

MEAT INSPECTION

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Preface

Our book titled *Meat Inspection* has been prepared with the aim of creating a practical guide for veterinarians and veterinary students, taking into account the principles of public health, animal welfare, traceability, sustainability, food safety, and occupational safety. In our book, we have adopted a decision-focused, algorithm-based approach to enable our colleagues who strive for “one health” in slaughterhouses, where the raw materials for the meat industry—one of the most important branches of the veterinary profession—are sourced, to make the right decisions as quickly as possible.

In our work, the efficient use of time, considered one of the most valuable assets in human life, has been a central principle and will continue to serve as a key focus in our future studies.

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1. PRE-SLAUGHTER (ANTE MORTEM) INSPECTION

Infectious and prion diseases that could endanger the livestock population, as well as zoonotic and toxicological diseases that could pose a risk to public health, are controlled through meat inspection carried out by veterinarians. Although the term “meat inspection” has become established in the terminology, it sometimes leads to a misunderstanding of the process. An ideal meat inspection can only be ensured through a well-executed ante-mortem inspection. This process, which is the subject of our discussion and is implemented to determine the suitability of meat from slaughtered animals for consumption, begins as veterinarians supervise the unloading of animals from transport vehicles (Figure 1) into paddocks (Figures 2 and 3). This inspection protocol also includes monitoring animal welfare to ensure that transportation is conducted in compliance with legislative requirements and using appropriate transport vehicles.



Figure 1. Livestock transport vehicle and ramp

! Attention: The ramp angle used during loading and unloading operations when transporting animals to slaughterhouses must not exceed 20 degrees for sheep and 26 degrees for cattle.



Figure 2. Sheep paddocks



Figure 3. Cattle paddocks

! Attention: The ideal transport time for animals is 8 hours. The maximum transport time is set at 14 hours. Transport may be allowed for an additional 14 hours with a 1-hour break, but the total duration must not exceed 29 hours.

Slaughter animals transported to slaughterhouses must be accompanied by a veterinary health report (Appendix 2), a large animal identification card (passport) (Figure 4), or a small animal transport certificate (Figure 5). The identity details of the animal owner, as well as the species, breed, and number of animals in the vehicle, along with the departure and arrival times at the slaughterhouse, must be verified. Animals lacking documentation or containing incomplete or inaccurate information in their records shall not undergo ante mortem inspection for slaughter suitability. Live slaughter animals with complete documentation shall be subjected to ante mortem inspection to assess their fitness for slaughter, and the date and time of the inspection shall be recorded in the paddocks where they are unloaded.

1.1. Ante Mortem Inspection Protocol

Ante mortem inspection is likely the only point at which slaughter animals are examined outside the farms where they are raised. Therefore, it plays a crucial role in monitoring animal welfare practices. Any deficiencies identified in animal welfare are assessed with due sensitivity to determine whether the neglect occurred on the farm, during transport, or during unloading into the pens.

Signs of dehydration, hunger, and malnutrition; inadequate shelter and housing conditions; fear and stress; and the timely and accurate diagnosis and treatment of injuries, diseases, or parasitic infestations are evaluated. Standard behavioural patterns in slaughter animals are also observed.

Any irregularities identified regarding animal welfare are reported to the Provincial or District Directorates of Agriculture and Forestry, as well as to the animal owners, to ensure corrective measures are taken and prevent recurrence.

Body condition and age-related weight of slaughter animals, their level of cleanliness (Figure 6), the presence of injuries or untreated diseases, and the condition of the feet and hooves provide valuable information about farm welfare conditions. Scratches caused by unsuitable bedding materials, injections administered under unhygienic conditions, untreated wounds, and abscesses resulting from injured or broken tails are carefully evaluated.

Contamination may occur along the incision line during skin removal or through knife contact, leading to the transfer of faecal matter and dirt onto the carcass surface. In such cases detected during ante-mortem inspection, animals must not be sent for slaughter until their body coverings are adequately cleaned. However, animals that are only slightly soiled (Table 1) may be slaughtered individually, provided that additional precautions are taken, including closer

attention to operational procedures and slower slaughter line speeds, to prevent contamination of carcasses, equipment, and facilities.

! Attention During the ante-mortem inspection, animals deemed healthy are rested for 8–24 hours, depending on the length of their journey, before being transported to slaughter. This period can be reduced to a minimum of 8 hours in winter and 12 hours in summer.

! Attention: Ending feeding 6 hours before the planned slaughter time is essential to ensure slaughter hygiene and ideal meat quality. There is no harm in continuing watering until just before slaughter.

! Attention: If slaughter is delayed for more than 24 hours for any reason, a repeat ante-mortem inspection is required.

To ensure traceability in the food chain, to identify the origin of animals with contagious or zoonotic diseases, and to ensure that necessary measures are taken, slaughter animals must be appropriately identified, marked, and tracked. Ear tags (Figure 7), microchips, plastic seals, and clamps can be used for this purpose. If slaughter animals are not reliably identified, traceability in the food chain is compromised.

Table 1. Visual assessment of the skin surfaces of slaughter animals

Category	Class	Cleanliness Status
1	Clean and Dry	Considering faeces and dirt contamination, these animals have dry and clean skin with small amounts of loosely adhered bedding and straw.
2	Slightly Dirty	The animal's skin has a small amount of dry or moist dirt and faeces contamination, and loosely adhered bedding and straw may be present.
3	Dirty	Dry or moist faeces, dirt, and/or adhered straw and bedding are present on the animal's skin.
4	Very Dirty	Dry or wet heavy contamination of faeces and dirt with dense clumps and/or considerable amounts of adhered bedding.
5	Filthy and Wet	Very wet and heavily contaminated with faeces/dirt and/or heavily clumped bedding adherent.



HAYVAN PASAPORTU



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Hayvan Satış Yeri (İşletme No-Sürü No, Adres)		Pasaportu Tanımlanmış Yetkili		İmza			
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Yasal Uyarı: Alım satım yaptığımız hayvanı 30 (otuz) gün içerisinde il 7 ilçe kadroluğuna bildirmeniz kanuni zorunluluktur. Bildirim yapılmaması halinde idari para cezası uygulanır.							

Figure 4. Large animal passport

KOYUN ve KEÇİ TÜRÜ HAYVANLARA AİT NAKİL BELGESİ

A.ÇIKIŞ İŞLETMESİ		B.VARİŞ İŞLETMESİ	
İŞLETME NO		İŞLETME NO	
T.C. / VERGİ NO		T.C. / VERGİ NO	
İŞLETME SAHİBİ/KURULUŞ ADI/ İMZA/KAŞE *		İŞLETME SAHİBİ/ KURULUŞ ADI /İMZA/KAŞE *	
ADRES		ADRES	
ÇIKIŞ TARİHİ	VARİŞ TARİHİ **

C.NAKİL SORUMLUSU			
ADI-SOYADI		TARİH	
ARAÇ PLAKA NO		İMZA	

HAYVAN KÜPE NUMARALARI					
01)TR	21)TR	41)TR	61)TR	81)TR	101)TR
02)TR	22)TR	42)TR	62)TR	82)TR	102)TR
03)TR	23)TR	43)TR	63)TR	83)TR	103)TR
04)TR	24)TR	44)TR	64)TR	84)TR	104)TR
05)TR	25)TR	45)TR	65)TR	85)TR	105)TR
06)TR	26)TR	46)TR	66)TR	86)TR	106)TR
07)TR	27)TR	47)TR	67)TR	87)TR	107)TR
08)TR	28)TR	48)TR	68)TR	88)TR	108)TR
09)TR	29)TR	49)TR	69)TR	89)TR	109)TR
10)TR	30)TR	50)TR	70)TR	90)TR	110)TR
11)TR	31)TR	51)TR	71)TR	91)TR	111)TR
12)TR	32)TR	52)TR	72)TR	92)TR	112)TR
13)TR	33)TR	53)TR	73)TR	93)TR	113)TR
14)TR	34)TR	54)TR	74)TR	94)TR	114)TR
15)TR	35)TR	55)TR	75)TR	95)TR	115)TR
16)TR	36)TR	56)TR	76)TR	96)TR	116)TR
17)TR	37)TR	57)TR	77)TR	97)TR	117)TR
18)TR	38)TR	58)TR	78)TR	98)TR	118)TR
19)TR	39)TR	59)TR	79)TR	99)TR	119)TR
20)TR	40)TR	60)TR	80)TR	100)TR	120)TR
KOYUN..... baş		KEÇİ..... baş		TOPLAM..... baş	

* İşletme sahibi kuruluş ise kaşelenip kuruluş yetkilisi tarafından imzalanacaktır.

** Hayvan varış işletmesine geldiğinde doldurulacaktır.

Yukarıda tür ve miktarı yazılı koyun/keçilerin çıkış yaptıklarıKöy/Mahallede son bir ay içinde bulaşıcı hastalıktan dolayı herhangi bir karantina veya kısıtlama uygulanmamıştır	MÜHTAR/BELEDİYE BAŞKANI KAŞE / İMZA/MÜHÜR
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Bu belgenin, varış işletmesinde hareket tarihinden itibaren üç yıl süre ile muhafazası zorunludur.

Figure 5. Animal transport document for sheep and goats



Figure 6. Dirtiness of the body coat in cattle



Figure 7. Ear tag in cattle

Ante-mortem inspection is conducted according to a systematic inspection protocol. To implement this protocol effectively, inspections are carried out in environments with adequate lighting. If natural light is considered insufficient, fixed or portable lighting is required. During ante-mortem inspection, the animals' behaviour, movement, temperament, and reactions are observed both at rest and while standing or moving. Suspicious or sick animals must be placed in separate compartments to allow for detailed inspection and to prevent potential contamination of other animals. The following points should be noted during the ante-mortem inspection:

- The animal's general cleanliness
- The animal's interest in its environment
- Behavioural abnormalities
- Postural abnormalities
- Gait abnormalities
- Anomalies in the animal's general anatomy
- Any unusual coloration on the animal's body
- Any abnormal odour on the animal's body
- Abnormalities on the skin surface
- Respiratory abnormalities
- Abnormalities in the digestive system
- Unusual appearances in the reproductive organs
- Abnormal discharges and extensions from body orifices
- The animal's body temperature

! Attention: Animals with a body temperature above 40.5 °C should be isolated until their body temperature returns to normal.

1.2. Age Determination in Slaughter Animals

Age determination in slaughter animals helps identify animals, determine whether they have reached slaughter maturity, and provide insight into the quality of their meat.

The "Tarim Cebimde" application, developed by the Ministry of Agriculture and Forestry, is a helpful tool for this purpose. It enables individuals engaged in livestock farming in Turkey to inquire about the registration and status of their animals by their ear tag numbers. The ear tag number serves as an animal's identification number, providing information on the animal's birth date, vaccinations administered, and general health. This program facilitates the verification of official animal registration and tracking of veterinary records using ear tag numbers. However, illegal practices, such as the transfer of ear tags to other animals that are not removed after they are slaughtered or die for different reasons, can sometimes hinder accurate results. In such cases, age determination in slaughter animals is carried out using the methods described below.

For animals that are too young to be slaughtered, their age and condition are determined by examining the umbilical cord, teeth, and horns. The umbilical cord stump dries within 4–5 days after birth, developing a scabbed and darkened appearance. The scab typically falls off by the 15th day at the latest, and the scar disappears within a month.

Newborn animals destined for slaughter usually have four pairs of incisors at birth. In rare cases, it may take up to a week for the fourth pair to emerge. The gums are initially bluish during the first five days, then become pale red or pink, partially covering the teeth, for up to a month. Teeth may remain loose from the gum tissue for up to a month.

Age determination in slaughter animals (Figures 8-11) is based on the timing of the shedding of the primary incisors and the emergence of the permanent incisors. The number and arrangement of the temporary and permanent teeth in slaughter animals, as well as the timing of the shedding of the temporary teeth and the emergence of the permanent teeth, are shown in Tables 2-4. While variations are occasionally observed due to breed, sex, geographic conditions, feeding, and care, these differences are not significant enough to affect the results.

Table 2. Temporary tooth numbers and arrangement in cattle and sheep

Right Upper Jaw Molar Teeth	Right Upper Jaw Incisor Teeth	Left Upper Jaw Incisor Teeth	Left Upper Jaw Molar Teeth
3	0	0	3
Right Lower Jaw Molar Teeth	Right Lower Jaw Incisor Teeth	Left Lower Jaw Incisor Teeth	Left Lower Jaw Molar Teeth
3	4	4	3

Table 3. Permanent tooth numbers and arrangement in cattle and sheep

Right Upper Jaw Molar Teeth	Right Upper Jaw Incisor Teeth	Left Upper Jaw Incisor Teeth	Left Upper Jaw Molar Teeth
6	0	0	6
Right Lower Jaw Molar Teeth	Right Lower Jaw Incisor Teeth	Left Lower Jaw Incisor Teeth	Left Lower Jaw Molar Teeth
6	4	4	6

Table 4. The timing of the eruption of permanent incisors in cattle and sheep

	1st pair	2nd pair	3rd pair	4th pair
Cattle	1.5-2 years	2-2.5 years	3 years	3.5-4 years
Sheep	1-1.5 years	1.5-2 years	2.5-3 years	3.5-4 years



Figure 8. Age determination by examining teeth (cattle, over 3 years old)



Figure 9. Age determination by examining teeth (cattle, under 1.5 years old)



Figure 10. Age determination by examining teeth (sheep, over 4 years old)



Figure 11. Deciduous teeth in cattle

1.3. Pregnancy Control in Sheep and Cattle

Pregnancy control is performed during ante-mortem inspections in paddocks using inspection and palpation. Slaughtering pregnant animals not only harms the national economy but also poses risks to meat quality, meat consumption, and human health in the medium and long term due to hormonal changes that occur during later pregnancies. Symptoms that can be detected in pregnant animals after the first trimester are as follows:

- Calm temperament
- Enlargement of the abdomen
- Red and oedematous vaginal appearance
- Enlargement of the udders (not evident during the first calving)
- Yellow vaginal discharge in later stages

The most important findings that can be detected in pregnant animals through inspection are:

In sheep and goats, pregnancy can be detected by palpation. This involves either pressing upward in the area between the right leg and the udder or placing the hands under the abdomen and lifting them rapidly without releasing, allowing the abdominal contents to be felt.

In cattle and buffaloes, advanced pregnancy can be identified by palpation through a rapid thrust with a fist in the area between the right side of the sternum and the udder, and by sensing the impact of the calf against the fist.

1.4. Checking the Fatness and Fatness Level of Large Animals

Assessing the body condition and fatness of large animals is performed by palpating specific points, known as conformation points. These points include:

- Coccyx
- Lumbar region
- Pelvic eminence
- Sciatic region (the hollow area of the flank)
- Conception area (between the kneecap and the abdominal cavity)
- Last rib
- Shoulder blade
- Brisket (the upper-lateral parts of the sternum)

When determining the age and fatness of cattle, categories are established to form the basis for carcass grading, as outlined in the table below (Table 5). The cattle's age, sex, castration status, and calving status are essential indicators of the meat quality and should be determined and categorised during the ante-mortem period.

Table 5. Category determination in large animals

Castration / Childbirth Status	Gender	Age				Category
		Month \geq	>Month	<Month	\geq Month	
Not Castrated	Male		12	24		A
	Male				24	B
Castrated	Male				12	C
Has Given Birth	Female					D
Undefined	Female				12	E
Undefined	Undefined		8	12		Z

1.5. Checking the Fatness and Fatness Level of Small Ruminants

The following points are assessed by palpation when evaluating the body condition and fatness of small ruminants:

- Back
- Rib
- Leg
- Tail

! Attention: Asymptomatic carriers of zoonotic pathogenic microorganisms do not exhibit any clinical signs detectable during ante-mortem inspection.

! Attention: Slaughter animals may harbour pathogenic microorganisms in their gastrointestinal tracts, fur, or wool without showing any clinical symptoms.

! Attention: The veterinarian performing the ante-mortem inspection must transfer diseased animals to a quarantine unit. After the necessary cleaning and disinfection procedures are completed, the inspection may continue. No other animals should be examined or moved elsewhere unless proper disinfection measures are taken.

! Attention: Veterinary drug use is suspected when signs of injection or swelling are observed at typical injection sites. In such cases, food chain information is reviewed, and the animal is moved to a separate unit for careful inspection, sampling if necessary, and a decision regarding its suitability for slaughter.

1.6. Lymph Nodes Palpable During Ante-Mortem Inspection

The lymph nodes that the veterinarian can palpate during ante-mortem inspection are as follows (Figure 12):

- Lnn. submandibularis
- Lnn. parotidea
- Lnn. retropharyngealis lateralis
- Lnn. prescapularis (cervicalis superficialis)
- Lnn. prefemorale (subiliaci)
- Lnn. gluteus
- Lnn. tuberalis



Figure 12. Lymph nodes palpable during ante mortem examination (1. Lnn. parotidea; 2. Lnn. submandibularis; 3. Lnn. retropharyngealis lateralis; 4. Lnn. prescapularis (cervicalis superficialis); 5. Lnn. prefemorale (subiliaci); 6. Lnn. gluteus; 7. Lnn. tuberalis)

1.7. Decisions on Ante-Mortem Inspection

Upon completion of the ante-mortem inspection protocol, the following decisions can be made regarding slaughter animals:

- Emergency slaughter
- Casualty slaughter
- Slaughter condemnation (with a clear justification)
- Slaughter under special conditions

1.7.1. Situations Requiring Emergency Slaughter

- Traumatic fractures
- Difficult or obstructed labour
- Uterine prolapse
- Pregnancy toxæmia
- Mastitis
- Non-systemic joint and hoof disorders
- Local abscesses and wounds compressing the spinal cord
- Situations in which the animal cannot stand for more than a few minutes
- Non-infectious acute respiratory distress

- Constant tremors
- Non-infectious anorexia
- Non-infectious tympany
- Non-infectious tachycardia
- Non-infectious hypertonia in the jugular vein
- Non-infectious non-defecation situation

1.7.2. Situations in Which Slaughter Condemnation

- Newborn animals
- Very young animals whose meat is not yet mature
- Very weak animals
- Pregnant animals that have completed two-thirds of their gestation
- Animals that gave birth one week ago
- Animals with a very high fever

1.7.3. Emergency Slaughtering Outside the Slaughterhouse

In situations where death may occur rapidly, such as traffic accidents, electric shocks, asphyxia, or severe head trauma, and to ensure a swift end to suffering for animal welfare reasons, animals may be slaughtered before being brought to the slaughterhouse. After bleeding and removal of all organs, particularly the digestive system, the animal must be transported to the slaughterhouse without delay, along with its organs. The carcass, subject to post-mortem inspection by a veterinarian at the slaughterhouse, is stamped with a square stamp measuring 5 cm on each side, provided there are no obstacles to its consumption, and is then offered for consumption.

