 days later, on Saturday 05.04. – 15 animals from the section 6 were sampled again – all of them NSP ELISA negat.

- ***it is likely that the infection was detected quite early on this farm*** *(no sero-positivity detected even in the oldest cases).*

Clinical course

The **second dairy cow with clinical signs** of salivation and vesicles on the mucous membranes appeared on Sunday afternoon, March 30th, 2025.

New clinical cases continued to be diagnosed from Monday morning onwards, especially in the group where the first case had been identified and in the neighbouring section (direct contact of animals).

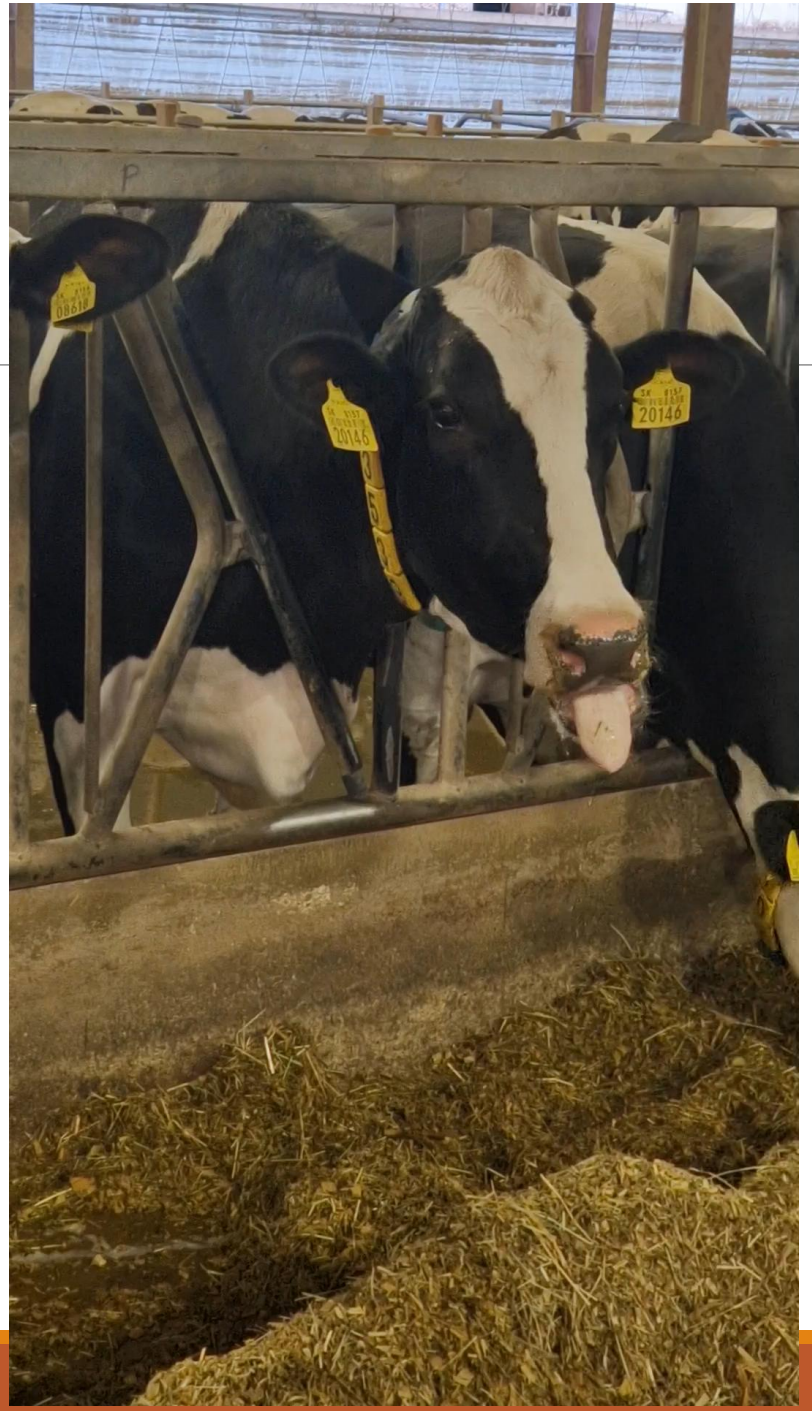
These animals were continuously identified and isolated in the isolation barn.

(Monday morning – 4 cows, Monday evening – 7 cows isolated)

Clinical signs in dairy cows

- **hypersalivation**
- **aphthae (vesicles) and erosions** on the mucous membranes of the oral cavity, tongue, udder, and the skin between the claws and on the coronary band
- frequent sign was characteristic **smacking** sounds, unnatural **jaw movements**, and tongue protrusion, followed later by painful lameness
- body temperature was elevated, though only occasionally exceeded 40 °C

- lesions on the mammary glands were highly variable — ranging from fluid-filled vesicles to erosions and peeling skin on the teats, and in some cases, bloody wounds on the udder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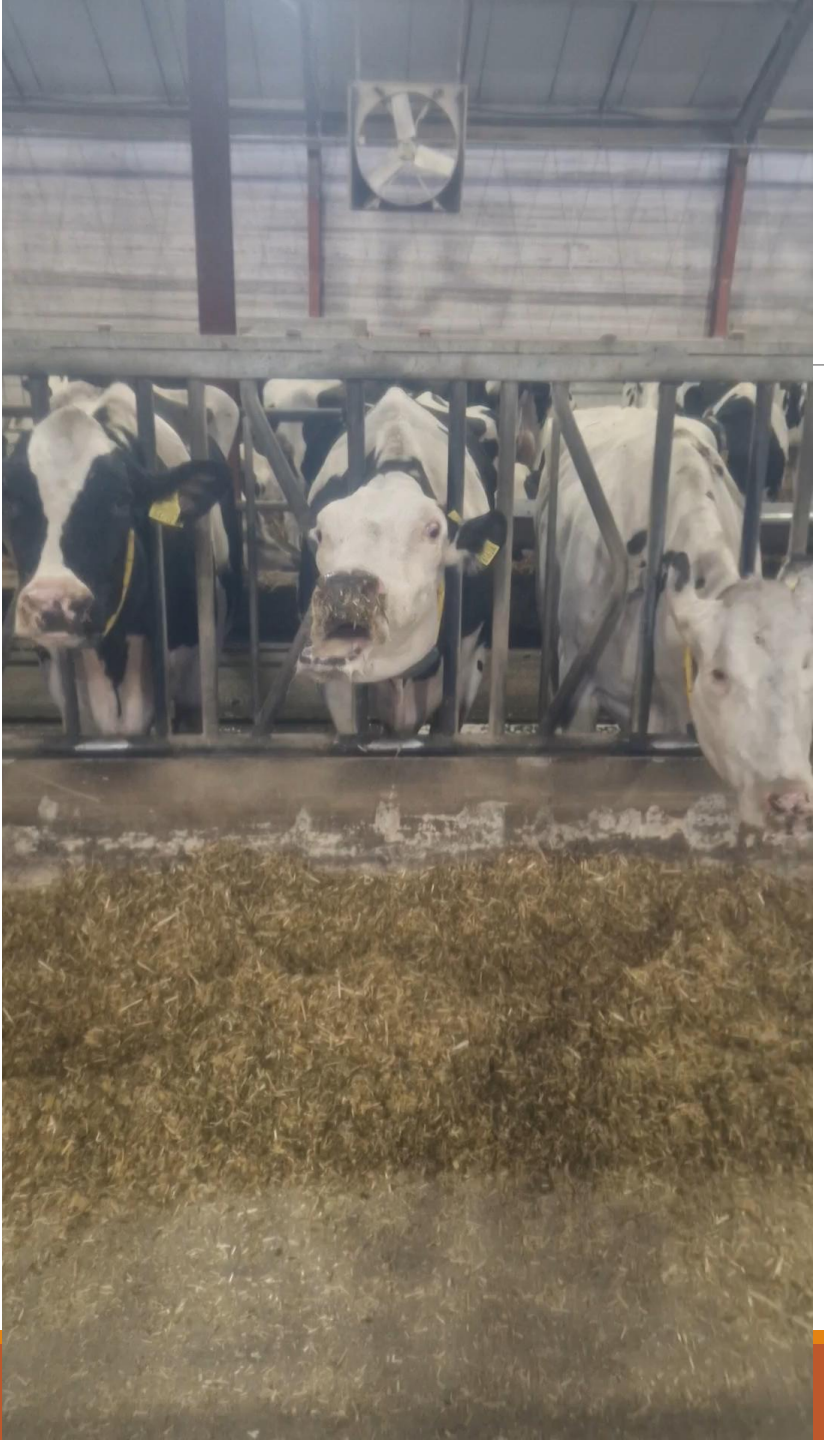