Carcasses and internal organs of animals found to be agonising or slaughtered after death are seized, and a disposal protocol is implemented. When identifying suspicious animals in such situations, the following points should be considered:

- The cut wound is smooth and not stained with blood.
- Muscle tissue appears dark reddish-maroon.
- Subcutaneous vessels are engorged.
- Internal organs are heavily blood-stained, particularly in the lungs, liver, and kidneys.
- The right side of the heart is filled with blood.
- If internal organs are not removed from the carcass, opening the abdominal cavity emits an intolerable foul odour.
- Peritoneal and renal fats appear greenish.

- The liver surface shows a yellow-green discolouration due to bile imbibition.
- Carcasses of dead animals decompose rapidly.
- Cold limbs and tympany indicate that time has elapsed since death.

! Attention: The most critical risk for animals found agonising or slaughtered after death is anthrax. In cases of anthrax-induced agony and death, the blood is dark and tarry.

1.7.4. Identification of Stillborn Animals

- The skin surrounding the body appears pasty and wet.
- The nails are light yellowish in colour and very soft.
- Umbilical cord remnants, including the umbilical arteries and veins, are visible and contain uncoagulated blood.
- If a neck wound is present, the surrounding area is not contaminated with blood.
- The carcass has a wet appearance with a pasty texture.
- The fat exhibits a jelly-like consistency.
- The lungs are deflated and firm, having not yet received air, and they sink when placed in a bucket of water.
- There is no coagulated milk in the stomach.
- The bone marrow is red.

1.7.5. Slaughter Under Special Conditions

In cases where a veterinarian suspects a slow-progressing, latent, lethal, and/or zoonotic disease during ante-mortem inspection, but the animal shows no obvious symptoms and cannot be postponed, a decision may be made to slaughter under special conditions.

The animal is kept in a separate paddock, isolated from other animals, and is transferred to the slaughterhouse only after other animals have been slaughtered. Slaughtering personnel are properly briefed, and bleeding is carried out with extreme care. All subsequent procedures are performed with maximum caution.

If there is a strong suspicion of disease at any stage, the process is immediately halted, and necessary cleaning and disinfection procedures are applied, starting with personnel and extending to all tools, equipment, and surfaces. Samples are sent to laboratories to support the veterinarian's evaluation of any physiological

or pathological abnormalities and to provide objective evidence for legal proceedings (see Section 6. Sending Samples for Laboratory Diagnosis and Confirmation).

! Attention: Section 1.8., Tables 6-13 lists the possible diseases that may cause various symptoms and abnormalities detected during ante mortem examination and the decisions to be made in these diseases. The colours of the possible diseases listed in the tables and the colours of the decisions to be made for these diseases written in the last column are the same.

1.8. Symptoms and Anomalies Detected During Ante-Mortem Examination, Possible Diseases, and Decision

1.8.1. Symptoms and Anomalies Identified During General Inspection, Possible Diseases, and Decision

Table 6. Symptoms and anomalies identified during general inspection, possible diseases, and decision

Symptoms	Possible Diseases					Decision	
Abscesses in the neck and head region	Caseous Lymphadenitis					Slaughter Condemnation	
Anaemia	Enzootic Bovine Leukosis		Liver Fluke Infestation		Anaplasmosis	Slaughter Condemnation	Casualty Slaughter
	Gastrointestinal Nematodiasis		Babesiosis	Theileriosis			
Anorexia	Hypocalcemia	Grass Tetany	Pregnancy Toxemia	Botulism	Anthrax	Emergency Slaughter	Slaughter Condemnation
	Leptospirosis	Pasteurellosis	Query Fever	Rinderpest	Blackleg		
	Malignant Oedema		Campylobacteriosis	Tularemia	Salmonellosis		
Aggression	Grass tetany	Rabies				Emergency Slaughter	Slaughter Condemnation
Bellowing	Grass tetany	Rabies				Emergency Slaughter	Slaughter Condemnation
Bleeding from natural orifices	Anthrax					Slaughter Condemnation	
Cachexia	Tuberculosis	Johne's Disease	Liver Fluke Infestation	Theileriosis	Tularemia	Slaughter Condemnation	
Cessation of defecation	Hypocalcemia					Emergency Slaughter	
Cessation of rumination	Hypocalcemia					Emergency Slaughter	
Circular turning movement	Listeriosis					Slaughter Condemnation	

Table 6 (continue). Symptoms and anomalies identified during general inspection, possible diseases, and decision

Symptoms	Possible Diseases				Decision	
Convulsions	Anthrax				Slaughter Condemnation	
Coordination disorder	Coryza Gangrenosa Bovum				Slaughter Condemnation	
Crepitant oedema in the lumbar-sacral region	Blackleg				Slaughter Condemnation	
Crepitant oedema in the neck region	Blackleg				Slaughter Condemnation	
Depression	Malignant Oedema	Leptospirosis	Campylobacteriosis	Slaughter Condemnation		
Diarrhoea	Johne's Disease	Rinderpest	Enzootic Bovine Leukosis	Salmonellosis	Slaughter Condemnation	
	Theileriosis	Coryza Gangrenosa Bovum	Babesiosis			
	Anaplasmosis	Campylobacteriosis	Tularemia			
Difficulty breathing	Grass Tetany	White Muscle Disease	Brisket Disease	Coryza Gangrenosa Bovum	Emergency Slaughter	Slaughter Condemnation
	Tetanus	Tularemia	Enzootic Bovine Leukosis	Actinomycosis		
Dry cough	Tuberculosis	Tularemia	Actinomycosis	Slaughter Condemnation		
Difficulty walking	Tetanus				Slaughter Condemnation	
Frequent shifting of position	Rabies				Slaughter Condemnation	
Hardening of neck and shoulder muscles	White Muscle Disease				Emergency Slaughter	

Table 6 (continue). Symptoms and anomalies identified during general inspection, possible diseases, and decision

Symptoms	Possible Diseases					Decision
Head bent to the side	Listeriosis					Slaughter Condemnation
Head-shaking movement	Toxoplasmosis					Slaughter Condemnation
Holes in the thoracic skin areas	Warble Fly Infestation					Slaughter Condemnation
Hypersensitivity	Tetanus					Slaughter Condemnation
Hyperthermia	Anthrax	Leptospirosis	Pasteurellosis	Tetanus	Tularemia	Slaughter Condemnation
	Coryza Gangrenosa	Bovum	IBR	Rinderpest/Sheep/ Goat Plague	FMD	
	Bluetongue	Pox	Lumpy Skin Disease	Babesiosis	Blackleg	
	Theileriosis	Tularemia	Malignant Oedema	Anaplasmosis	Salmonellosis	
Hypothermia	Hypocalcemia	Blackleg			Emergency Slaughter	Slaughter Condemnation
Irritability	Grass Tetany					Emergency Slaughter
Inability to stand for more than a few minutes	White Muscle Disease					Emergency Slaughter
Increased sexual desire	Rabies					Slaughter Condemnation
Intermittent fever	Malta Fever					Slaughter Condemnation
Jaundice on the skin	Arsenic Poisoning					Slaughter Condemnation
Jugular vein swelling	Brisket Disease					Emergency Slaughter
Lying on the back	Malignant Oedema					Slaughter Condemnation
Lying on the chest	Hypocalcemia	Botulism			Emergency Slaughter	Slaughter Condemnation

Table 6 (continue). Symptoms and anomalies identified during general inspection, possible diseases, and decision

Symptoms	Possible Diseases		Decision
Lying on the side	Tetanus		Slaughter Condemnation
Masseter muscle spasm (Lockjaw)	Tetanus		Slaughter Condemnation
Necrotic dermatitis	Leptospirosis		Slaughter Condemnation
Numerous ticks on the skin	Tularemia		Slaughter Condemnation
Oedema in the lumbar-sacral region	Warble Fly Infestation		Slaughter Under Special Conditions
Oedema in the neck and chest region	Anthrax	Brisket Disease	Slaughter Condemnation Emergency Slaughter
Oedema of skeletal muscles	Blackleg		Slaughter Condemnation
Oedema under the jaw	Enzootic Bovine Leukosis	Pasteurellosis	Slaughter Under Special Conditions
Opisthotonus	Coenurosis	Tetanus	Slaughter Condemnation
Paralysis	Rabies		Slaughter Condemnation
Paralysis of skeletal muscles	Botulism		Slaughter Condemnation
Pommel horse position	Tetanus		Slaughter Condemnation
Rapid breathing	Anthrax	Tularemia	Slaughter Condemnation
Respiratory paralysis	Botulism		Slaughter Condemnation
Restless appearance	Rabies		Slaughter Condemnation
Running with tail held up	Warble Fly Infestation		Slaughter Under Special Conditions
Separation from the herd	Grass Tetany	Listeriosis	Emergency Slaughter Slaughter Condemnation

Table 6 (continue). Symptoms and anomalies identified during general inspection, possible diseases, and decision

Symptoms	Possible Diseases				Decision	
Skin contaminated with pus	Warble Fly Infestation				Slaughter Under Special Conditions	
Soldier's gait	Tularemia				Slaughter Condemnation	
Spasmodic muscle contractions	Tetanus				Slaughter Condemnation	
Stiff and erect tail	Tetanus				Slaughter Condemnation	
Stiff head-neck	Tetanus		Listeriosis		Slaughter Condemnation	
Stranguria	Rabies		Tularemia		Slaughter Condemnation	
Tachycardia	White Muscle Disease				Emergency Slaughter	
Tar-like diarrhoea	Tanen Poisoning				Slaughter Condemnation	
Tenesmus	Rabies				Slaughter Condemnation	
Tremor	Hypocalcemia	Grass Tetany	White Muscle Disease	Toxoplasmosis	Emergency Slaughter	
Tympany	Hypocalcemia	Tanen Poisoning		Tetanus	Emergency Slaughter	Slaughter Condemnation
Unsteady gait	Listeriosis				Slaughter Condemnation	
Upright gait	Blackleg				Slaughter Condemnation	
Vesicle formations on the body	Pox		Lumpy Skin Disease		Slaughter Condemnation	
Vomiting	Gastrointestinal Nematodiasis				Slaughter Under Special Conditions	
Weakness	Pregnancy Toxemia	Brisket Disease		Botulism	Anthrax	
	Leptospirosis	Pasteurellosis		Query Fever	Rinderpest/Sheep/Goat Plague	Emergency Slaughter
	Enzootic Bovine Leukosis		Tuberculosis		Blackleg	
Wheezing respiration	Toxoplasmosis		Tuberculosis		Slaughter Condemnation	

1.8.2. Symptoms and Anomalies Detected During Oral Examination, Possible Diseases, and Decision

Table 7. Symptoms and anomalies detected during oral examination, possible diseases, and decision

Symptoms	Possible Diseases				Decision
Acetone odour in breath	Pregnancy Toxemia				Emergency Slaughter
Cyanosis of the tongue	Bluetongue				Slaughter Condemnation
Cyanotic and brownish changes in the oral mucosa	Nitrate Poisoning				Slaughter Condemnation
Difficulty in rumination	Rinderpest	FMD			Slaughter Condemnation
Difficulty swallowing and chewing	Actinobacillosis	Actinomycosis	Rabies	Listeriosis	Slaughter Condemnation
	Enzootic Bovine Leukosis				
Egg white-like salivation	FMD				Slaughter Condemnation
Erosion of the oral mucosa	Rinderpest				Slaughter Condemnation
Fistulas in the jaw	Actinomycosis				Slaughter Condemnation
Frothy saliva	Coryza Gangrenosa Bovum	Leptospirosis			Slaughter Condemnation
Increased salivation	Actinobacillosis	Actinomycosis	Listeriosis		Slaughter Condemnation
Ineffective chewing movements	Grass Tetany				Emergency Slaughter
Intermandibular oedema/leukosis	Enzootic Bovine Leukosis	Gastrointestinal Nematodiasis			Slaughter Condemnation Casualty Slaughter
Lump or swelling in the jaw	Actinomycosis				Slaughter Condemnation
Loosening of teeth	Actinomycosis				Slaughter Condemnation

Table 7 (continue). Symptoms and anomalies detected during oral examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision	
Necrotic foci in the mouth	Rinderpest	FMD			Slaughter Condemnation
Small abscesses from the cheeks to the mandible	Actinobacillosis	Actinomycosis	Tularemia		Slaughter Condemnation
Teeth grinding	Hypocalcemia	Pasteurellosis	Listeriosis	Blackleg	Emergency Slaughter Slaughter Condemnation
Thickening of the lip	Actinobacillosis				Slaughter Condemnation
Tongue paralysis	Botulism				Slaughter Condemnation
Tongue swelling	Actinobacillosis	Actinomycosis	Bluetongue		Slaughter Condemnation
Ulcer on the dorsal tongue	Actinomycosis				Slaughter Condemnation

1.8.3. Symptoms and Anomalies Detected During Eye Examination, Possible Diseases, and Decision

Table 8. Symptoms and anomalies detected during eye examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Blindness	Listeriosis			Slaughter Condemnation
Brownish cloudy appearance in the conjunctiva	Nitrate Poisoning			Slaughter Condemnation
Conjunctival prolapse	Enzootic Bovine Leukosis			Slaughter Condemnation
Conjunctivitis	IBR			Slaughter Condemnation
Corneal opacity	Lumpy skin	Coryza Gangrenosa Bovum	Listeriosis	Slaughter Condemnation
Exophthalmos	Enzootic Bovine Leukosis			Slaughter Condemnation
Eye discharge	Query Fever Listeriosis	Coryza Gangrenosa Bovum Pox	IBR Rinderpest	Slaughter Condemnation
Jaundice in the conjunctiva	Leptospirosis	Arsenic Poisoning	Copper Poisoning	Slaughter Condemnation
Ocular lymphosarcoma	Enzootic Bovine Leukosis			Slaughter Condemnation
Prolapse of the third eyelid	Tetanus			Slaughter Condemnation
Strabismus	Listeriosis			Slaughter Condemnation

1.8.4. Symptoms and Anomalies Detected During Nose Examination, Possible Diseases, and Decision

Table 9. Symptoms and anomalies detected during nose examination, possible diseases, and decision

Symptoms	Possible Diseases				Decision
Facial paralysis	Botulism				Slaughter Condemnation
Frothy bloody nasal discharge	White muscle disease	Bluetongue			Emergency Slaughter Slaughter Condemnation
Jaundice in the snout	Leptospirosis				Slaughter Condemnation
Mucopurulent nasal discharge	Pox	Tuberculosis			Slaughter Condemnation
Nasal discharge	Query Fever	Toxoplasmosis	IBR	Listeriosis	Slaughter Condemnation
	Rinderpest/Sheep Plague	Tuberculosis	Coryza	Gangrenosa Bovum	
Rhinitis	Pasteurellosis				Slaughter Condemnation

1.8.5. Symptoms and Anomalies Detected During the Examination of the Extremities, Possible Diseases, and Decision

Table 10. Symptoms and anomalies detected during the examination of the extremities, possible diseases, and decision

Symptoms	Possible Diseases			Decision	
Abscess formation in the legs	Caseous Lymphadenitis			Slaughter Condemnation	
Arthritis	Malta Fever			Slaughter Condemnation	
Difficulty walking	Tetanus			Slaughter Condemnation	
Hypersensitivity	Hypocalcemia			Emergency Slaughter	
Joints are immobile	Grass Tetany			Emergency Slaughter	
Lameness	FMD	Malta Fever	Leptospirosis	Blackleg	Slaughter Condemnation
Laminitis	Bluetongue			Slaughter Condemnation	
Moving the legs away from the sides of the chest area	Brisket Disease			Emergency Slaughter	
Paralysis in the hind legs	Enzootic Bovine Leukosis			Slaughter Condemnation	
Staggering gait	Grass Tetany			Emergency Slaughter	
Vesicles on the hooves	FMD			Slaughter Condemnation	

1.8.6. Symptoms and Anomalies Detected During Genital Organ Examination, Possible Diseases, and Decision

Table 11. Symptoms and anomalies detected during genital organ examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Abortion	Query Fever Toxoplasmosis	IBR	Tuberculosis Malta Fever	Slaughter Condemnation
Anuria	Leptospirosis			Slaughter Condemnation
Balanoposthitis	IBR			Slaughter Condemnation
Haemoglobinuria	Leptospirosis			Slaughter Condemnation
Mastitis	Query Fever	Malta Fever		Slaughter Condemnation
Mucopurulent discharge in the vagina	Malta Fever			Slaughter Condemnation
Orchitis	Malta Fever			Slaughter Condemnation
Red-coloured nodules in the vagina	Malta Fever			Slaughter Condemnation
Swellings in breast tissue	Tuberculosis			Slaughter Condemnation
Vesicles in breast tissue	FMD	Lumpy Skin		Slaughter Condemnation

1.8.7. Symptoms and Anomalies Detected During Mucosa Examination, Possible Diseases, and Decision

Table 12. Symptoms and anomalies detected during mucosa examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision	
Cyanotic mucosa	Brisket Disease			Emergency Slaughter	
Gray-white, grey-red, mucopurulent exudate on vaginal mucosa	Malta Fever			Slaughter Condemnation	
Jaundice	Leptospirosis			Slaughter Condemnation	
Pallor of the oral mucosa	Cyanide poisoning			Slaughter Condemnation	
Pallor on the mucosa	Leptospirosis			Slaughter Condemnation	
Pallor on vaginal mucosa	Cyanide poisoning			Slaughter Condemnation	
Petechiae on the mucosa	Leptospirosis			Slaughter Condemnation	
Red nodules on the vaginal mucosa	Cyanide poisoning			Slaughter Condemnation	
Ulceration on the mucosa	Bluetongue	Babesiosis	Theileriosis	Anaplasmosis	Slaughter Condemnation

1.8.8. Symptoms and Abnormalities Detected During Lymph Nodes Examination, Possible Diseases, and Decision

Table 13. Symptoms and anomalies detected during lymph nodes examination, possible disease

Symptoms	Possible Diseases			Decision
Enlargement of lymph nodes	Caseous Lymphadenitis Enzootic Bovine Leukosis	Blackleg Theileriosis	Tuberculosis Tularemia Lumpy Skin Disease	Slaughter Condemnation
Enlargement of maxillary lymph nodes	Actinobacillosis	Actinomycosis	Caseous Lymphadenitis	Slaughter Condemnation
Enlargement of the supramammary lymph node	Malta Fever			Slaughter Condemnation
Purulent abscesses in the mandibular lymph nodes	Actinomycosis	Caseous Lymphadenitis		Slaughter Condemnation

1.9. Special Situations Encountered During Ante-Mortem Inspection

The ante-mortem inspection protocol must be followed meticulously. However, it is advisable to make separate assessments for certain diseases that have caused major epidemics, significant economic losses, severe threats to animal life, and notable public health concerns in recent human history, and to re-evaluate the process critically. In this context, it is appropriate to pay particular attention to diseases such as Bovine Spongiform Encephalopathy (BSE), scrapie, foot-and-mouth disease, rinderpest, brucellosis, Lumpy Skin Disease (LSD), sheep and goat pox, anthrax, rabies, enzootic bovine leukosis, and infectious bovine pleuropneumonia, and to review associated quarantine measures and the implementation of cordon zones (see section 1.10 Quarantine Measures and Cordon Zone Implementation).