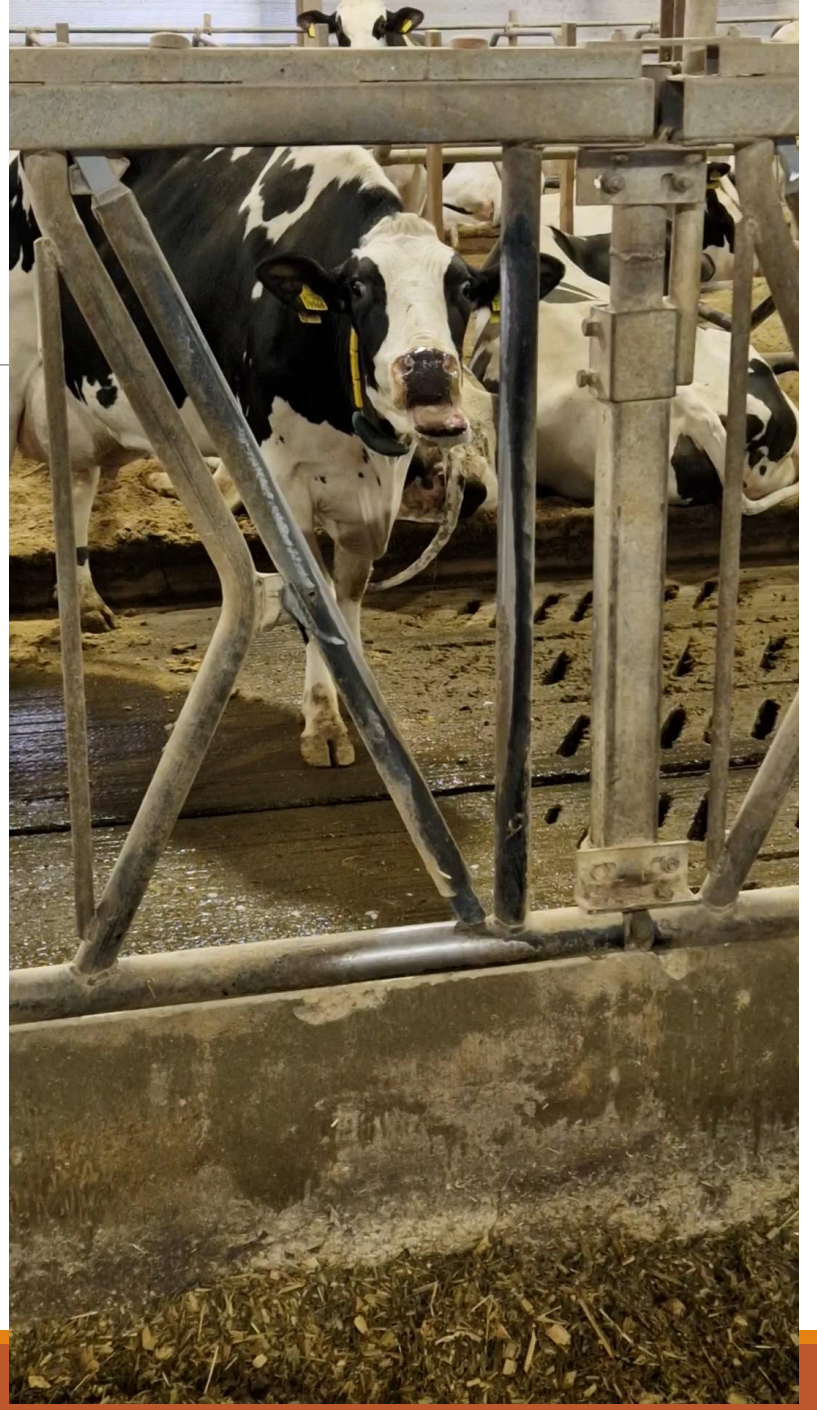


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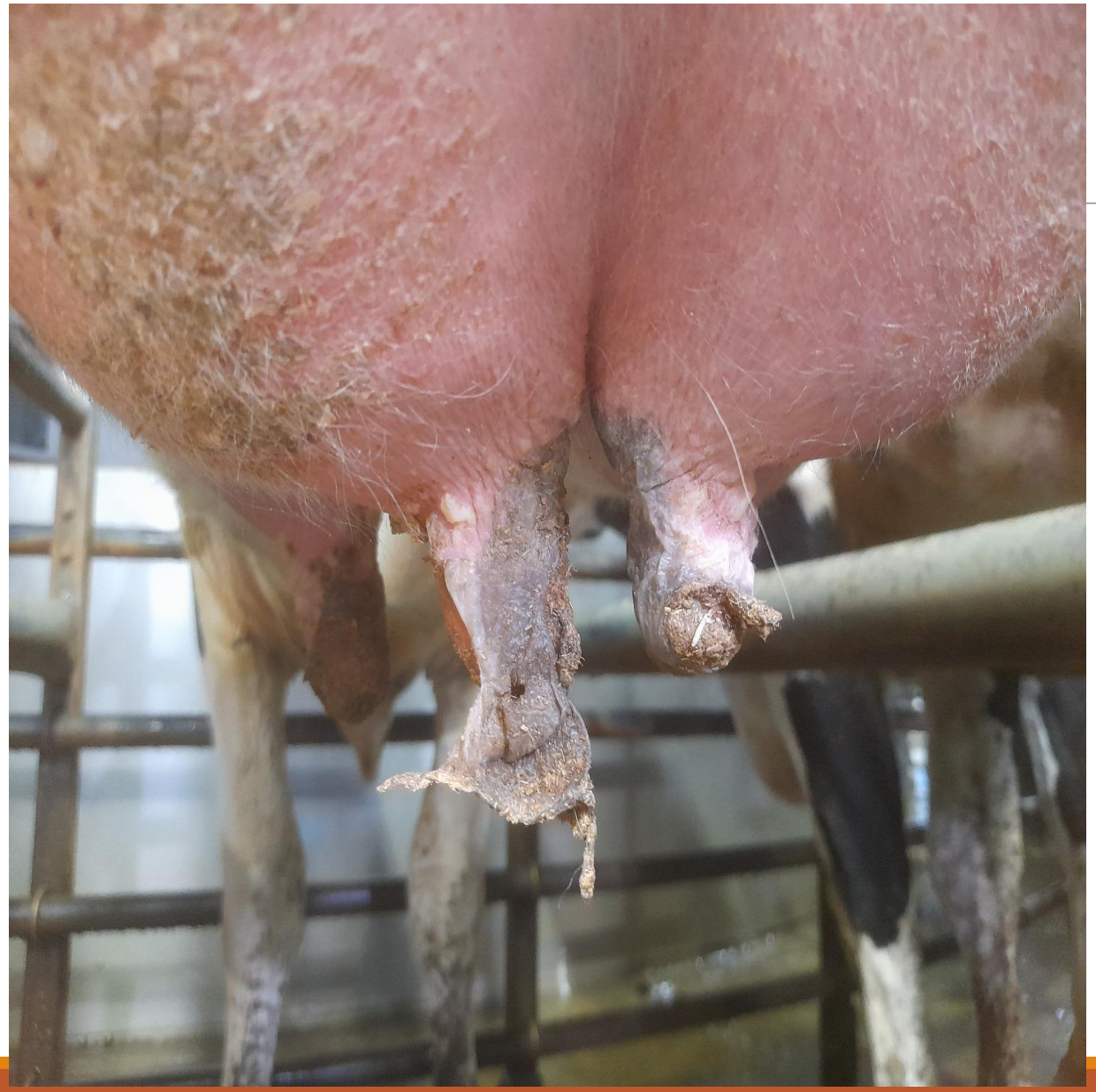