1.9.1. BSE (Mad Cow Disease) Risk Situations

This disease is subject to mandatory reporting and compensation. Bovine Spongiform Encephalopathy (BSE) is a neurodegenerative, slowly progressing, lethal, and zoonotic disease affecting the central nervous system of cattle.

Cattle exhibiting any of the following symptoms are considered at risk for BSE. These animals are slaughtered under special precautions. After beheading, the samples are sent to a regional laboratory for BSE testing. The carcass is preserved until laboratory results are received and is not released for consumption.

Symptoms indicating risk for BSE include:

- High-stepping gait
- Inability to walk on concrete floors
- Irritability, fear, and anxiety
- Aggression toward humans
- Difficulty entering enclosed spaces or passing through doors
- Head held down; excessive reaction to touching the head and neck
- Sensitivity to sound and light
- Difficulty rising from the ground
- Skin tremors and severe nasal itching

1.9.2. Scrapie Risk Situations

This disease is subject to mandatory reporting and compensation. Scrapie is a neurodegenerative, lethal, and zoonotic disease affecting the central nervous system of sheep and goats. Animals showing clinical signs are euthanised and slaughtered. After euthanasia, the heads are sent to a regional laboratory for scrapie testing.

Symptoms indicating risk for scrapie include:

- Inability to walk on concrete floors
- Irritability, fear, and anxiety
- Aggression toward humans
- Hopping on the hind legs
- Constantly turning the head to the side, holding the ears down, and experiencing tremors in the head and neck
- Sensitivity to sound and light
- Abrasions and hematomas caused by intense itching
- Wool-pulling behaviour

Sending samples for diagnosis in animals suspected of BSE and Scrapie:

For accurate diagnosis of BSE and scrapie using histopathological methods, the most appropriate site for sample collection is the obex region of the brain (Figure 13). The obex can be accessed by inserting a spoon through the foramen magnum. The sample is then placed in containers to prevent contamination and sent to the laboratory while maintaining the cold chain.



Figure 13. The Obex region of the brain from which samples are taken in suspected cases of BSE and scrapie

1.9.3. Foot and Mouth Disease Risk Situations

This disease is subject to mandatory reporting and compensation. During ante-mortem inspection, the oral cavity, feet, and hooves must be carefully examined for signs of foot-and-mouth disease (FMD). Animals displaying the following clinical symptoms are considered at risk for FMD. If an elevated body temperature is suspected, it should be verified using a clinical thermometer. When the presence of the causative agent is confirmed through laboratory diagnosis, the animal must be humanely euthanised, and compensation shall be provided to the owner in accordance with national animal health legislation.

In cases where FMD is detected post-mortem, and the disease is complicated by secondary infections, cachexia, or muscular degeneration, the entire carcass shall be condemned and destroyed. However, if the animal is otherwise healthy and well-nourished, and no concurrent diseases are present, only the affected tissues and hooves are to be removed and destroyed, while the remaining carcass may be deemed fit for human consumption under veterinary supervision.

- Excessive salivation with a viscous, egg-white-like consistency originating from the mouth
- Vesicular lesions on the tongue, oral mucosa, and palate
- Desquamation or sloughing of the lingual epithelium
- Lameness associated with vesicles or erosions on the feet or in the interdigital spaces

1.9.4. Cattle/Sheep and Goat Plague Risk Situations

This disease is subject to mandatory reporting and compensation. When cases of plague, rinderpest, or peste des petits ruminants (PPR) are detected in slaughterhouses, abattoirs, or meat processing facilities, affected and suspected animals must be humanely euthanised and destroyed, with compensation provided to their owners. Animals that are neither affected nor suspected may be slaughtered; however, their viscera and heads are condemned, while hides and hooves are thoroughly disinfected and released. The meat from such animals is deemed fit for human consumption.

All parts of affected or suspected animals, including blood and meat, must be destroyed to prevent the spread of infection.

1.9.5. Brucellosis Risk Situations

This disease is subject to mandatory reporting and compensation. It is characterised by mucopurulent, foul-smelling vaginal discharge following

parturition or abortion, as well as by retained placenta or metritis, mastitis, orchitis, and arthritis.

During the febrile stage, the causative agent may be present in the bloodstream. In such cases, affected animals are humanely euthanised and destroyed.

1.9.6. Lumpy Skin Disease (LSD) Risk Situations

This disease is subject to mandatory reporting and compensation. Following a high fever, nodules measuring 0.5–7 cm in diameter appear on the skin of the head, neck, legs, and perineal region.

A sudden drop in milk production, severe debilitation, abortion in pregnant animals, rapid emaciation, and lameness are important clinical indicators of the disease.

1.9.7. Sheep and Goat Pox Risk Situations

This disease is subject to mandatory reporting and compensation. It is a fatal and highly contagious condition characterised by vesicular eruptions on the skin, oral cavity, tongue, and upper respiratory mucosa of sheep and goats. High fever, eyelid oedema, mucopurulent nasal discharge, anorexia, and a humped posture are essential clinical indicators.

If pox lesions are detected during ante-mortem inspection, slaughter is permitted only after sixty (60) days following the lifting of quarantine upon recovery or death of affected animals. In such cases, hides, hooves, and horns are disinfected, and the meat is approved for human consumption.

If pox lesions are identified during post-mortem inspection, and the carcass is emaciated or lesions are widespread and deep, the entire carcass must be condemned. However, if lesions are few and localised, the affected areas are removed, and the remaining parts may be deemed suitable for consumption.

1.9.8. Anthrax Risk Situations

This disease is subject to mandatory reporting, compensation, and also prohibited for slaughter. It is characterised by shivering, rough hair coat, abdominal pain, reduced milk yield, yellowish or bloody milk, hematuria, haemorrhage from natural orifices, oedema of the neck, pharynx, and tongue, cyanotic mucous membranes, and bloody urine.

1.9.9. Rabies Risk Situations

This disease is subject to mandatory reporting, compensation, and is also prohibited for slaughter. Animals bitten by rabid or suspected rabid animals, but

not yet exhibiting clinical signs of rabies, may be slaughtered within a maximum of ten (10) days. The bite wound, scar, or lesion must be removed and condemned, after which the meat may be permitted for human consumption.

1.9.10. Enzootic Bovine Leukosis Risk Situations

This disease is subject to mandatory reporting. It is a fatal, tumour-forming disease primarily affecting the skin, lymph nodes, bone marrow, lymphocytes, and thymus, and is more commonly observed in adult cattle aged 4–8 years. Clinical signs include weight loss, decreased productivity, and painless, non-inflammatory, symmetrical lymph node enlargement.

1.9.11. Contagious Bovine Pleuropneumonia Risk Situations

This disease is subject to mandatory reporting. It is characterised by coughing, shallow and rapid respiration, oedema in the throat, mucopurulent and bloody nasal discharge, pain upon palpation of the ribs, humped back posture, and constipation.

1.9.12. Bluetongue Risk Situations

This disease is subject to mandatory reporting and compensation. It is characterised by congestion, oedema, haemorrhages, high fever, excessive salivation, and foaming at the mouth. The coronary bands of the feet are hyperemic and painful, and affected animals are reluctant to walk, with hooves potentially sloughing. The head and neck region is oedematous, and the tongue appears cyanotic and swollen.

1.10. Quarantine Measures and Cordoned Area Implementation

When a mandatory or epidemic disease is detected in animals within a region, when unexplained animal deaths occur, or when an animal becomes ill or dies in an area where a disease is prevalent, animal owners, caretakers, village headmen, and veterinarians examining the animals must report the situation to the Provincial or District Directorate of Agriculture and Forestry.

Administrative authorities are required to arrive at the site within 24 hours to carry out necessary inspections. Until the veterinarian from the Provincial Directorate's Animal Health and Husbandry Branch or the District Directorate arrives, quarantine measures are applied. Sick and healthy animals are segregated, entry and exit are restricted, and equipment used for sick animals may not be removed. A single person is assigned to care for the sick animals, and no one else is permitted in the isolation area. Dead animals are preserved until the authorised veterinarian arrives.

Upon arrival, the official veterinarian conducts inspections. If clinical findings indicate a notifiable or epidemic disease, this date is recorded as the cordon date. If the responsible veterinarian in a slaughterhouse or abattoir detects a notifiable disease during ante-mortem or post-mortem inspection, a sample is sent to the designated regional laboratory via the Provincial/District Directorate. Until the results are available, the enterprise of origin is notified, and the area is defined as a temporary cordon area, with the date recorded as the temporary cordon date.

If laboratory results confirm the diagnosis, the report date becomes the confirmation date, marking the final diagnosis. The report is submitted to the Animal Health and Zoonoses Commission. Based on the Commission's decision, a protection zone with a 3 km radius and a surveillance zone with a 10 km radius around the affected establishment are established; these are designated as cordoned areas. Guards and wardens are assigned in villages, while police and municipal officers are appointed in towns and cities to enforce the measures.

According to the 2024 Directive on Animal Disease Control and Animal Movement Control, mandatory cordon periods for notifiable diseases are provided in Table 14. In the event of a zoonotic disease outbreak, the Ministry of Health is notified on the same day to ensure inter-agency cooperation and coordination.

To ensure a more accurate epidemiological assessment, studies continue until the route and mode of transmission (filiation) of the disease are determined, the source of transmission is identified, and control measures are implemented.

Within the cordoned area, quarantine measures are enforced. Quarantine measures are based on three main principles:

- Isolation
- Movement restrictions
- Surveillance

Isolation is the first step of quarantine and involves physically separating infected or exposed animals from healthy ones. This procedure prevents direct contact and limits the potential for disease transmission via indirect means, such as contaminated feed or water. The isolation area should be designed in order to avoid escape and minimise the risk of pathogen spread through environmental contamination.

Quarantine also includes controlling the entry and exit of animals, personnel, and materials into and out of the quarantine area. To prevent disease spread to other locations, the movement of animals, animal products, and potentially contaminated equipment must be restricted. Establishing checkpoints at the

boundaries of the quarantine area and disinfecting vehicles and equipment at these points is crucial.

Moreover, the number of personnel accessing quarantine areas should be limited. Personnel must wear protective clothing and undergo disinfection procedures before and after contact with quarantined animals. Disinfection is a critical component of quarantine protocols to reduce the risk of indirect transmission. Additional biosecurity measures, such as footbaths, handwashing stations, and disposable protective clothing, are also essential for preventing the spread of infectious agents.

Continuous monitoring and surveillance throughout the quarantine period are critical for assessing the health status of isolated animals and detecting new infections. This involves regular clinical inspections, diagnostic testing, and observation of disease symptoms. The frequency and type of tests depend on the incubation period of the suspected pathogen and the duration of the quarantine. Surveillance is not limited to isolated animals but also extends to the surrounding environment, including nearby animal populations, to ensure that the infection has not spread beyond the quarantine area. This helps determine when it is safe to release animals from quarantine or whether additional control measures are necessary.

Table 14. Quarantine periods for mandatory reportable diseases according to the 2024 General Directive on Combating Animal Diseases and Controlling Animal Movements

Disease	Cord Durations (After Final Recovery and Death)
Rinderpest	28 days
FMD	30 days
Pox	28 days
Sheep/Goat Plague	28 days
Anthrax	15 days
Tuberculosis	Tests are conducted every 60 days. If the last two tests yield negative (-) results, the cord application is discontinued.
Rabies	6 months for carnivores, ungulates, and cattle, 3 months for sheep, goats, pigs, and poultry
Bluetongue	40 days

The following measures are applied in the cordoned-off area:

- Sick or suspected sick animals are not allowed to leave the cordoned-off area.
- No animal products, materials, or feed that could cause contamination are allowed to leave the cordoned-off area.
- Animals susceptible to the disease are not allowed to enter the cordoned-off area.
- If a slaughterhouse exists within the cordoned-off area, only animals brought to the slaughterhouse are allowed to enter. Animals that are not slaughtered must remain in the area.
- Official veterinary approval is required to remove animals from the cordoned-off area for slaughter. If approval is obtained, animals are transported in vehicles isolated from the outside environment and are not unloaded until arrival.
- After slaughter, animals' hides are disinfected, and relevant organs are destroyed. No other animals may be slaughtered until the slaughter site has been thoroughly disinfected.
- Vehicles used for animal transport must not move until they have been properly disinfected.

In areas where a disease outbreak has occurred, personnel designated by the Animal Health Inspection Commission carry out culling and disposal of sick animals and animals that have been in contact with infected animals. Animals that die or are culled in the cordoned-off area must be buried in pits at least two meters deep, treated with lime, incinerated, or destroyed using chemical agents, without removing their hides. Disposal must be conducted in locations where other animals cannot come into contact with them, away from water sources such as streams or rivers, and in areas that will not contaminate groundwater.

Once it is determined that the last death from the disease and the last recovery have occurred, the official veterinarian submits a report to the Animal Health Commission proposing the lifting of the cordon. If the commission approves the report, the cordon is lifted. This date is recorded as the date of disease cessation.

2. POST-MORTEM INSPECTION

When a decision to approve slaughter is made following ante-mortem inspection, post-mortem inspection commences immediately after the animal is restrained, beginning with bleeding. The slaughter process is conducted as illustrated in Figure 15. No further processing may occur, and no parts may be removed from the slaughterhouse until the blood, head, skin, carcass, and all internal organs of the slaughtered animal have undergone a systematic inspection.

After examining the aforementioned organs and tissues, all parts deemed suitable for consumption, except those prohibited for specific reasons, are stamped with a health mark and released for consumption. The health mark, as shown in Figure 14, measures 6.5 cm in width and 4.5 cm in height, features legible characters, has an oval shape, and contains the following information: The mark indicates the name of the country where the establishment is located in capital letters or may use a two-letter ISO code. It also displays the slaughterhouse approval number, which includes the slaughterhouse's plate code. Additionally, the health mark may include the mark of the official or authorised veterinarian who performed the meat inspection.



Figure 14. Stamps to mark meat carcasses

2.1. Issues to Consider During Post-Mortem Inspection

Veterinarians must not commence the post-mortem inspection without first ensuring that the requirements listed in Table 15 are met. The effectiveness of the post-mortem inspection depends closely on the availability of the necessary equipment and on fulfilling these conditions before starting the inspection.

During the post-mortem inspection, incisions are made at an adequate size and in sufficient number to avoid reducing the commercial value of organs and tissues and to prevent rapid deterioration. Organs and tissues to be removed are carefully dissected, with precautions taken to prevent contamination of healthy organs, tissues, clean surfaces, instruments, or equipment. In such cases, it is advisable to designate a separate area in a different section of the cutting room for these procedures. Knives and other instruments used are disinfected before examining another carcass or organ.