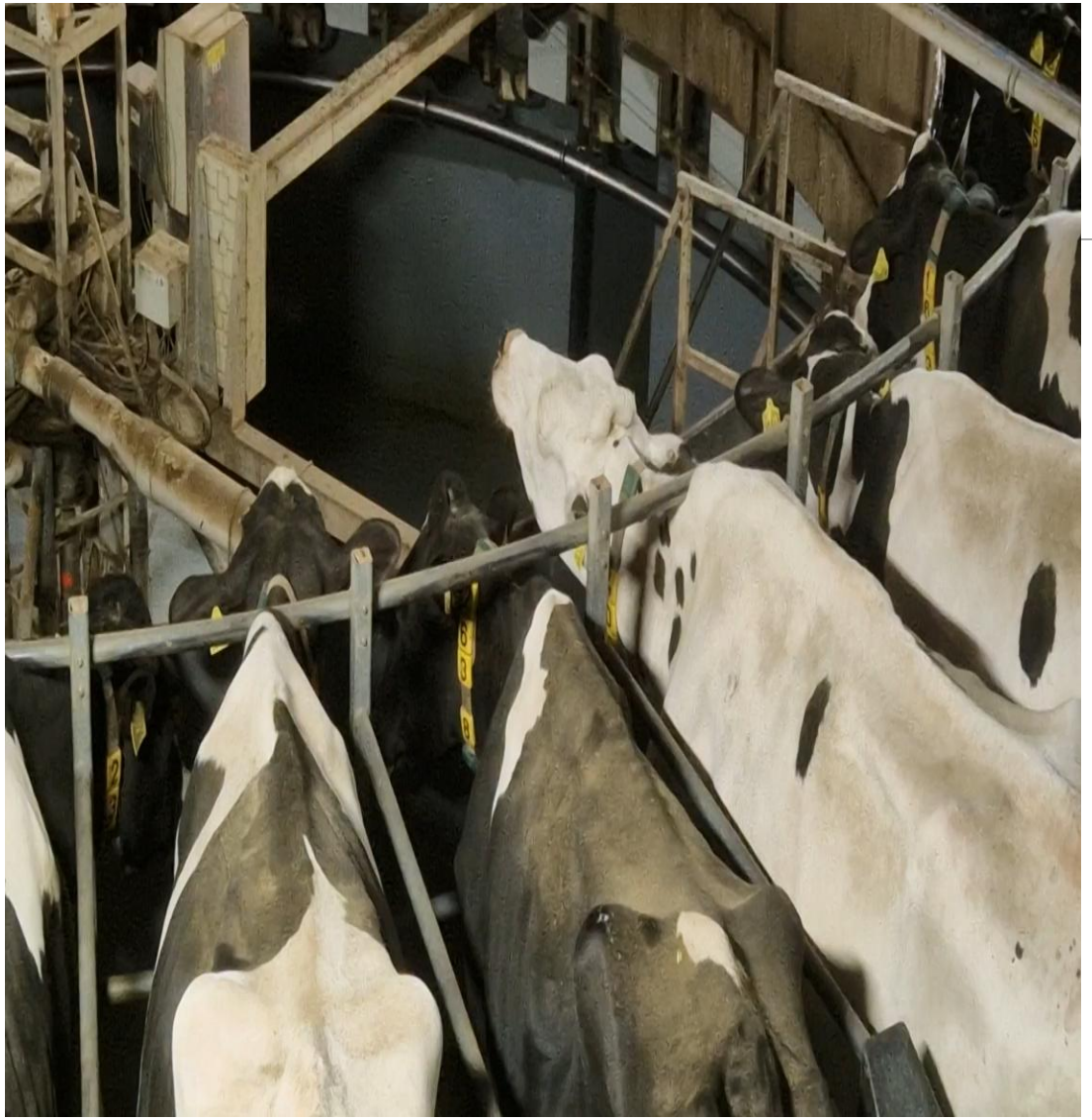
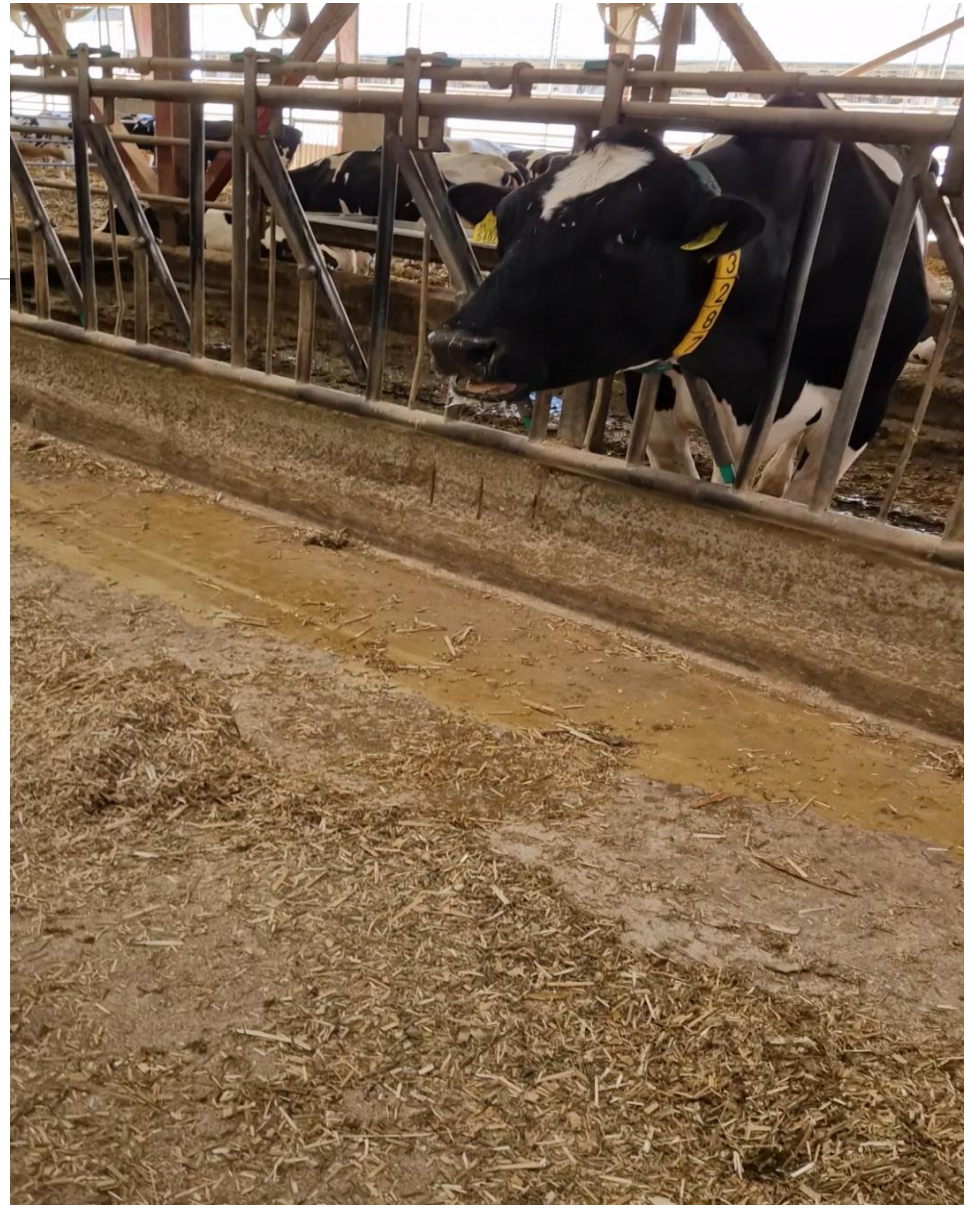
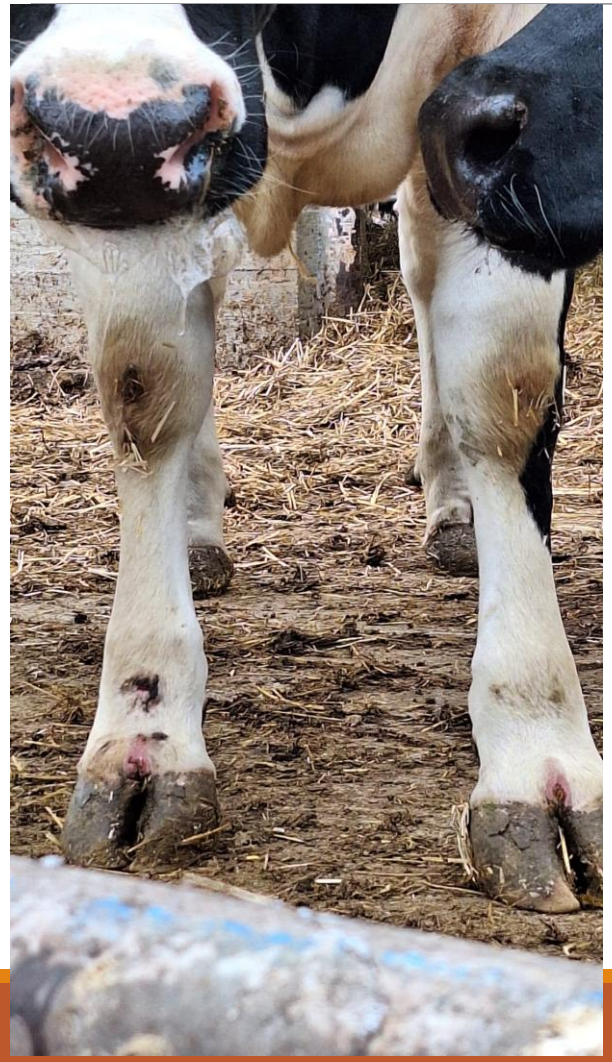






Typical „smacking“ sound

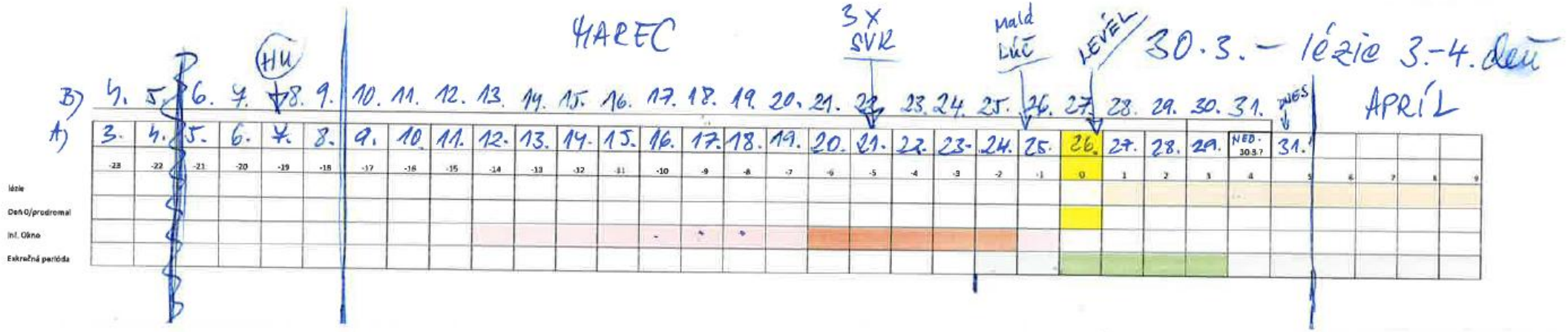
Limping – starting 4 days after salivation



Epidemiological investigation

3 KEY QUESTIONS :

1. How long has the virus been present on the farm?
2. How did it get there?
3. Where could it have spread from there?



Most probable ways of introduction

SK 05 operationally and geographically separated from the southern outbreaks – not many possible ways of trasmission.