Table 15. Material checklist for postmortem examination

Checklist for a veterinarian	
✓	At least two stainless steel scalpels
✓	Knife sharpener
✓	Plastic knife scabbard
✓	Surgical gloves
✓	Hot water at least 82°C
✓	Disinfectant
✓	Natural or artificial lighting without colour distortion
✓	Waterproof labels to track head, carcass, skin, and internal organs belonging together
✓	Sample collection bags and containers
✓	Waterproof, easy-to-clean apron
✓	Steel-toed waterproof boots or shoes
✓	Helmet
✓	Protective goggles
✓	Glass test tubes
✓	Glass beakers (100 ml)
✓	Absolute Ethanol
✓	Ether
✓	Pure water
✓	Spatula
✓	Pot, pan
✓	Stove

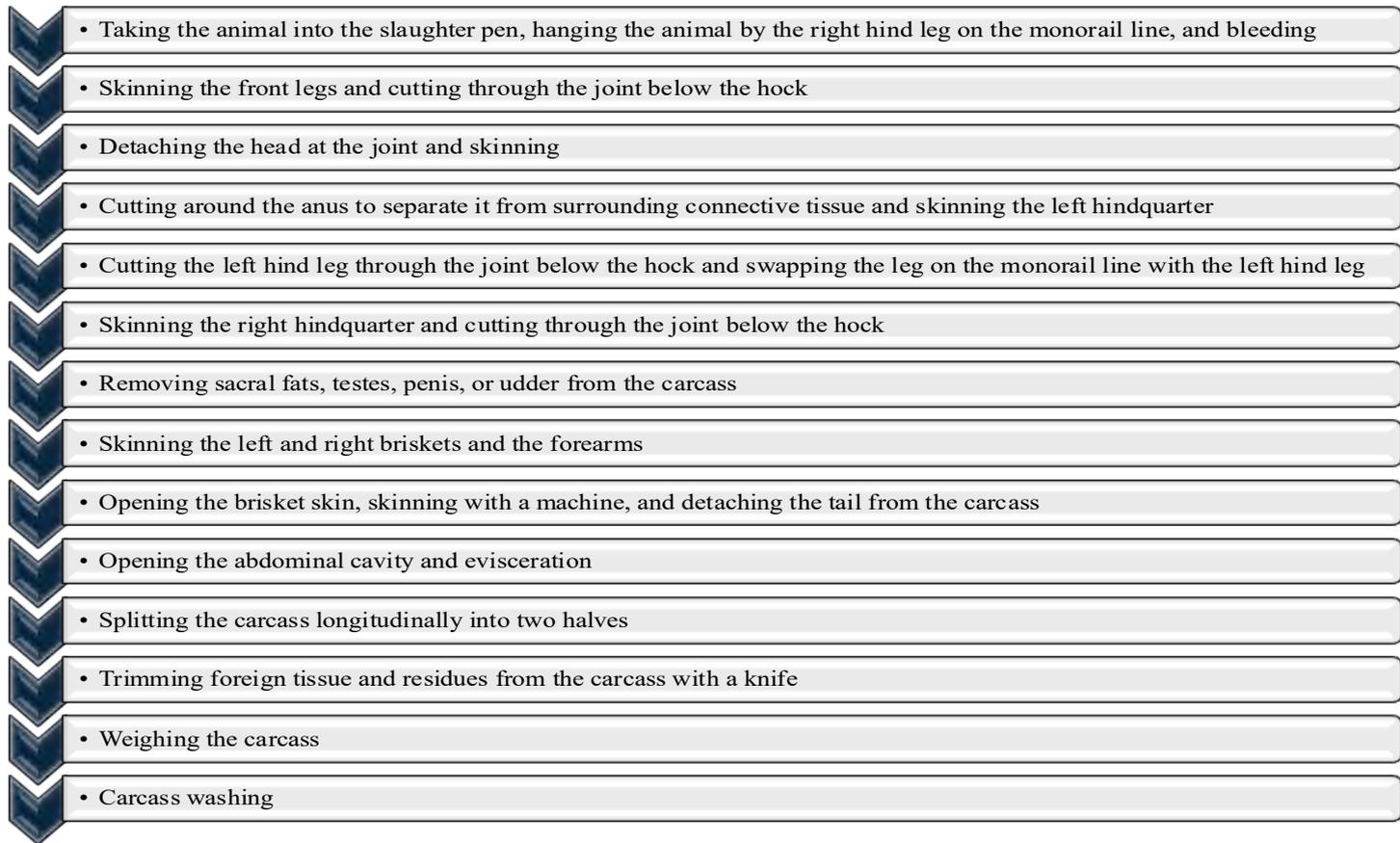
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- Taking the animal into the slaughter pen, hanging the animal by the right hind leg on the monorail line, and bleeding
 - Skinning the front legs and cutting through the joint below the hock
 - Detaching the head at the joint and skinning
 - Cutting around the anus to separate it from surrounding connective tissue and skinning the left hindquarter
 - Cutting the left hind leg through the joint below the hock and swapping the leg on the monorail line with the left hind leg
 - Skinning the right hindquarter and cutting through the joint below the hock
 - Removing sacral fats, testes, penis, or udder from the carcass
 - Skinning the left and right briskets and the forearms
 - Opening the brisket skin, skinning with a machine, and detaching the tail from the carcass
 - Opening the abdominal cavity and evisceration
 - Splitting the carcass longitudinally into two halves
 - Trimming foreign tissue and residues from the carcass with a knife
 - Weighing the carcass
 - Carcass washing

Figure 15. Slaughter process in livestock

2.2. Blood Inspection

The first tissue examined during the postmortem inspection conducted by the veterinarian is blood. In other words, the postmortem inspection begins with bleeding. Bleeding can be performed using two different techniques (Figure 16).

In the horizontal bleeding method, the artery, vein, trachea, and oesophagus in the throat region are severed in a single stroke just below the lower jawbone. In the vertical bleeding method, the main artery and vein emerging from the heart are cut through an incision in the chest.

During the slaughter of livestock, the quantity, colour, coagulation properties, and the presence of any foreign material in the blood are carefully examined.

On average, the total blood volume of slaughtered animals constitutes approximately 7.5–8% of their body weight, and about half of this volume is expected to be drained during bleeding.

If the blood appears pitch-black in colour, it raises suspicion of anthrax. Incomplete or absent coagulation of the blood is a critical diagnostic indicator for anthrax, blood parasitic infections, degenerative liver disorders (such as jaundice), leptospirosis, and other septicemic conditions.

! Attention: Examination of blood during postmortem inspection is of paramount importance for the diagnosis of anthrax. In cases where the disease cannot be detected during ante-mortem inspection, the blood examination performed post-mortem plays a decisive role in identifying anthrax infection.

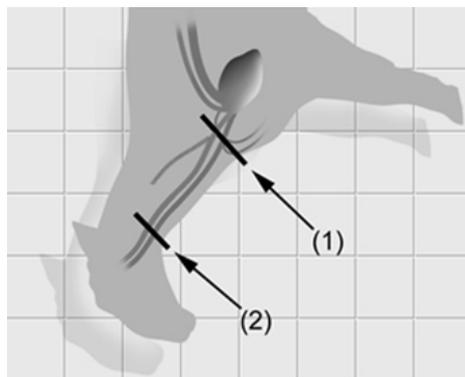


Figure 16. Cutting area in vertical (1) and horizontal (2) cutting methods

2.3. Hide Examination

After skinning, the hide is placed on a clean, flat surface and carefully examined. The inner surface of the hide is cleaned using the blunt edge of a knife to remove residual blood and tissue fragments. Once cleaned, the inner surface is inspected for colour, vascular congestion, and uniformity (Figure 17).

If the inner surface of the hide appears excessively congested or blood-filled, meaning that blood vessels are markedly engorged, this suggests that improper skinning was performed, or that the animal was slaughtered while in agony or after death.

During post-mortem inspection, the hide is also evaluated for the presence of wounds, abscesses, and subcutaneous oedema or fluid infiltration on its inner surface. Lesions associated with scabies, hypodermosis, sheep and goat pox (figure 18), anthrax, blackleg, and foot-and-mouth disease vesicles may also be observed.

! Attention: The post-mortem inspection of the carcass must be performed immediately after the completion of the skinning process to prevent decomposition and cross-contamination.

! Attention: During post-mortem inspection, the carcass, internal organs, and head must be kept together and subjected to a systematic examination by the official veterinarian.



Figure 17. Skin examination of small livestock



Figure 18. Pox lesions on the skin

! Attention: Section 2, Tables 16-31, lists the possible diseases that may cause various symptoms and abnormalities detected during post-mortem examination and the decisions to be made in these diseases. The colours of the possible diseases listed in the tables and the colours of the decisions to be made for these diseases written in the last column are the same.

Table 16. Symptoms and anomalies detected during blood examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Blood dark-coloured	Anthrax	Tetanus	Blackleg	Total Condemnation
Blood does not clot	Anthrax			Total Condemnation
Blood light-coloured	Gastrointestinal Nematodiasis			Local Condemnation
Hydremia	Johne's Disease			Total Condemnation
Insufficient bleeding	Anthrax	Leptospirosis	Pasteurellosis Tularemia	Total Condemnation
Jaundice	Leptospirosis			Total Condemnation
Odor	Hypocalcemia	Grass Tetany	Pregnancy Toxemia	Total Condemnation

Table 17. Symptoms and anomalies detected during skin examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Ash-coloured lesions	Pox	Lumpy Skin Disease		Total Condemnation
Gas gangrene formation	Blackleg			Total Condemnation
Jaundice	Leptospirosis			Total Condemnation
Odor	Hypocalcemia	Grass Tetany	Pregnancy Toxemia	Total Condemnation
Red gelatinous infiltration	Blackleg			Total Condemnation
Splash ink-like appearance	Leptospirosis			Total Condemnation
Tissues dark red	Blackleg			Total Condemnation

2.4. Head Examination

For the preparation of the head for post-mortem inspection, the tongue is detached from the lower jaw and pulled downward between the mandibular bones. This positioning allows easy examination of the oral cavity, pharynx, and base of the tongue.

An incision parallel to the mandible is made in the internal and external masseter muscles to check for the presence of parasite larvae (*Cysticercus* spp.) (Figure 23).

The nostrils, lips, gums, palate, and pharyngeal region are inspected for necrotic foci and erosion of the mucosa (Figures 19-20).

The tongue is examined for necrotic foci, oedema, cyanosis, and mucosal erosion. The consistency of the tongue is assessed by palpation to detect any abnormal hardness, which may indicate foot-and-mouth disease, rinderpest, or Actinobacillosis. A vertical section is made at the posterior part of the tongue to search for *Cysticerci* (Figure 22).

Finally, the head lymph nodes are examined for lesions suggestive of tuberculosis, Actinobacillosis, Actinomycosis, Leukaemia, and other systemic diseases.

Lymph nodes palpable in the head region during post-mortem inspection by the veterinarian:

- Lnn. submandibularis (Figure 26)
- Lnn. parotidea (Figure 27)
- Lnn. retropharyngealis lateralis and medialis (Figure 28)

! Attention: The tonsils are examined for suspected tuberculosis (Figure 24).



Figure 19. Examination of the oral mucosa



Figure 20. Examination of the nasal mucosa



Figure 21. Examination of the eye mucosa



Figure 22. Preparation and examination of the tongue in cattle

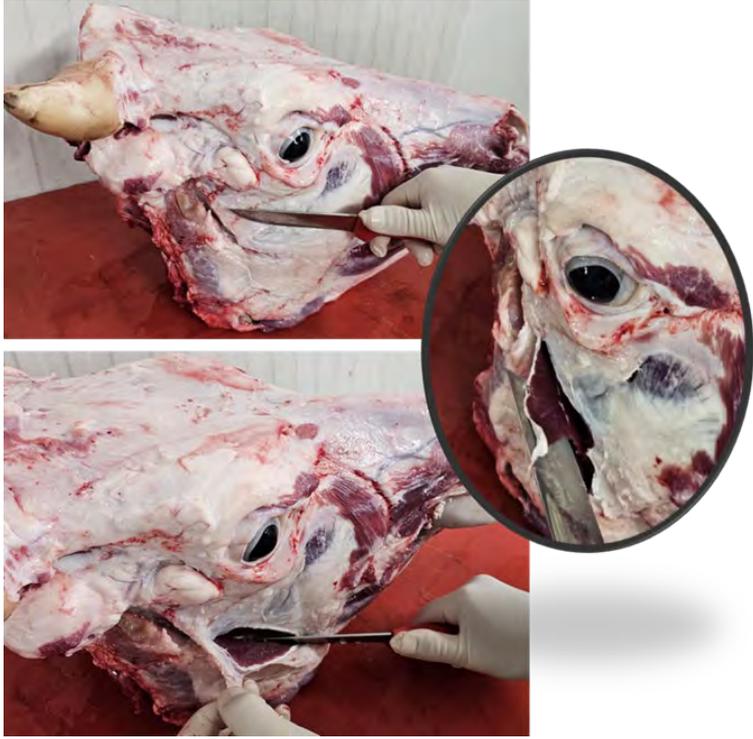


Figure 23. Incision of the masseter muscles



Figure 24. Examination of the tonsils

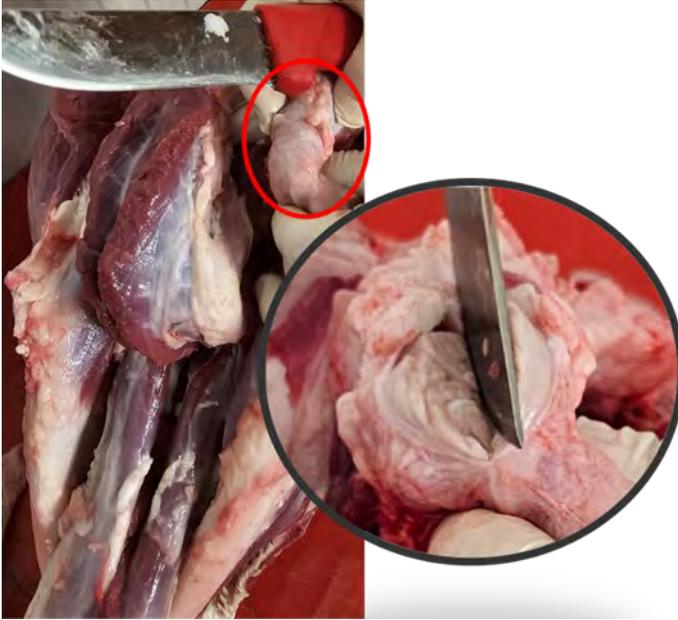


Figure 25. Incision of the Gl. parotidea



Figure 26. Lnn. submandibularis



Figure 27. Lnn. parotidea

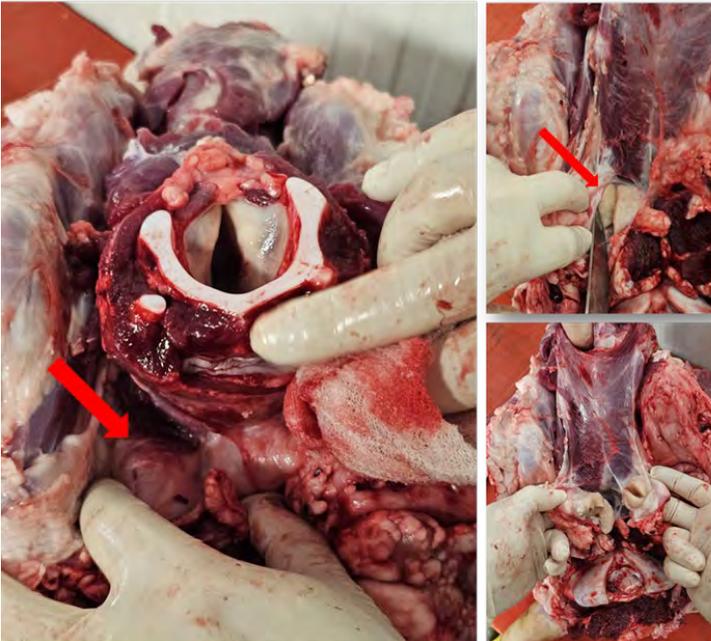


Figure 28. Lnn. retropharyngealis lateralis and medialis



Figure 29. Leptospirosis-related ink-like spots on the skin of cattle



Figure 30. Mucopurulent nasal discharge



Figure 31. Corneal opacity

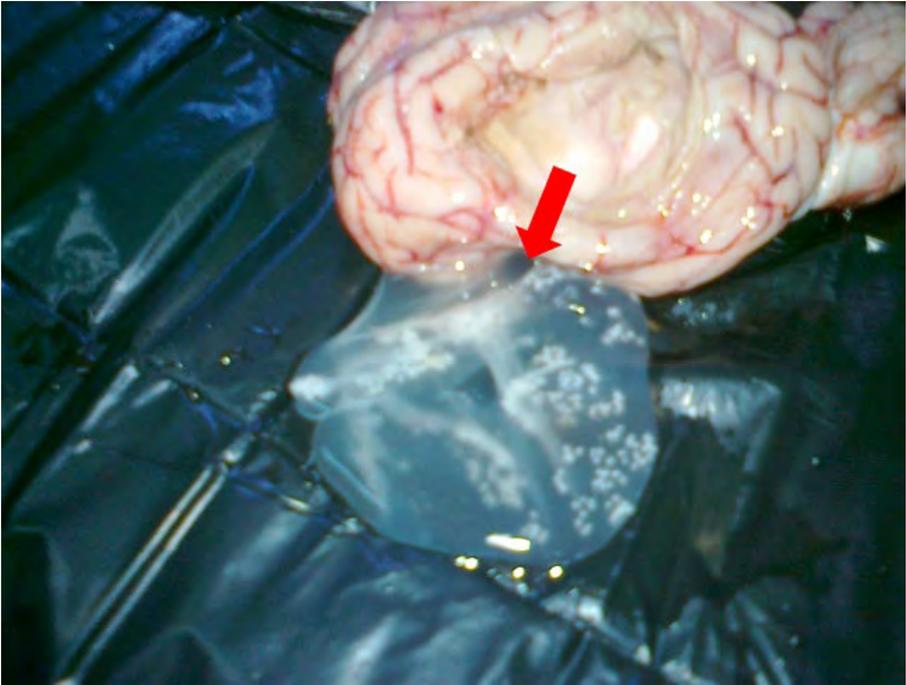


Figure 32. Scholex in the sheep brain

Table 18. Symptoms and anomalies detected during the examination of the head, possible diseases, and decision

Symptoms	Possible Diseases	Decision
Atrophic rhinitis	Pasteurellosis	Total Condemnation
Dark, thick, yellowish, purulent foci in the tongue	Actinobacillosis	Offal Condemnation
Laryngotracheitis	IBR	Total Condemnation
Necrotic areas in the trachea and larynx	Lumpy Skin Disease	Total Condemnation
Purulent exudate in the trachea	IBR	Total Condemnation
Purulent foci in the jawbones	Actinomycosis	Offal Condemnation
Purulent foci in the subcutaneous soft tissues of the head and neck	Actinobacillosis	Offal Condemnation
Rice grain-like larvae inside the tongue muscles	Cysticercosis	Total Condemnation
Rice grain-shaped larvae in the masseter muscles	Cysticercosis	Total Condemnation
Sarcocysts in the tongue	Sarcocystosis	Local/Total Condemnation
Severe tracheitis	IBR	Total Condemnation
Spongy appearance in the jawbones	Actinomycosis	Offal Condemnation
Vesicles larger than 5 cm in the brain	Coenurosis	Total Condemnation

2.5. Carcass Examination

The external surface of the carcass, the chest and abdominal cavity, the pleura and peritoneum membranes, and the diaphragm remnant are carefully inspected. During this process, the colour, the presence of anomalies in the tissues, and the presence of foreign odours are checked.

The diaphragm, loin, and leg muscles are examined for cysticercosis.

If any suspicious findings are detected during carcass examination, the lymph nodes are palpated. Lymph nodes are sought within the fat and connective tissue. Lymph nodes that can be palpated by the veterinarian during carcass examination:

- Lnn. prescapularis (Lnn. cervicalis superficialis) (Figure 33)
- Lnn. axillaris proprii (Figure 34)
- Lnn. subiliaci (Figure 35)
- Lnn. poplitea (Figure 36)

! Attention: If movement disorders are observed during ante mortem examination, tendons, bones, and joints are examined



Figure 33. Lnn. prescapularis (Lnn. cervicalis superficialis)



Figure 34. Lnn. axillaris propria



Figure 35. Lnn. subiliaci



Figure 36. Lnn. poplitea



Figure 37. Leptospirosis-related ink spot pattern in the carcass

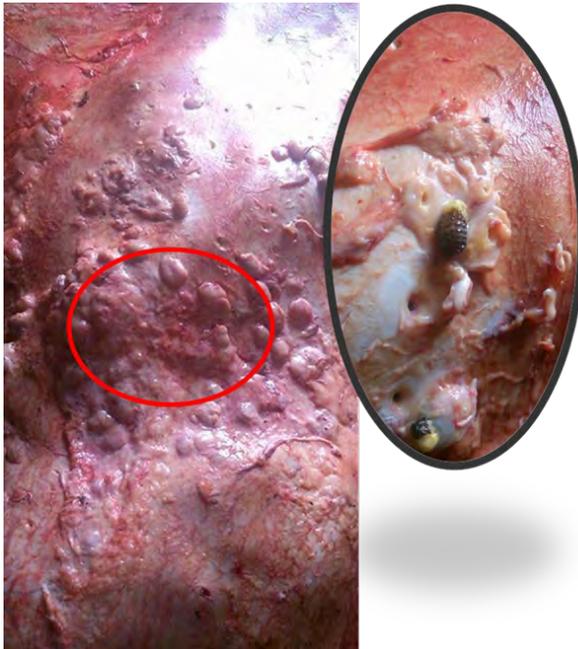


Figure 38. Hypoderma bovis in the carcass

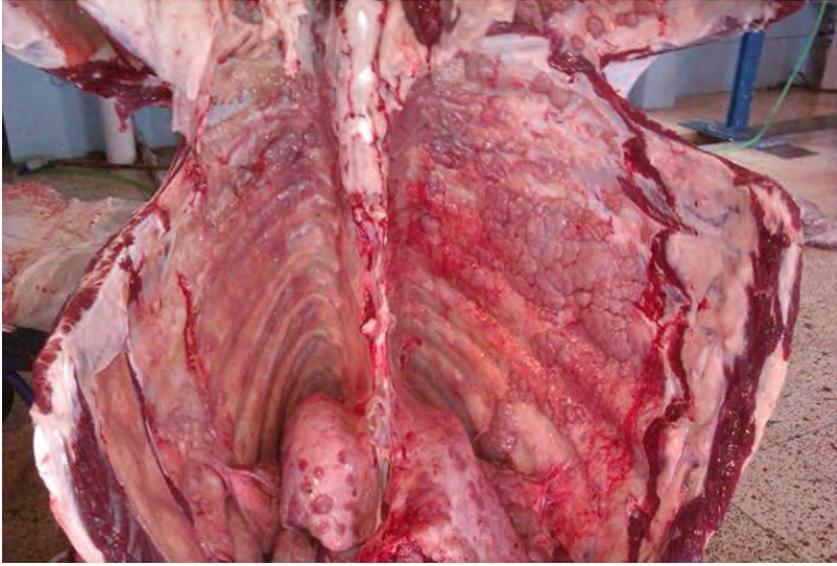


Figure 39. Tuberculosis in the carcass

Table 19. Symptoms and anomalies detected during the general carcass inspection, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Blackish-red appearance	Blackleg			Total Condemnation
Body fat lost	Johne's Disease			Total Condemnation
Cachexia	Tuberculosis	Johne's Disease		Total Condemnation
Carcass green-orange coloured	Babesiosis			Total Condemnation
Cooked meat appearance	White Muscle Disease			Total Condemnation
Fluid-filled cysts in skeletal muscles	Hydatidosis			Total Condemnation
Generalized oedema	Hypocalcemia Grass Tetany	Pregnancy Toxaemia	Enzootic Bovine Leukosis	Total Condemnation
Hole-shaped damage in the fillet part	Warble Fly Infestation			Local Condemnation
Hydremia	Johne's Disease			Total Condemnation
Intense vascularisation in muscles	Tetanus			Total Condemnation
Jaundice	Leptospirosis			Total Condemnation
Larvae on the carcass surface	Warble Fly Infestation			Local Condemnation
Muscles appearing mottled	Tetanus			Total Condemnation
Odour	Hypocalcemia Grass Tetany	Pregnancy Toxaemia	Blackleg Tetanus	Total Condemnation
Rice grain-like larvae in the femoral muscles	Cysticercosis			Total Condemnation
Rice grain-like larvae in the shoulder muscles	Cysticercosis			Total Condemnation
Sarcocysts in skeletal muscles	Sarcocystosis			Total Condemnation
Septicaemia pattern	Anthrax	Pasteurellosis	Leptospirosis Tularemia	Total Condemnation
Splash ink-like appearance on the carcass surface	White Muscle Disease			Total Condemnation
Spongy structure	Blackleg			Total Condemnation
Symmetrical white streaks	White Muscle Disease			Total Condemnation

Table 20. Symptoms and anomalies detected during examination of the chest and abdominal cavity, possible diseases, and decision

Symptoms	Possible Diseases	Decision
Accumulation of bloody fluid in the thoracic and abdominal cavity	Leptospirosis	Total Condemnation
Ascites	Toxoplasmosis Liver Fluke Infestation	Total Condemnation
Bile imbibition	Leptospirosis	Total Condemnation
Bloody exudate in the abdominal cavity	Malta fever	Total Condemnation
Hydrothorax	Toxoplasmosis Lungworm Infestation	Total Condemnation Local Condemnation
Jaundice and haemorrhage in the thoracic and abdominal organs	Copper Poisoning	Total Condemnation
Pearl-like tubercles on the inner surface of the ribs	Tuberculosis	Total Condemnation
Petechiae on the diaphragm	Blackleg	Total Condemnation
Rice grain-like larvae on the diaphragm	Cysticercosis	Total Condemnation
Sarcocysts in the diaphragm	Sarcocystosis	Total Condemnation
Sarcocysts in the oesophagus	Sarcocystosis	Total Condemnation
Serous fluid in the abdominal and thoracic cavity	Blackleg	Total Condemnation
Striated appearance of the diaphragm	White Muscle Disease	Total Condemnation

Table 21. Symptoms and anomalies detected during examination of lymph nodes, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Congestions of 2–3 cm diameter at tick bite sites	Tularemia			Total Condemnation
Enlargement of lymph nodes	Blackleg	Malta Fever	Pox	Total Condemnation
Enlargement of prescapular lymph nodes	Actinobacillosis			Offal Condemnation
Enlargement of the lymph nodes in the head	Actinobacillosis			Offal Condemnation
Enlargement of the submandibular lymph node in cattle	Pasteurellosis			Total Condemnation
Focal yellow necrotic foci	Listeriosis			Total Condemnation
Granular abscess foci in the submandibular lymph nodes	Actinomycosis			Offal Condemnation
Haemorrhagic foci and nodular masses in the lymph nodes	Theileriosis			Total Condemnation
Lymphadenitis	Leptospirosis	Tularemia	Bluetongue Toxoplasmosis	Total Condemnation
Mesenteric lymph nodes are enlarged and oedematous	Johne's Disease	Campylobacteriosis	Salmonellosis	Total Condemnation
Onion-slice appearance inside the lymph nodes	Caseous Lymphadenitis			Offal Condemnation
Small whitish necrotic foci	Tularemia			Total Condemnation
Tissue necrosis at tick bite sites	Tularemia			Total Condemnation
Tumours in lymphatic tissues	Enzootic Bovine Leukosis			Total Condemnation

2.6. Trachea and Lungs Examination

The trachea is opened longitudinally up to its bifurcation at the lung entrance and carefully inspected. Following the visual inspection of the lungs, palpation is performed to detect deep parenchymal foreign bodies, such as cysts, abscesses, or nodules.

The bronchial and mediastinal lymph nodes are exposed and examined. A section is made through each lymph node to assess its internal structure.

In cases of suspicious findings, transverse incisions are made along the diaphragmatic lobes of the bronchi, except in sheep and goats. The larynx, trachea, and main bronchi are opened longitudinally when echinococcosis or tuberculosis is suspected.

A transverse section taken from the lower third of the lungs provides valuable information regarding the extent and degree of haemorrhage, which is particularly useful in the diagnosis of pneumonia, pulmonary oedema, or septicemic conditions.

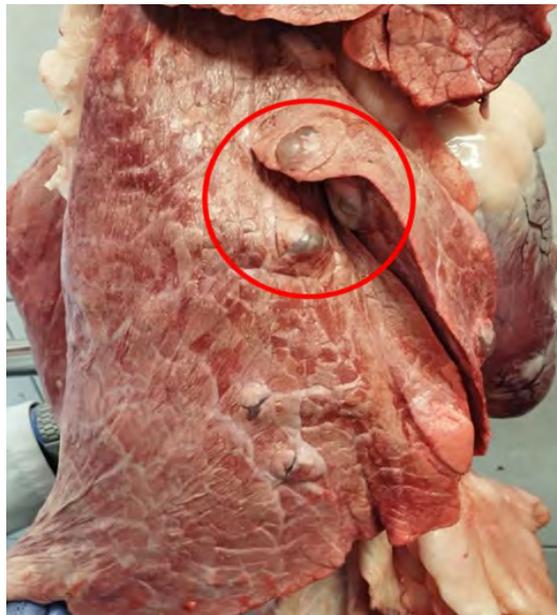


Figure 40. Hydatid cyst in the lung of cattle

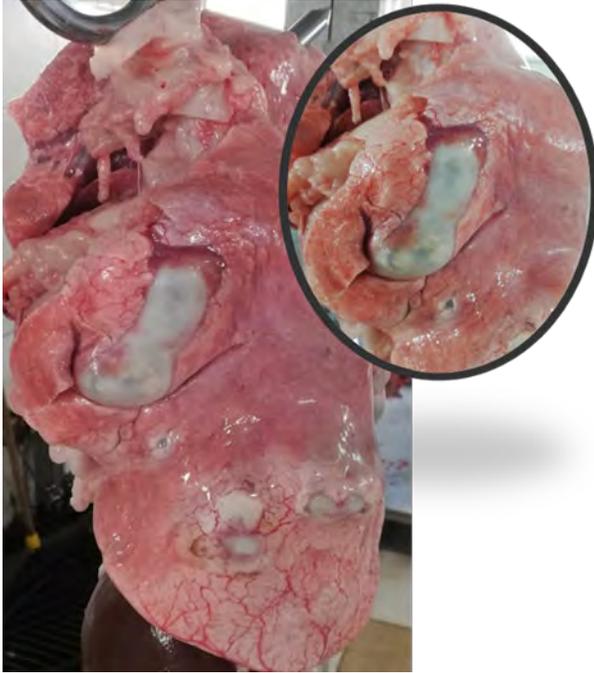


Figure 41. Hydatid cyst in the lungs of a sheep

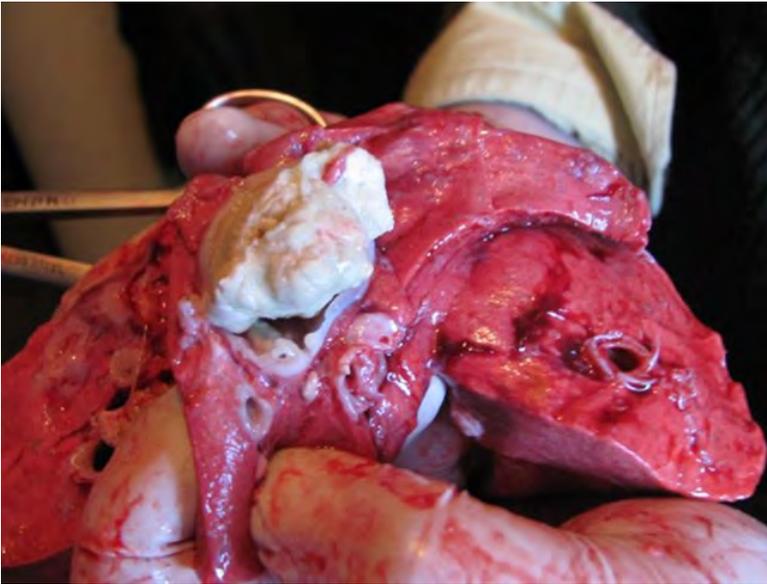


Figure 42. Tuberculosis in the sheep lungs

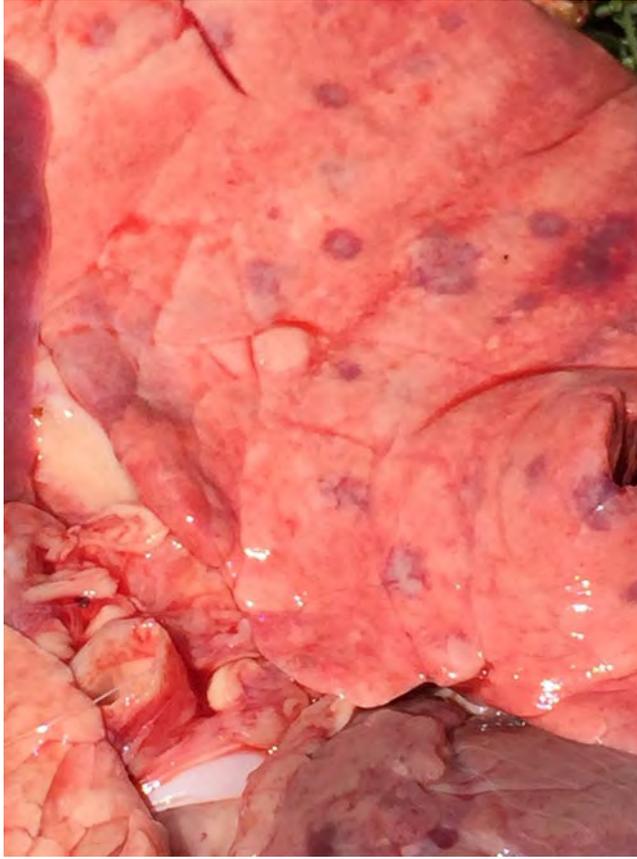


Figure 43. Pox papules (ash-like structures) in the sheep lungs

Table 22. Symptoms and anomalies detected during lung examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Ash-coloured lesions in the lung	Pox	Lumpy Skin Disease		Total Condemnation
Bronchopneumonia	Lungworm Infestation			Local Condemnation
Fluid-filled cysts in the lung	Hydatidosis			Total Condemnation
Focal yellow necrotic foci	Listeriosis			Total Condemnation
Gelatinous infiltration in the interlobular septa	Blackleg			Total Condemnation
Gray-white nodules filled with pus	Actinomycosis			Local Condemnation
Haemorrhage at the origin of the pulmonary artery	Bluetongue			Total Condemnation
Haemorrhage in the lung	Ascariasis			Total Condemnation
Hairworms at the tracheal bifurcation	Lungworm Infestation			Local Condemnation
Hepatisation in the lung	Tularemia			Total Condemnation
Multiple granulomas in the lung	Toxoplasmosis			Total Condemnation
Necrosis in lung tissue	Ascariasis			Total Condemnation
Oedema and emphysema in the lung	Mycotoxin Poisoning Tetanus	Tularemia	Leptospirosis	Total Condemnation
Pneumonia pattern	Bluetongue	Pasteurellosis	Toxoplasmosis	Total Condemnation
Polyp-like appearance on the pleura	Actinomycosis			Local Condemnation
Small green-grey nodules in the lung	Caseous Lymphadenitis			Local Condemnation
Thickening of the pleura	Actinomycosis			Local Condemnation
Tubercle formations in the lung	Tuberculosis			Local Condemnation
Tubercles on the pleura	Tuberculosis			Local Condemnation
Yellow-red-green foci in the lung	Lungworm Infestation			Local Condemnation

2.7. Heart Examination

The heart should be thoroughly examined, as it is essential for diagnosing cysticercosis in cattle. A transverse section is made through the myocardium, extending to the apex, so that the valves and the left and right ventricles are exposed for inspection. The heart is evaluated for myocardial degeneration, haemorrhagic lesions, and the presence of *Cysticercus* spp. or Echinococcus cysts (Figure 44).

! Attention: In young animals affected by foot-and-mouth disease (FMD), myocardial degeneration may be observed.