2 high risk contacts identified:

1) visit of the operator from the HU 02 outbreak farm (18. 3. 2025)

2) building company of new milking parlor – from the region of Dunajská Streda (till 18. 3. 2025)

Contact holdings of SK 05

- in the same region – **3 contact commercial farms** (closed herd turnover between these 4 farms – same operator)

Since 20. 3. 2025 – farms were closed, no movements of animals, staff and vehicles between them;

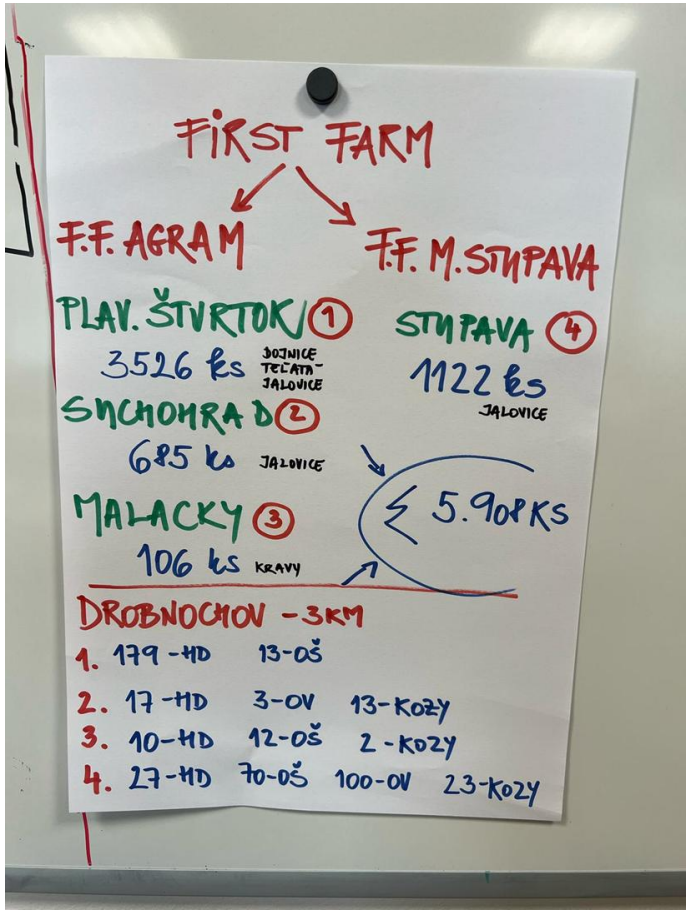
It is supposed that the virus was already present on the outbreak farm on 20. 03. 2025, but the cattle on this farm was probably not infectious yet;

These farms were tested at least once a week (swabs for PCR and blood for serology from the same animals);

All the samples were negative.

- 1 small contact farm (the employee of the outbreak farm) in the Protection zone – registered farm with 1 registered cow – on the spot during the official control 4 more unregistered cows were found – farm was depopulated (the carcasses were disposed of at a rendering plant)

Contact holdings of SK 05



Sampling in the Restricted zones (SK 05)

- in total: 13 municipalities were located in the zones
- 2 in the Protection zone (3 km) – Plavecký Štvrtok and Láb
- 11 in the Surveillance zone (10 km)
- from the issuance of the measures until the zones were lifted (30. 03. – 21. 05. 2025), four rounds of sampling were conducted in the Protection zone and three rounds in the Surveillance zone, approximately at weekly intervals
- 3 356 samples were collected for FMD testing (3 192 swabs for PCR and 164 blood samples for serology)
- as part of the sampling, three contact holdings belonging to the operator of the outbreak farm were also included.

Practical problems

- people are afraid/are lying/are hiding information/are mentaly broken etc.
- you have to **catch up the momentum right after the confirmation of the outbreak** and ask as many questions as you can – the operator and personnel are not in a good mental state during the depopulation of the farm and after the depopulation they often do not want to talk with you anymore or they are already briefed not to share some information with you.
- **you have to make notes and photos/videos** of everything on the spot – you will not remember later.
- **on the big farms** (especially farms with adult bulls or heifers) there is **generally not possible to clinically examine or test the animals properly**. Sampling and examination of the lesions in the mouth is mostly possible during the depopulation, but it can be too late to make the epidemiological conclusions... (many farms do not have any restraint cages or other equipment for the fixation of animals).

Biggest systematic problems

- **huge lack of personel**
- funding
- contingency plans and simulation exercises (on regular basis)

Comments and observations

- the **virus spreads very easily and quickly**, and only immediate reactions and strictly enforced, properly designed measures can help control and stop its spread.
- by the time an outbreak is detected on a large farm, the virus has often already been introduced to other farms. Therefore, it is essential to trace contacts and **assess the risk for exposed holdings**. (In the early phase, the virus is usually two steps ahead of us, and our task is to “catch up.”)
- the incubation period is reported as 2–14 days (most probable 2 – 6 days **from the infection of the animal – it means, after the contact of the susceptible animal with the virus**). From an epidemiological investigation perspective, the **maximum length of this period must be considered**.

Indirect contact is a tricky thing!

It is **especially important** to note that in cases of **indirect transmission** via fomites (objects, vehicles, tools, feed, people through footwear/clothing/hands, etc.), **the date of transmission to the farm** (e. g., vehicle entry onto the farm) **does not necessarily mean** (and usually does not mean) **the date of infection of the animals**. The FMD virus can survive in the environment/material for several weeks or even months under suitable conditions (depending on pH, temperature, humidity). Therefore, it is inappropriate to limit the investigation strictly to the 2 - 6 days incubation period or 14-day (WOAH)/21-day (EU legislation monitoring period) intervals prior to the onset of clinical signs—introduction of the virus to the farm may have occurred several days or weeks earlier (via feed, fomites etc.).

Comments and observations

- **biosecurity** on many cattle farms **is very poor**.
- farms **lack disinfection** baths/gates/mats, **do not maintain complete records** of vehicle or personnel movements, and are often **missing effective hygiene barriers** and proper separation of “dirty” and “clean” zones. Many farms operate in outdated facilities that cannot be properly cleaned or disinfected.
- **farm staff are often uninformed** about the risks of disease introduction and, in some cases, are **allowed to keep susceptible animals** at home. In a few instances, employees in direct contact with farm animals kept unmarked, unregistered animals of unknown origin and health status at home.
- a major issue is the **high number of unregistered farms and animals** in our country.

Comparison of the clinical course on cattle farms in Slovakia

- infections tend to be **detected earlier on dairy farms** than on farms with other production types.
- the **most severe** clinical signs (CS) were observed **in high-producing dairy cows** (including udder changes and signs of pain).
- **calves, heifers, and bulls** showed **milder clinical signs**.
- in three outbreaks involving dairy cows, signs were likely observed already in the index case ("patient zero"). After the first signs appeared in one animal, the disease spread rapidly (*exponentially!*): on day 1, symptoms were seen in 1–2 animals; on day 2, in around 10 animals; and by day 3, in dozens or even 100 animals.

Comparison of the clinical course on cattle farms in Slovakia

- **typical visible clinical signs** in cattle include **hypersalivation** due to painful **lesions in the mouth** and on the tongue (even detachment of the tongue mucose membrane), lesions **on the udder and coronary band** (just above the hoof). The earliest recognizable signs (before visible hypersalivation) include characteristic **smacking, grimacing**, and **side-to-side movements of the head and lower jaw** (often with open mouth).
- a noticeable **decrease in feed intake and milk production** (as well as reluctance to be milked due to pain) is also typical. However, these signs often go **undetected in the first few animals** on large farms.

Comparison of the clinical course on cattle farms in Slovakia

- **lameness becomes evident usually not sooner than around the 4th day after hypersalivation** is first observed.

- the **emergency suppressive vaccination** used **visibly slowed the appearance/incidence of new clinical cases** and **reduced severity** by the 3rd day.

- from day 5 onwards, few or no new cases with clinical signs were recorded among vaccinated animals.

Comparison of the clinical course on cattle farms in Slovakia

- on **heifer and bull fattening farms** — where animals are not milked multiple times per day and an official veterinarian is not present on the daily bases — **clinical signs are detected several days later than on dairy farms** (e.g., when a noticeable drop in feed intake or visible hypersalivation is observed in multiple animals, indicating that many are already clinically affected).

- experience has shown that technical **farm personnel** (technicians, caretakers, feeders) generally **do not notice the early signs** such as smacking, grimacing, or drooling. Even when the outbreak was confirmed and the veterinarians observed early CS in dozens of animals, the local staff had not yet noticed these symptoms.

Comparison of the clinical course on cattle farms in Slovakia

- on these farms, the infection was only detected at least a week after the end of the incubation period.

- another major challenge was the **lack of animal restraint systems** on many cattle farms. Aside from dairy farms (which usually have milking parlors or headlocks), most farms lack proper restraining equipment. This makes **clinical examinations and sample collection** (especially from adult bulls or heifers, in large numbers or repeatedly) **extremely difficult**.

Comparison of the clinical course on cattle farms in Slovakia

- **ideal samples** to be taken **from asymptomatic cattle** include nasal or combined nasal and buccal swabs (PCR positivity occurs several days before clinical signs), ideally paired with a native blood sample.
- **in symptomatic animals**, the best samples are epithelium from a freshly ruptured lesion (2x2 cm) or aspirated fluid from an unruptured vesicle.
- for **small ruminants** (sheep, goats), combined swabs are taken;
- **for pigs**, oropharyngeal swabs are preferred.

Depopulation of the SK 05

- depopulation started with animals showing clinical signs,
- the first 60 animals were euthanized intravenously with T61 following intramuscular sedation

(significant time and financial demands of the initial method),

- first outbreaks: electricity – very time consuming (10 cows per hour)
- ***this outbreak:***

penetrative captive bolt device + firearms with free projectile – adults

- calves – lethal injection (by private vets)

- members of the mobile depopulation unit (SVFA SR) plus slaughtermen from the local slaughterhouses
- using of the free projectile – ordered by CVO via emergency measures
- done in cooperation with the Army of the SR


NEW

Disposal of the carcasses

- only 1 **rendering plant** in Slovakia
- emergency measures ordered by CVO: disposal of the carcasses also via the **burial sites**
- cooperation on governmental level (ministers)
- 2 localities were choosed for the establishing of the burial sites (in military districts, the land belongs to the Army of SR) – one of these sites was located only 35 km from SK 05 – more than 3 000 animals from this farm were disposed via this burial site

Cleaning and disinfection

The **entire depopulation of the herd—3 500 animals—was completed on Monday, April 7th, 2025**

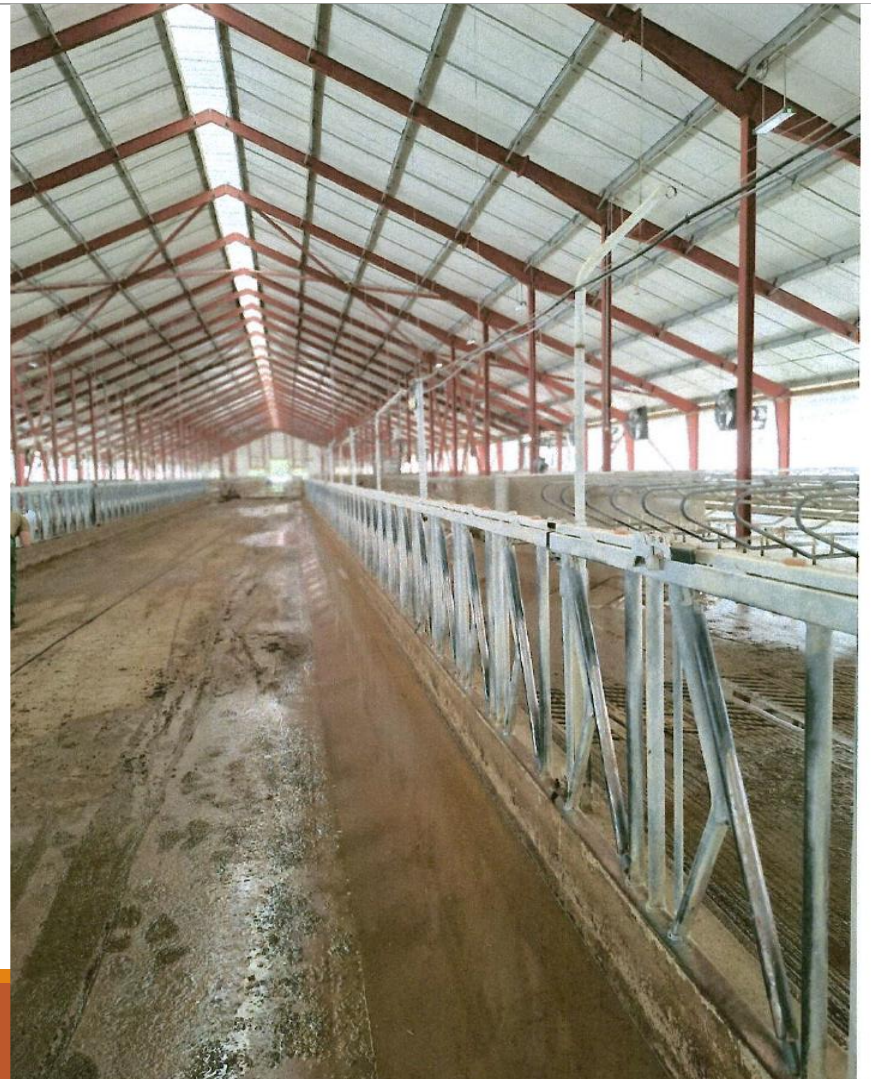
On **Tuesday, April 8**, cleaning of areas designated for culling was carried out to remove biological material.