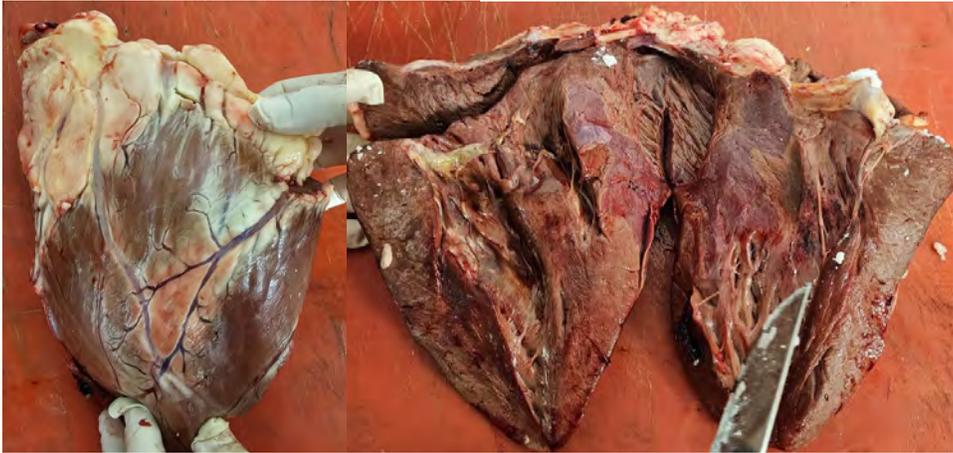


Figure 44. Examination of the heart in large animals

2.8. Liver, Bile Ducts, and Gallbladder Examination

The liver is carefully inspected, with particular attention to the sharpness of the edges, surface distomiasis, echinococcal cysts, and tuberculosis nodules. Rounding of the liver edges (i.e., hepatomegaly) should be considered a significant finding. The liver parenchyma is palpated to detect any abnormal structure, consistency, or lesions.

The portal lymph nodes (Lnn. portales) associated with the liver and pancreas, which may be observed in their entirety or as remnants on the posterior surface of the liver, are palpated. A longitudinal incision is made to examine the internal contents of these lymph nodes.

Because the liver is an organ of commercial value, the incision is made perpendicular to the bile ducts on the posterior surface of the organ. Once the bile ducts are exposed, any possible distomas within them are removed by applying gentle pressure to the liver surface and then examined (Figure 45).

Table 23. Symptoms and anomalies detected during the examination of the heart, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Cysticerci in the heart muscle				Total Condemnation
Dark red heart muscle	Blackleg			Total Condemnation
Diffuse tumours in the heart	Enzootic Bovine Leukosis			Total Condemnation
Ecchymosis and petechial haemorrhage in the heart	Pasteurellosis			Total Condemnation
Fluid-filled cysts in the heart	Hydatidosis			Total Condemnation
Focal yellow necrotic foci	Listeriosis			Total Condemnation
Gelatinous structure on the epicardium	Blackleg			Total Condemnation
Haemorrhage in the heart	Ascariasis	Anaplasmosis	Cyanide Poisoning	Total Condemnation
Jaundice in the heart	Theileriosis			Total Condemnation
Myocarditis	FMD			Total Condemnation
Necrosis in heart tissue	Ascariasis			Total Condemnation
Pericardial thickening	Pasteurellosis			Total Condemnation
Sarcocysts in the heart	Sarcocystosis			Total Condemnation
Weakening of the heart muscle	Brisket Disease			Local Condemnation

The colour, consistency, and volume of bile in the gallbladder are evaluated to identify any abnormalities. If a suspicious condition is detected, the bile is drained onto a clean surface by piercing the gallbladder with the tip of a knife for further examination.

! Attention: Lumpy, grey-pink, or dirty yellow pancreatic remnants may be observed on the posterior surface of the liver.

! Attention: In cattle with salmonellosis, particularly in chronic cases, thickening of the gallbladder wall may occur.



Figure 45. Liver examination of small livestock

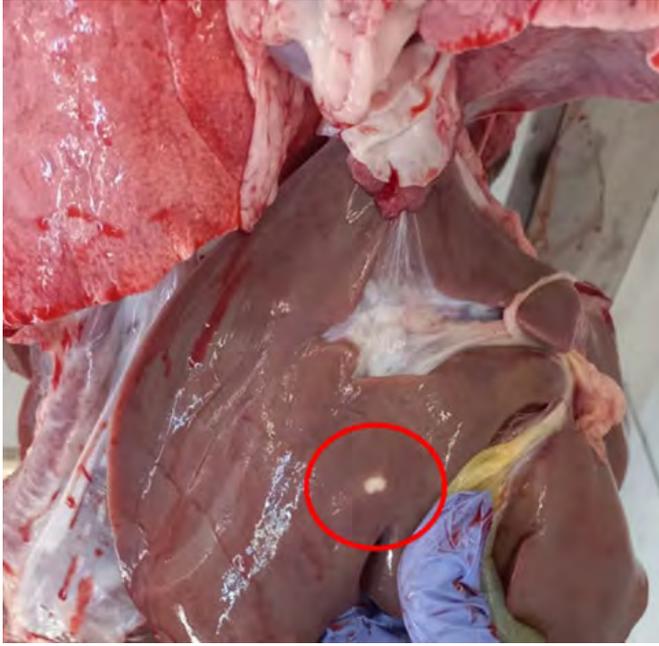


Figure 46. Cystic appearance in the small ruminant liver



Figure 47. Fascioliasis in the liver

2.9. Spleen Examination

The spleen is inspected for sharpness at its edges and for tuberculous nodules on its surface. Blunting of the spleen's sharp edges, in other words, splenomegaly, may be a symptom of an anthrax case that was overlooked during the ante-mortem inspection (Figure 48).

! Attention: The spleen should not be palpated or incised in suspected anthrax cases.

If the ante-mortem inspection protocol has been followed perfectly, blood parasites may be considered as the cause of this increase in volume. The spleen is examined for echinococcosis, tuberculosis, and tumours by palpation and careful incision.



Figure 48. Spleen examination in large animals

Table 24. Symptoms and anomalies detected during liver examination, possible diseases, and decision

Symptoms	Possible Diseases				Decision
Abscesses in the liver	Caseous Lymphadenitis				Total Condemnation
Atrophy in the liver	Liver Fluke Infestation				Total Condemnation
Brown-white nodules in the liver	Liver Fluke Infestation	Ascariasis			Total Condemnation
Cirrhosis of the liver	Liver Fluke Infestation				Total Condemnation
Cysticercus larvae in the liver	Cysticercosis				Total Condemnation
Distome in the liver and bile ducts	Liver Fluke Infestation				Total Condemnation
Enlarged liver	Blackleg	Babesiosis	Leptospirosis	Tularemia	Total Condemnation
Fatty liver	Pregnancy Toxemia				Total Condemnation
Fluid-filled cysts in the liver	Hydatidosis		Coenurosis		Total Condemnation
Focal yellow necrotic foci in the liver	Listeriosis				Total Condemnation
Haemorrhage in the liver	Coryza Gangrenosa Bovum			Ascariasis	Total Condemnation
Jaundice in the liver	Babesiosis	Liver Fluke Infestation	Leptospirosis	Theileriosis	Total Condemnation
Liver has a bloody and spongy appearance	Blackleg				Total Condemnation
Small white necrotic foci in the liver	Tularemia				Total Condemnation
Tubercles in the liver	Tuberculosis				Total Condemnation

Table 25. Symptoms and anomalies detected during gallbladder examination, possible diseases, and decision

Symptoms	Possible Diseases	Decision
Dark green bile accumulation in the gallbladder	Babesiosis	Total Condemnation
Dark sticky bile accumulation in the gallbladder	Leptospirosis	Total Condemnation

Table 26. Symptoms and anomalies detected during spleen examination, possible diseases, and decision

Symptoms	Possible Diseases						Decision
Grey-coloured foci in the spleen	Tularemia						Total Condemnation
Splenomegaly	Anthrax	Malta Fever	Tularemia	Enzootic Bovine Leukosis	Salmonellosis	Anaplasmosis	Total Condemnation

2.10. Oesophageal Examination

The oesophagus is examined for sarcosporidia. Cysts that are milky white in colour, rice grain-shaped and sized, 1-1.5 cm in size, grey-cream in colour, ovoid or ellipsoid in shape, are considered to be the presence of sarcosporidia. Macrocyysts can be seen in the diaphragm, heart, tongue, and intercostal muscles, while microcyysts can be seen in all skeletal muscles.

! Attention: *Sarcocystis* spp. is a zoonosis for which slaughter animals are intermediate hosts, and humans can be both intermediate and definitive hosts for this parasite. Carnivores are the definitive hosts for this parasite. For this reason, organs, tissues, and carcasses that are prohibited from consumption cannot be used in the feeding of cats and dogs.

2.11. Examination of the Stomach Compartments and Intestines

The mesentery, omentum, mesenteric lymph nodes (Lnn. mesenterici), and gastric lymph nodes (Lnn. gastrici) are examined for parasites, paratuberculosis, tuberculosis-related disorders, tumours, salmonellosis, and actinomycosis (Figure 49). When necessary, the lymph nodes are dissected. When dissecting the stomach compartments and intestines, longitudinal sections are made. After draining the contents and washing the mucosa, inspection and palpation continue.



Figure 49. Incision of mesenteric lymph nodes in cattle

Table 27. Symptoms and anomalies detected during the stomach examination, possible diseases, and decision

Symptoms	Possible Diseases	Decision
Oedema in the abomasum mucosa	Malignant oedema	Total Condemnation
Oedema in the stomach	Rabies	Total Condemnation
Foreign body in the stomach	Rabies	Total Condemnation
Haemorrhage in the omasum serosa	Cyanide poisoning	Total Condemnation
Inflamed mucosa of the stomach (abomasum)	Gastrointestinal Nematodiasis	Local Condemnation
	Sheep/Goat Plague	Total Condemnation
Irregular pale white foci in the abomasum	Cyanide poisoning	Total Condemnation
Necrosis in the abomasum mucosa	Malignant oedema	Total Condemnation
Necrosis in the stomach	IBR	Total Condemnation
Nodules in the stomach mucosa	Lumpy Skin Disease	Total Condemnation
Perforated ulcer in the abomasum	Theileriosis	Total Condemnation
Petechiae (small red or purple bleeding spots)	Blackleg	Total Condemnation
Tile-red inflammation in the pylorus region	Rinderpest	Total Condemnation
Ulcer in the abomasum mucosa	Malignant oedema	Total Condemnation
Vesicles in the rumen	FMD	Total Condemnation
Watery rumen content	Urea poisoning	Total Condemnation
Yellow-green exudative necrotic foci in the abomasum tissue	Coryza Gangrenosa Bovum	Total Condemnation

Table 28. Symptoms and anomalies detected during the intestinal examination, possible diseases, and decision

Symptoms	Possible Diseases			Decision
Enteritis (necrotic, haemorrhagic)	Bluetongue	Sheep/Goat Plague		Total Condemnation
Haemorrhage in the colon	Campylobacteriosis			Total Condemnation
Haemorrhage in the small intestine	Cyanide poisoning	Campylobacteriosis	Salmonellosis	Total Condemnation
Inflamed intestinal mucosa	Gastrointestinal Worms			Local Condemnation
Nodules in the intestinal mucosa	Lumpy Skin			Total Condemnation
Petechiae on the intestinal mucosa	Rinderpest	Blackleg	Campylobacteriosis	Total Condemnation
Thickening of the intestinal mucosa	Johne's Disease	Campylobacteriosis		Local Condemnation
Vesicles in the small intestine	FMD			Total Condemnation
Volvulus nodosus	Urea poisoning			Total Condemnation

2.12. Kidneys and Urinary Bladder Examination

After the renal fat is removed, the kidneys are carefully inspected. The renal fat pads are palpated and, if necessary, excised. Both kidney and renal fat pad sections are examined for tuberculosis and evaluated for salmonellosis and leptospirosis.

In a healthy kidney, the capsule can be easily separated from the organ. In suspicious cases, the kidney is incised from the ureteral orifice to expose the medulla fully.

The contents of the urinary bladder are inspected for abnormal colour and consistency. These contents are also evaluated for the presence of piroplasmosis, leptospirosis, and anthrax (Figures 50 and 51).



Figure 50. Kidney examination in small ruminants

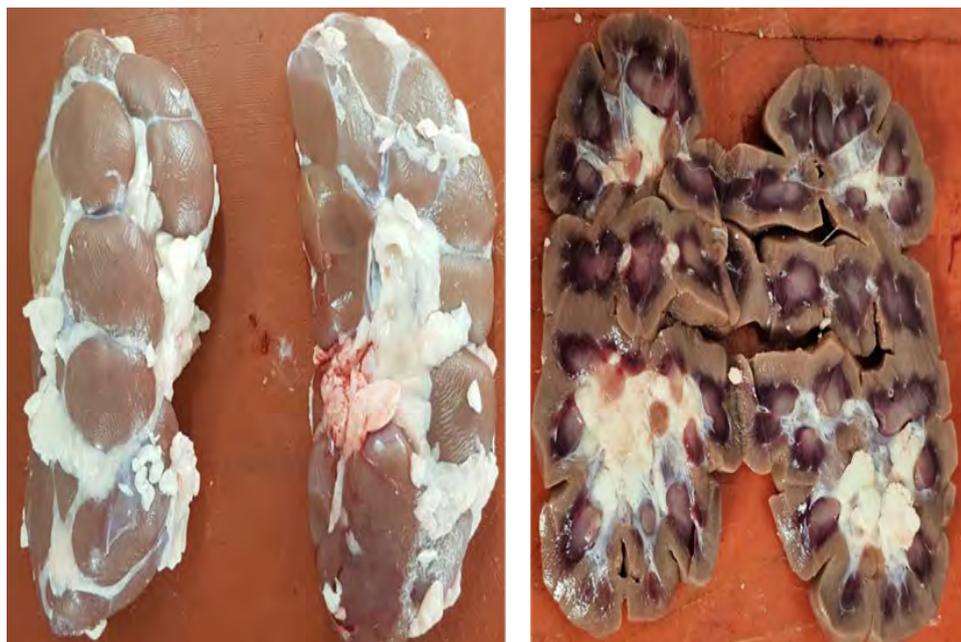


Figure 51. Kidney examination in cattle

Table 29. Symptoms and anomalies detected during kidney examination, possible diseases, and decision

Symptoms	Possible Diseases		Decision
Bloody urine	Leptospirosis		Total Condemnation
Congestion or hyperaemia in the kidney	Blackleg	Ascariasis	Total Condemnation
Diffuse petechial haemorrhage in the renal capsule	Tanen Poisoning	Blackleg	Total Condemnation
Enlargement of the kidneys	Pox	Leptospirosis	Total Condemnation
Kidneys are bluish black in colour	Babesiosis	Copper Poisoning	Total Condemnation
Necrotic areas on the kidney surface	Ascariasis		Total Condemnation
Tubercles in the kidney	Tuberculosis		Total Condemnation
Small red or white infarcts in the renal cortex	Leptospirosis		Total Condemnation
Small white spots on the kidney surface	Coryza Gangrenosa Bovum		Total Condemnation

Table 30. Symptoms and anomalies detected during examination of the urinary bladder, possible diseases, and decision

Symptoms	Possible Diseases				Decision
Bloody urine in the urinary bladder	Anthrax	Leptospirosis	Rinderpest	Babesiosis	Total Condemnation

2.13. Examination of the Genital Organs and Mammary Glands

The genital organs are examined for tuberculosis by assessing secretions and pathological abnormalities. The uterus is evaluated for pyometra and brucellosis. The testes are examined for tuberculosis and orchitis. If necessary, the contents of the uterus and testes can be examined by longitudinal incision (Figure 52).

! Attention: In cases of suspected brucellosis, the uterus and testes should not be palpated or incised.

The mammary glands and mammary lymph nodes (Lnn. supramammarii) are examined for tuberculosis, actinomycosis, abscess, and septic mastitis. A longitudinal incision is made in the mammary glands, extending to the depth of the milk duct cavities.



Figure 52. Examination of the testicles in cattle

Table 31. Symptoms and anomalies detected during examination of the genital organs, possible diseases, and decision

Symptom	Possible Diseases	Decision
Epididymitis	Tuberculosis	Total Condemnation
Fibrinous inflammation in the uterus	Malta Fever	Total Condemnation
Inflammation of the vaginal and vulval mucosa	IBR	Total Condemnation
Jaundice on the vulva	Arsenic Poisoning	Total Condemnation
Necrosis in the cotyledons	Malta Fever	Total Condemnation
Oedema in the foetus	Malta Fever	Total Condemnation
Orchitis in the testes	Malta Fever	Total Condemnation
Thickening of the placenta	Malta Fever	Total Condemnation
White vesicles on the mucosa	IBR	Total Condemnation

2.14. Additional Points to Consider in the Post-Mortem Examination of Cattle

In addition to the post-mortem examination protocol applied to slaughter animals, the following points are examined.

- Peptic ulcers are sought in the stomach.
- The small intestines are examined for dysentery.
- Mesenteric and hepatic lymph nodes are examined for primary infection for the diagnosis of tuberculosis.
- Omphalophlebitis is sought in the umbilical region.
- Septic polyarthritis and pyemia are sought in the joints.

2.15. Additional Points to Consider in the Post-Mortem Examination of Sheep and Goats

- The brain is examined for cerebral encephalitis.
- The skeletal muscles are examined for sarcosporidia.
- The skin is carefully examined for pox and mange.

2.16. Guide to Physiological and Pathological Disorders

Abscess: A localised collection of pus within liquefied tissue produced by pyogenic bacteria (e.g., *Staphylococcus aureus*, Group E Streptococci, *Corynebacterium pyogenes*). Acute abscesses may have irregular margins and lack a distinct capsule. If a local abscess is encapsulated, the lesion may be removed to prevent contamination of the surrounding tissue. The causative agents may spread via blood and lymphatic pathways.

Anaemia: A condition in which organs and tissues appear pale and reduced in volume. It may result from inadequate blood supply to the organ or tissue or from deficiencies in the number, volume, or haemoglobin content of erythrocytes. Anaemic organs and tissues feel cold upon palpation.

Anasarca: (see also oedema)

Anomaly: (see also atrophy, hyperplasia, hypertrophy)

Arthritis: Inflammation affecting joints and connective tissues, characterised by pain, swelling, and restriction of movement. It may occur systemically through hematogenous spread or locally following trauma. If generalised or acute arthritis is detected at ante-mortem inspection, slaughter is postponed. If generalised or acute arthritis is detected at post-mortem inspection, a total condemnation protocol is implemented. In localised cases, only the affected limb is condemned.

Ascites: (see also oedema)

Atrophy: Reduction of organs and tissues below their normal size. This condition may result from compression impairing blood supply, starvation, or endocrinological factors.

Bile Imbibition: Local yellow discolouration of tissues caused by leakage of bile from the gallbladder.

Cachexia: A chronic wasting condition characterised by loss of fat and muscle tissue. Muscles and internal organs are shrunken and oedematous; they have a glossy appearance. The skin of a cachectic animal is wrinkled and dry, the hair coat is rough and dishevelled, the bones are prominent, and the eyes are sunken. At post-mortem inspection, pericardial and renal fat show serous atrophy and appear watery; the carcass surface is semi-transparent and jelly-like. Cachectic carcasses are condemned.

Calcification: (see also necrosis)

Caseification: (see also necrosis)

Congestion: (see also hyperemia)

Cyanosis: Bluish-purple discolouration of body tissues resulting from decreased oxygen content.

Degeneration: A disorder defined by increased organ volume and a cloudy, dull appearance of the capsule on inspection, especially in the liver, heart, kidneys, and muscle tissue (parenchymal degeneration). It usually develops as a result of chemical or bacterial toxicosis and septicemia. In addition, excessive fat intake, ketosis, pancreatic dysfunction, hypoxia, and anoxia can lead to “fatty degeneration,” characterised by excessive lipid accumulation within cells. The affected organs increase in volume. On palpation with pressure between two fingers, the tissue is excessively friable. A protruding or bulging appearance is characteristic of an incision. In fatty degeneration, the liver is yellow clay coloured and shiny, while the kidney presents a mottled appearance due to bright white fat extending from the medulla to the cortex. If detected at post-mortem inspection and limited to a single organ or tissue, local condemnation is applied; if generalised, total condemnation is required.

Ecchymosis: (see also haemorrhage) (Figure 54)

Emaciation: (see also cachexia)

Fat Infiltration: Deposition of fat in tissues other than normal fat depots during nutrient mobilisation. Seen in muscle fibers, heart, and liver. Common in older cattle, fat sheep, undernourished pregnant cows and ewes. Organs are enlarged. On palpation between two fingers, the tissue feels excessively friable. A protruding (“bulging”) appearance at the incision is characteristic. The liver is yellowish clay-coloured and shiny. The kidney shows a mottled appearance due to bright white fat tissue extending from the medulla to the cortex. However, organ capsules remain clear and glistening (Figure 59).

Fatty Degeneration: (see also degeneration)

Gangrene: Localised death of cells and tissues in the living animal due to intoxication, local interruption of blood flow, partial compression, or disruption of neural transmission, followed by infection with putrefactive bacteria. Wet gangrene occurs especially in highly vascular organs and tissues. Affected tissues show dark grey to black discolouration, oedema, and a foul odour.

In tissues poor in blood and body fluids, dry gangrene is seen, characterised by dry, shrunken, pale tissue.

Gas gangrene is described as a pale appearance, a cold and crepitant feeling on palpation, and a foul-smelling brownish haemorrhagic exudate seeping from the wound.

At post-mortem inspection, gangrenous tissues are condemned.

Haematoma: (see also haemorrhage)

Haematuria: Presence of blood in the urine.

Haemorrhage: Escape of blood from vessels into tissues due to loss of vessel integrity or increased permeability. Pinpoint haemorrhages approximately the size of a pinhead are called petechiae. Serosal surfaces, mucous membranes, lymph nodes, and subcutaneous tissues are common sites of petechiae and are essential for diagnosing toxicosis, infection, and septicemia. Larger areas of bleeding under the skin, mostly due to trauma, are described as ecchymoses. In ecchymosis, red blood cells extravasate from damaged vessels and accumulate subcutaneously; platelets accumulate around the lesion, which then expands. Ecchymoses appear dark red or purple and may undergo colour changes (blue, green, brown, yellow) during healing. The term hematoma refers to localised blood clots or accumulations occurring in deeper tissues after haemorrhage. At post-mortem inspection, carcasses and internal organs with a generalised haemorrhagic appearance are totally condemned. If haemorrhage types are localised but the blood accumulation is such that it prevents safe consumption, the affected organs or tissues are partially condemned.

Hydrothorax: (see also oedema)

Hyperemia: An increase in blood supply to a tissue or organ due to arterial dilation or impaired venous return (congestion).

Hyperplasia: An increase in the size of a tissue or organ due to an increase in the number of its cells.

Hypertrophy: An increase in the size of a tissue or organ due to an increase in the size of its cells.

Icterus: A disorder characterised by the passage of bile-coloured substances into the blood and the resulting yellowish discolouration of tissues. Physiological icterus occurs due to diet (lutein, carotene, lipochrome) or breed characteristics.

If jaundiced meat kept at (-1) to (3) °C for 24 hours develops a dark yellow or dark yellow-green colour, it is condemned.

If, after 24 hours, the meat turns light yellow-green and, after boiling and frying tests, shows abnormal taste or odour, it is also totally condemned.

If the meat is light yellow and the carcass is not cachectic, the yellow portions are trimmed, and the remaining meat may be approved for consumption.

To distinguish whether icterus is pathological, the alcohol-ether test can be performed:

Several pea-sized fat pieces from the jaundiced carcass are placed in two separate test tubes containing 7–8 mL of 50 % alcohol and ether, respectively, and shaken periodically with closed caps.

Yellow colour in the alcohol tube indicates pathological icterus.

Yellow colour in the ether tube indicates physiological icterus.

The yellow colour in both tubes indicates a mixed pathological and physiological icterus.

Jaundice: (see also icterus)

Melanosis: A condition characterised by excessive accumulation of melanin pigment in tissues and organs, producing an “ink-splashed” appearance. Affected tissues and organs are condemned. When melanosis is generalised to all organs and muscles, the entire carcass is condemned.

Necrosis: Localised death of cells and tissues in the living animal due to intoxication, local interruption of blood flow, partial compression, or disruption of neural transmission. Necrotic areas are paler than normal tissue and surrounded by a hyperemic border. In coagulation necrosis, tissues are grey-white and firm. In caseous (caseification) necrosis, tissues resemble white cheese in consistency.

Neoplasm: (see also tumour)

Oedema: The accumulation of fluid in tissues, organs, and body cavities.

Fluid caused by inflammation is called exudate; it is cloudy due to high protein, leukocyte, and fibrin content.

Fluid not related to inflammation, usually due to mechanical factors, is called transudate; it is clear.

Fluid in the thoracic cavity = hydrothorax, in the abdominal cavity = ascites, infiltration of lymph fluid into subcutaneous and connective tissue = anasarca.

For carcasses with ascites or anasarca and otherwise good condition: store in a cold room for 12 hours. If, after this time, the fluid in the thorax and abdomen dries and the carcass returns to normal appearance, it may be passed for consumption. Otherwise, total condemnation is required at post-mortem inspection. In cases of anasarca involving subcutaneous and connective tissues, the decision is total condemnation.

Bone marrow water content test to support anasarca diagnosis:

Samples of marrow from long bones are taken with a spatula and placed into 100-mL beakers containing 32%, 47%, and 52% alcohol solutions.

If the marrow floats in each beaker, it belongs to a healthy carcass (bone marrow water content <25%).

If the marrow sinks in at least two beakers, it is considered from an anasarous carcass.

Papule: Elevated skin lesion 1 mm–1 cm in diameter without fluid content.

Parenchymal Degeneration: (see also degeneration)

Pathological Fat Infiltration: (see also fat infiltration)

Petechiae: (see also haemorrhage)

Physiological Fat Infiltration: (see also fat infiltration)

Pyaemia: Formation of multiple abscesses in different locations of the body due to pyogenic agents disseminating through the bloodstream. Acute abscesses are irregular and lack distinct walls. Decision: total condemnation. Carcasses with high fever and systemic deterioration are also totally condemned.

Pyrexia: An increase in body temperature indicative of an acute systemic disorder such as septicemia or pyaemia. Characterised by dryness and hyperemia of mucosal tissues (e.g., muzzle). If pyrexia is detected in slaughter animals during the ante mortem period, slaughter is postponed.

Signs indicating that the animal was slaughtered while pyrexia during the postmortem period: Carcass is congested; subcutaneous veins are engorged. Depending on the severity and duration of fever, fatty degeneration may be seen in the liver, kidney, and heart. A decision in these circumstances is total condemnation.

Sapremia: Absorption into the bloodstream of saprophytic bacteria and their metabolic products from necrotic tissue in the living animal.

Septicaemia: A disease resulting from pathogenic bacteria entering the bloodstream.

Ante-mortem findings: Depression, altered body temperature, dyspnoea and tachypnoea, shivering and muscle tremors, petechial haemorrhages and hyperaemia of conjunctiva, oral and vulvar mucosa.

Post-mortem findings: Enlarged, oedematous, and haemorrhagic lymph nodes, degenerative changes in parenchymatous organs (liver, heart, kidneys), hyperemia and petechial or ecchymotic haemorrhages in kidneys, heart surface, mucous and serous membranes, connective tissue, and panniculus adiposus, carcass insufficiently bled due to high fever, bloody serous exudate in thoracic and abdominal cavities, bone marrow depression and anaemia secondary to icterus

Regardless of cause (e.g., septic metritis, generalised septic mastitis, haemorrhagic enteritis, septic omphalophlebitis), meat from animals slaughtered or diagnosed with septicaemia is condemned.

Meat suspected of septicaemia should be subjected to bacteriological examination for Salmonella or other harmful microorganisms.

Toxaemia: A disease condition resulting from bacterial toxins entering the bloodstream.

Ante-mortem findings: Hyperthermia may be present, convulsions, abnormal movements, agonal or pain signs, difficulty in rising or inability to rise, possible dehydration

Post-mortem findings: Haemorrhages in internal organs, normal or enlarged oedematous lymph nodes (unlike the hyperplastic nodes in septicaemia), areas of tissue necrosis, emphysema in cattle, occasionally degenerative changes in parenchymatous organs (heart, liver, kidneys). If toxæmic lesions are evident in the carcass and organs, the carcass and internal organs are condemned.

Tumour: A mass formed by uncontrolled, unregulated cell proliferation due to some irritation. Benign tumours are localised. Malignant tumours can metastasise from their site via blood and lymph nodes and may lead to cachexia. Localised benign tumours are removed along with surrounding tissues. If the entire organ is affected, it is condemned (Figure 58). In cases of metastasis, total condemnation of the carcass is required

Uremia: A condition characterised by a urea odour in organs and tissues caused by the entry of urea into the blood. If the carcass is otherwise in good condition, it is stored in a cold room for 12 hours. After this period, if the urea odour remains pronounced, total condemnation is applied.

If the odour is not pronounced and the decision is difficult, a cooking (boiling/frying) test is performed: A clean pot or pan is used, and the meat is boiled or fried with only the animal's own internal fat (no added vegetable oil or margarine). The lid is kept closed during cooking and opened afterwards to assess the odour.

Vesicle: A small blister ≤ 0.5 cm in diameter containing clear fluid. They appear white to yellowish, or reddish when blood is admixed.



Figure 53. Degeneration in the lungs of small ruminants



Figure 54. Ecchymosis in a large animal carcass



Figure 55. Haemorrhage in the small ruminant kidney

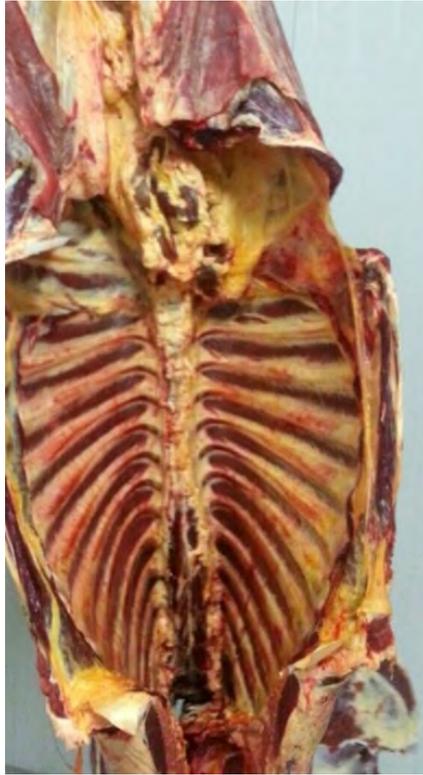


Figure 56. Jaundice in the carcass



Figure 57. Jaundice in the liver

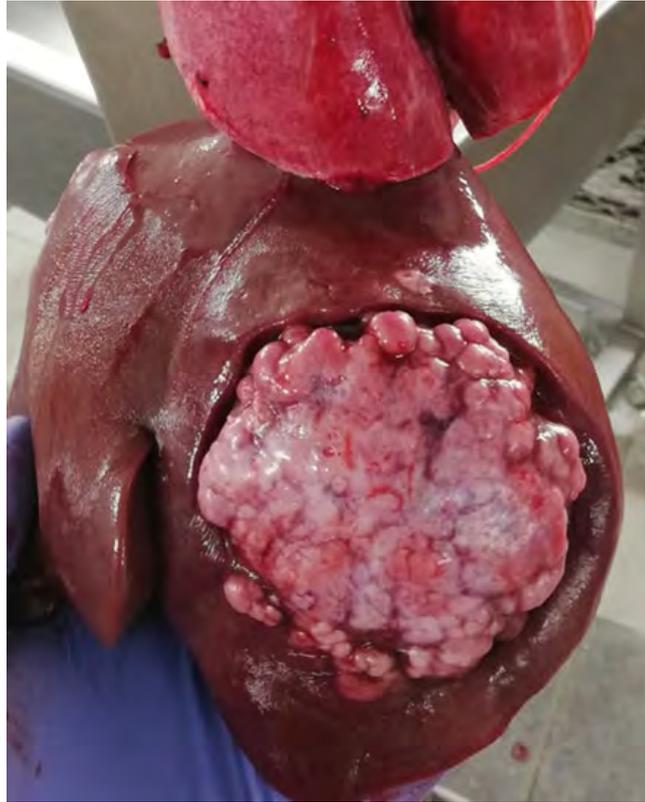


Figure 58. Tumour formation in the liver



Figure 59. Fat infiltration in the lungs of small ruminants

3. DIFFERENCES IN SLAUGHTERED ANIMAL CARCASSES ACCORDING TO SPECIES AND GENDER

The segregation of carcasses from animals that are either unfit for consumption or considered undesirable for consumption due to food safety, public health, socio-cultural, psychological, or religious reasons, according to the consumer profile, is a critical issue. To resolve questionable cases involving animals slaughtered outside official slaughterhouses, the species of the carcass can, if necessary, be determined based on various anatomical and physiological characteristics.

3.1. Differences Between Sheep and Goat Carcasses

Although breeds of sheep and goats exhibit very different carcass structures within their own species, specific characteristics provide essential clues for distinguishing between the carcasses of the two species. These distinguishing characteristics are given in Table 32.

Table 32. Differences in small ruminant carcasses by species

Criterion	Sheep Carcass	Goat Carcass
Antebrachium (Figure 63)	Proximal edge flat	Proximal edge sharp
Carcass colour	Red	Dark red
Carcass odour	Sheep wool odour	Distinct goat odour
Carcass fatness condition	Carcass surface fatty	Carcass surface non-fatty
Carcass shape	Round, cylindrical	Flat from the sides (Figure 59)
Fat consistency	Not sticky - Slightly sticky	Sticky
Femur (Figure 64)	Gradual transition from caput to fossa	Sudden transition from caput to fossa
Humerus (Figure 62)	Short	Long
Metapodium (Figure 66)	Long and thin Protrusions parallel	Short and wide Protrusions in a V shape
Presence of foreign tissue in the carcass	Wool may be present	Goat hair may be attached
Scapula (Figure 61)	Short, wide, flat	Long, narrow, more tapered
Spinous processes of vertebrae	Wide, flat, short	Narrow, long
Tail	Fatty-very fatty	Lean
Tibia (Figure 65)	Groove indistinct	Groove prominent



Figure 60. Goat carcass



Figure 61. Lateral view of the scapula in sheep and goats

A- Collum scapulae; B- Tuberculum supraglenoidale; C- Spina scapulae

The neck region of the scapula (collum scapulae) is thinner and longer in goats than in sheep (A). The tuberculum supraglenoidale is generally more strongly developed in sheep and extends beyond the cavitas glenoidalis. In the lateral view, it appears more rounded than in goats (B). The scapular spine has a cushion-like thickening in the middle in sheep. Its direction is caudal. In goats, the scapular spine is sharper and does not form a tuberosity (C).

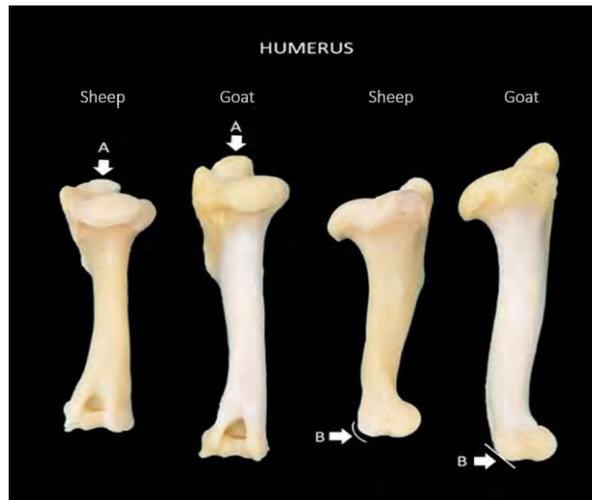


Figure 62. The fundamental differences in the humerus of sheep and goats
 A- Pars cranialis of tuberculum majus; B- Epycondylus medialis

Although it is accepted that the humerus of goats is longer than that of sheep, this difference can only be used to a limited extent in distinguishing between the two species. Proximally, the most prominent feature is observed in the pars cranialis of the tuberculum majus. In goats, it is high and narrow. It significantly exceeds the caput and tuberculum majus caudale and is steeply inclined (A). In sheep, the distal part of the medial epicondyle ends in a more rounded and wider angle. In contrast, in goats, the angle appears to be cut at an oblique angle (B).