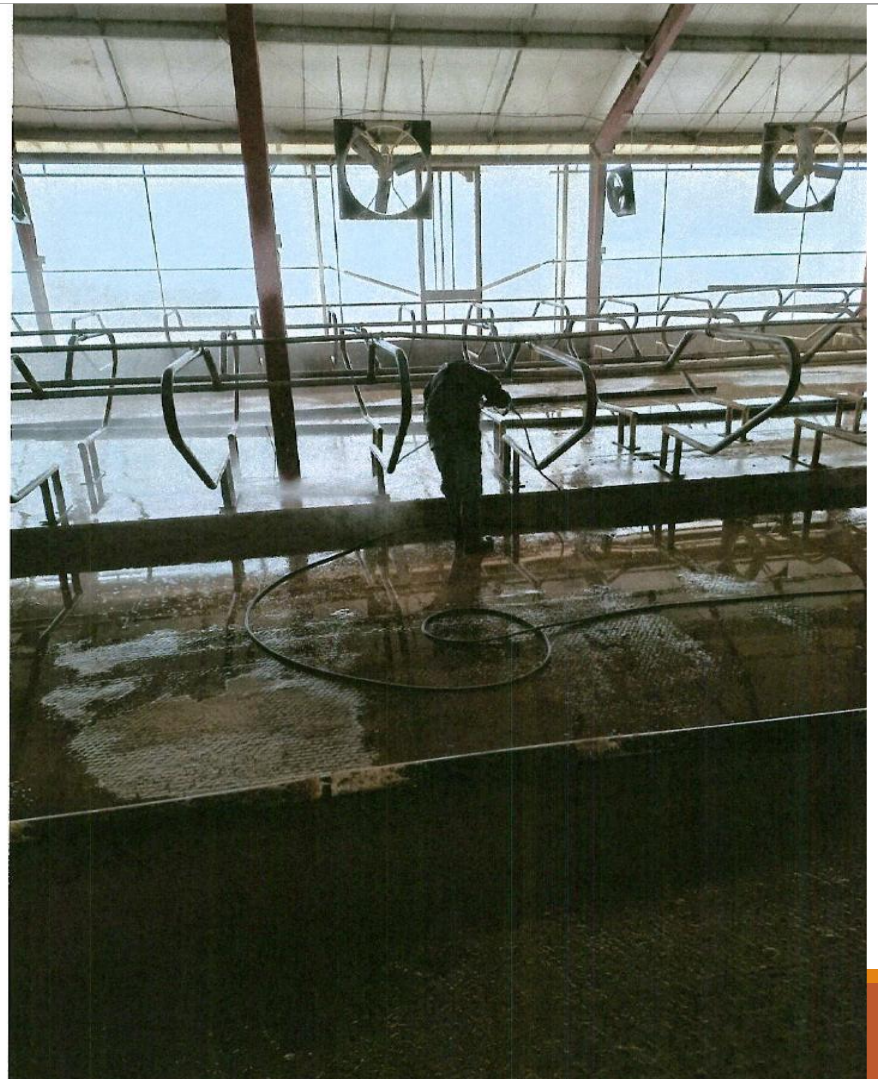
On **Wednesday, April 9**, **disinfection of outdoor areas** was performed using a **drone**.

On **Thursday, April 10**, the **preliminary disinfection of indoor facilities** was performed (conducted by **firefighters**)

On **Friday, April 11**, **official veterinarians from the State Veterinary and Food Administration (SVFA)** conducted an **inspection** of the entire premises, including **inventory of all remaining feed, slurry, manure, and other biological materials, equipment, machinery, and devices**. Based on this, they issued the instructions to the owner for **the final cleaning and disinfection procedures**.

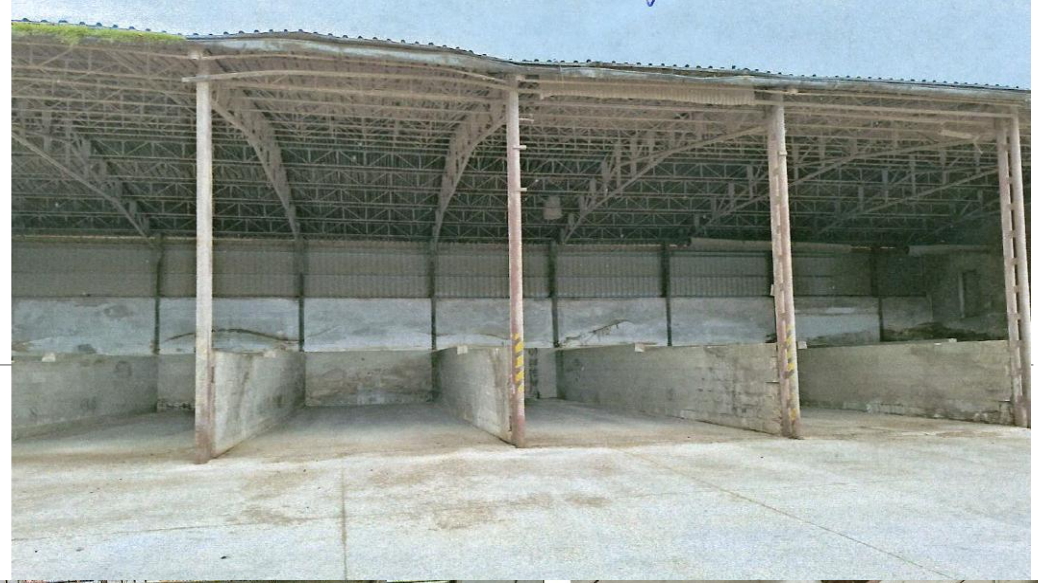
Final cleaning and desinfection – ongoing

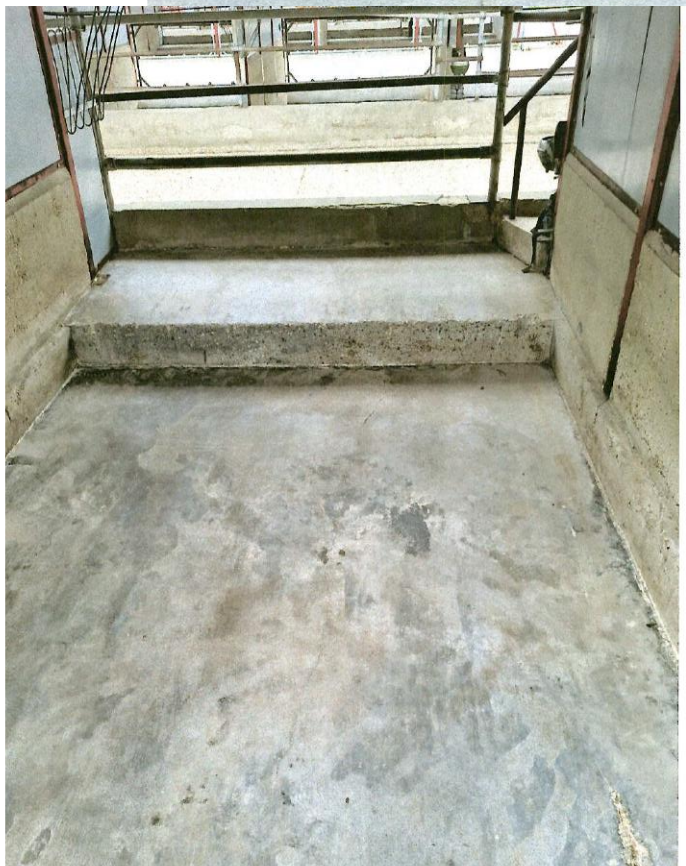




Dojáreň

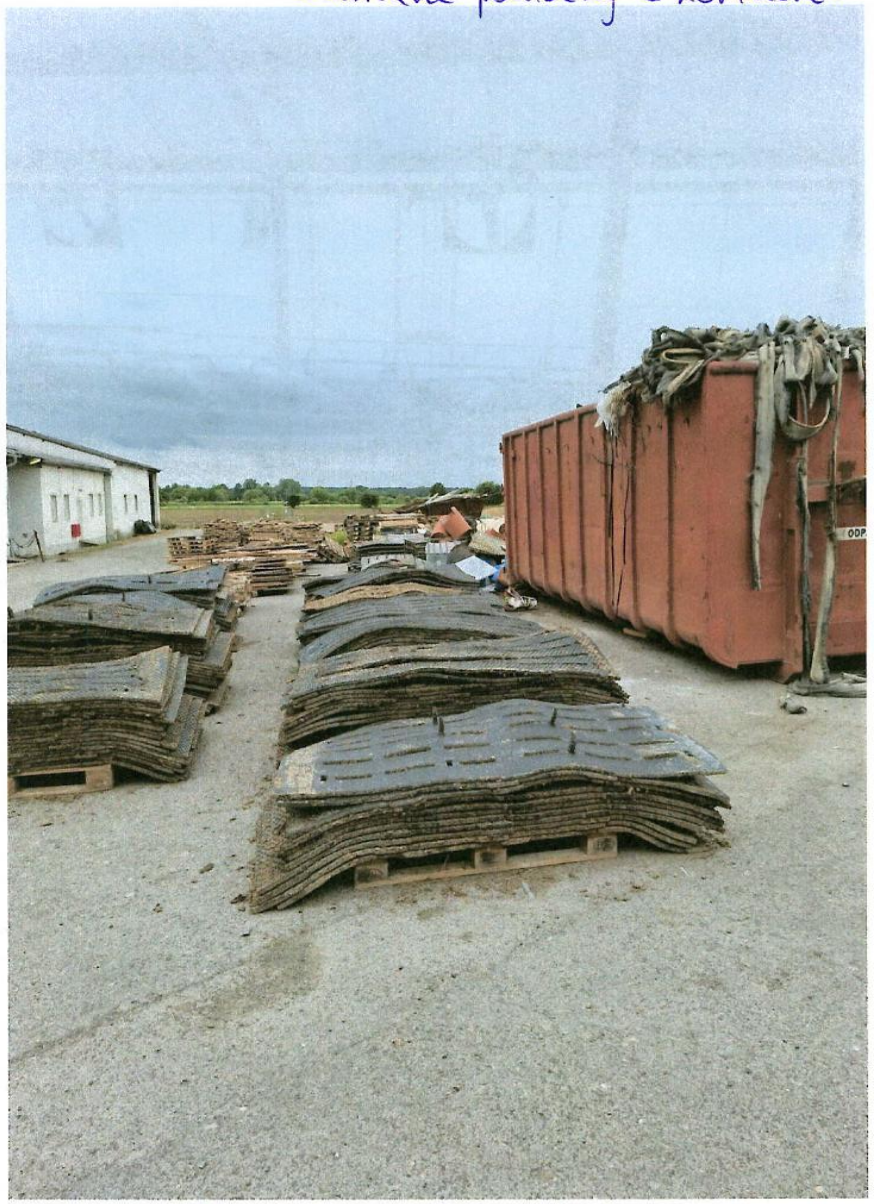
Ochranné odevy na likvidáciu





Na likvidáciu

Gumené podložky z koridorov



Drevený odpad


Vedrá na mlieko pre teľatá

Conclusions – our experience

- seems that most susceptible are highly productive dairy cows,
- detection in fattening bulls slightly delayed,
- before showing typical vesiculs (aphtae) cattle present unusual play with tongue with smacking,
- later all typical signs were observed - aphtae on gums, tongue, udder, interungulate space, hypersalivation, apathy, feed intake decrease,,
- emergency suppressive vaccination minimise clinical signs in animals, decrease virus spreading which provide to us sufficient time for safe depopulation,
- cleaning and disinfection of premises and materials is the most important action following depopulation.

Lessons learned

Calculate twice the need for human power:

- vets, epi investigation, clinical exams+sampling, culling supervision, disposal supervision,...)
- firefighters/rescue (decontaminantion)
- police and customs (road checks, border checks, anticonflict teams, vets srotection)
- Supply (vaccines, captive bolts+cartridge, disinfectants, protective cloths, proviant, pencils, heavy technics, transport of carcases,)

Do not underestimate any need for expertise.

Organize, coordinate, evaluate, adjust,...

If you think you are ready beforehand - you are not – each situation is different and **you must react immediately** and take the decision which are accurate and mirros the current siuation.

Lessons learned

Advice: revise your contingency plan

People (public) behave in a strange wave – everybody is understanding what to do and how to do...

Journalist: roumorous, hoaxes – sensationes - a fight on 2 fronts - diseases versus public information and interests.

Extremely exhaustive work - total physical and mental pressure on the veterinary staff – great exhaustion but also great determination to manage it in a professional way.

COSTS!!!!!!!!

Veterinary resources

SVFA (NDCC) – 42 staff – **846 man/days**
Increased border controls – 119 staff – **2190 man/days**
Epidemiological investigation – 37 staff – **2495 man/days**
Checks at burial locations – 20 staff – **63 man/days**
Ban of movements checks – 242 staff – **1200 man/days**
In total **6794 man/days veterinary** staff, plus above **5000 man/days rescue** system, obove **15000 man/days police**, above **500 man/days army**,....

Thank you for your attention!