Figure 63. The fundamental differences in the antebrachium of sheep and goat
 A- Olecranon; B- Spasium interosseum antebrachii proximalis; C- Processus coronoideus lateralis of ulna

The proximal edge of the olecranon is almost horizontal in sheep, while it is pointed in goats (A). The interosseous space of the proximal forearm is more distal in goats than in sheep. In goats, the union of the proximal ends of the radius and ulna results in a curvature, whereas in sheep, it ends in a slit-like formation between the contact surfaces of the two bones (B). In goats, the lateral coronoid process of the ulna extends together with the lateral facet of the radius and, in most cases, forms a lateral protruding edge with it. However, in sheep, the lateral coronoid process of the ulna does not protrude as far as it does in goats (C).

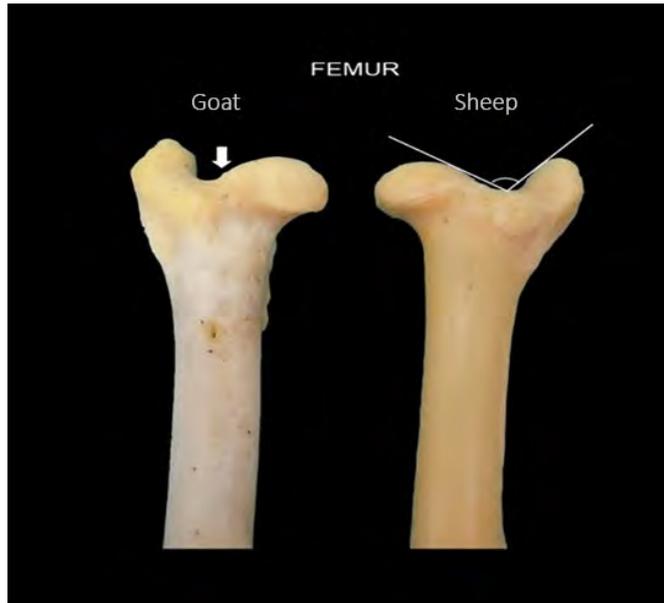


Figure 64. Proximal differences in the femur in sheep and goat

In sheep, the caput femoris gradually transitions into the fossa due to its oval shape. This transition forms a right angle between the caput femoris and the greater trochanter. In goats, the caput femoris is spherical and abruptly joins the fossa trochanterica (white arrow).



Figure 65. Medial view of the tibia in sheep and goats (distomedial grooving (black arrows))

In goats, the groove (sulcus malleolaris) on the medial surface of the distal end of the corpus is clearly visible. In sheep, however, this groove is indistinct.

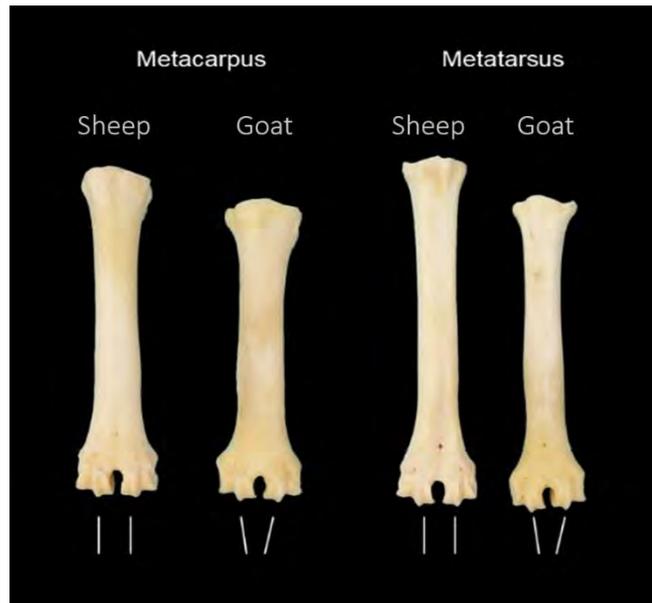


Figure 66. Dorsal appearance of metapodiams in sheep and goats
(The shape of the verticillium (white lines))

In sheep, the metapodials (metacarpus and metatarsus) are long and thin, while in goats, they are relatively short and wide. The sagittal ridges (verticillium) on the distal articular surface of sheep run parallel to each other in the anterior view, whereas in goats, they are closer together.

3.2. Differences Between Cattle and Buffalo Carcasses

Although there are breeds of cattle and buffalo with very different carcass structures within their own species, specific characteristics provide essential clues for distinguishing between the two species' carcasses. These distinguishing characteristics are given in Table 33.

Table 33. Differences between cattle and buffalo carcasses

Criterion	Cattle Carcass	Buffalo Carcass
Carcass colour	Red	Dark red
Colour of carcass fats	Ecu (broken white)	White
Consistency of carcass fats	Sticky	Dry and slightly sticky
Distribution of fats within the meat	Good	Weak
Achilles tendon	Normal	Well developed
Symphysis pelvis	Cross-section surface S-shaped	Flat cross-section surface
M. cutaneus omobrachialis	Wide	Narrow (3-5 finger breadth)
Ribs	Convex	Flat (Figure 67)
Boiling in sulfuric acid solution	Odour is not specific	Manure odour is present



Figure 67. The structure of the ribs in buffalo

3.3. Differences Between Cattle and Horse Carcasses

Although there are breeds of cattle and horses with very different carcass structures even within their own species, specific main characteristics provide essential clues for distinguishing between the two species' carcasses. These distinguishing characteristics are given in Table 34.

Table 34. Differences between cattle and horse carcasses

Criterion	Cattle Carcass	Horse Carcass
Carcass Colour	Red	Dark red
Carcass Odor	Normal meat odour	Slightly sweet odour
Connective Tissue and Fasciae	Developed	Highly developed
Distribution of Fats within Meat	Good	Poor
Amount of Kidney Fat	Abundant	Scarce
Fat Colour	White	Yellowish due to olein
Thoracic Cavity	Short	Long
Number of Ribs	13 pairs of ribs	18 pairs of ribs
Spinous Processes of Vertebrae	Underdeveloped and inclined	Developed and upright
Femur (trochanter major (Figure 68))	Single piece	Two pieces

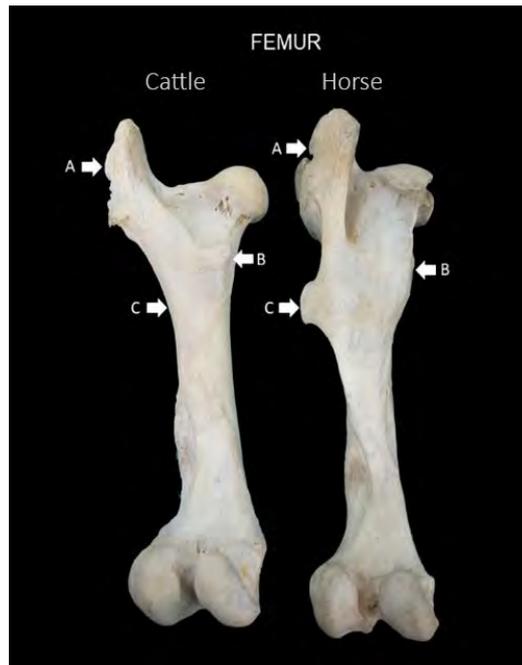


Figure 68. The distinct differences between the femurs of horses and cattle
 A- Trochanter major and incisura trochanterica; B- Tuberculum minus; C- Trochanter tertius

The greater trochanter of the femur is divided into a cranial part and a caudal part by the trochanteric notch in the horse femur. In cattle, the greater trochanter is a single piece (A). The lesser trochanter is long and sharp in horses, while in cattle, it is a rounded protuberance (B). In horses, the lesser trochanter is located on the middle lateral aspect of the femur, whereas in cattle, it is absent (C).

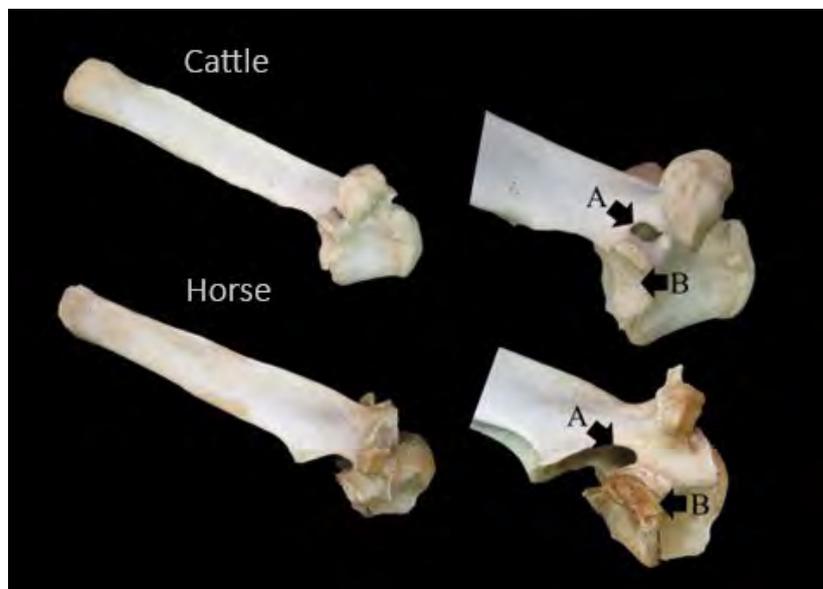


Figure 69. Thoracic vertebrae

- A: In cattle, the caudal vertebral notch is bridged by bone and forms a hole (lateral vertebral foramen). In horses, there is no hole, and it remains as a caudal vertebral notch.
- B: The caudal costal fossae are deep in cattle and shallow in horses.

3.4. Differences in Large Animal Carcasses According to Gender

In cattle and buffalo, some basic carcass characteristics and gender-related anatomical differences provide essential clues for distinguishing carcasses. These distinguishing features are listed in Table 35.

Table 35. Separation of large animal carcasses by gender

Criterion	Female Carcass	Male Carcass
Carcass colour	Red	Dark red
Carcass	The hindquarter carcass is more developed	The forequarter carcass is more developed
Tuberculum pubicum (Figure 70)	Underdeveloped	Developed
M. gracilis (Figure 71)	Bean-shaped appearance	Triangle-shaped appearance
Pelvis (Figure 72)	Wide	Narrow
Funiculus spermaticus	No residue	Residue present
M. bulbocavernosus	Underdeveloped	Developed

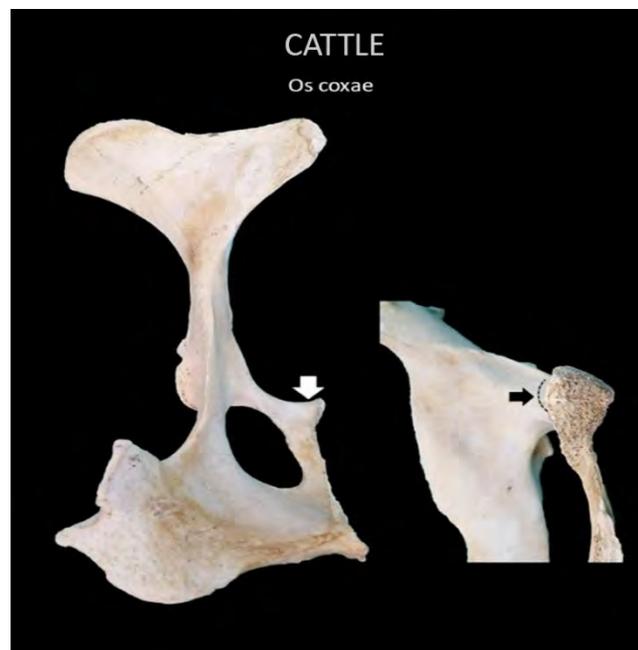


Figure 70. Dorsal (white arrow) and medial (black arrow) appearance of the symphysis pelvis and tuberculum dorsale in cattle (in males, a bump (lump); in females, a hollow)

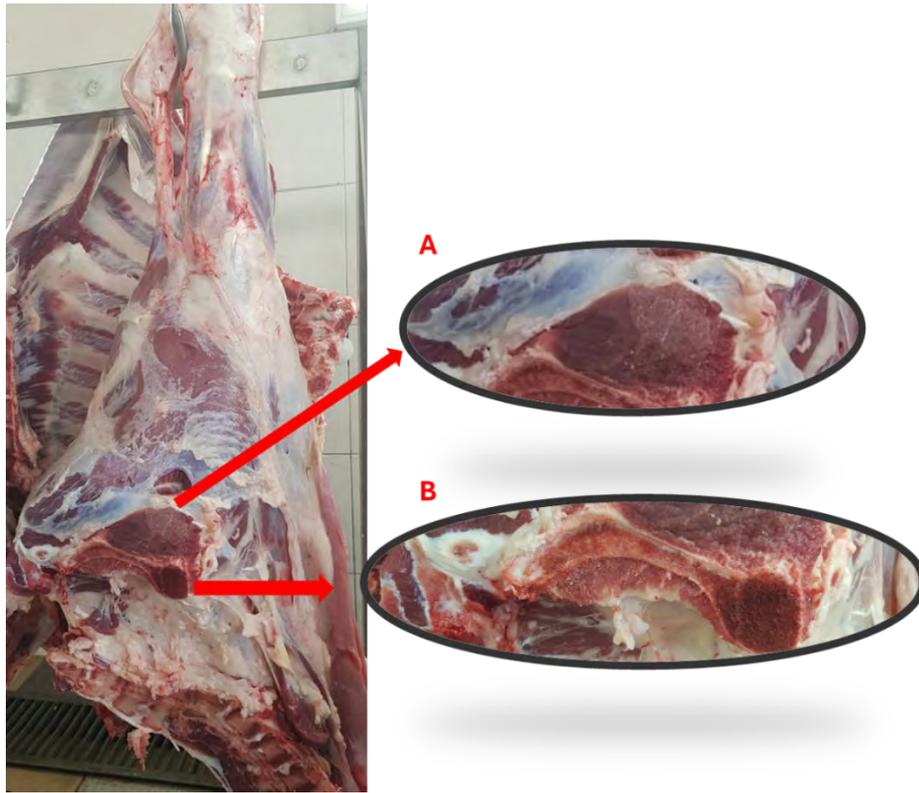


Figure 71. Male cattle carcass
A- musculus gracilis B- pelvis angle and tuberculum pubicum

4. CONFORMATION CLASSES IN BEEF CARCASSES

We mentioned that during the ante mortem period, category determination is performed to establish a basis for carcass grading when determining age and fatness status in cattle (*see also section 1.4 and Table 5*). In the post-mortem period, conformation classification is also performed by evaluating the development of the muscles in cattle carcasses, the degree of fat coverage of the carcasses and chest cavity, and the fatness level of the carcass (Tables 36-39). This systematic protocol is crucial for ensuring accurate carcass pricing in the future and protecting the interests of both producers and consumers.

1. S-Superior

Good muscle development; profiles are extremely convex; the loin is extremely convex, excessively wide and thick; the shoulder is extremely convex and thick.

2. E-Excellent

Rump is very thick, profiles very convex, loin very convex, very wide, thicker than shoulders, shoulders very convex and thick.

3. U-Very Good

Rump is thick, profiles are thicker. Loin is wide, appears thicker than the shoulders, and the shoulders are thick and convex in structure.

4. R-Good

The rump profiles are flat, the loin is thick, less wide than the shoulders, and the shoulders are well developed but less thick.

5. O-Fair

The rump is relatively concave. The width and thickness of the loin are reduced. The shoulder thickness is reduced.

6. P-Poor

Rump profiles may range from concave to very concave. The loin is narrow, bony, and concave. The shoulder is narrow and flat, and the bones are visible.

Table 36. Carcass grades according to cattle categories identified during the ante mortem period

Cattle Categories		Carcass Grade						
A	U2 U3	R2	R3	O2	O3			
B	R3							
C	U2 U3	U4	R3	R4	O3	O4		
D	R3	R4	O2	O3	O4	P2	P3	
E	U2 U3	U4	R2	R3	R4	O2	O3	O4
Z	U2 U3	R2	R3	O2	O3			

Table 37. Markings used in grading cattle carcasses

Carcass Structure	Mark
Fully represents its class	=
Characteristic between two classes	-
Better condition than its class, but cannot be included in the upper class	+

In the EU, beef and veal carcasses are classified into 5 categories (1-5) based on fat cover. In this grading system, carcasses are classified as low (1), moderate (2), average (3), high (4), and very high (5) fat cover carcasses (Table 38).

Table 38. Cattle carcass fat cover classes

Degrees of Fat Covering	Definition
1 (Low)	Negligible external fat
2 (Weak)	Light and thin fat cover, muscles visible almost everywhere
3 (Medium)	Muscles are covered with fat except for the thighs and shoulders, with slight fat accumulation in the chest cavity.
4 (High)	Muscles are covered with fat, but the shoulder and thigh are partially visible; significant fat accumulation in the chest cavity.
5 (Very High)	The entire carcass is covered with fat, with abundant fat accumulation in the chest cavity.

Table 39. Beef carcass fatness grades in Türkiye

Fatness Condition	Fatness Grade
Non-fat	1
Low-fat	2
Medium-fat	3
Fatty	4
High-fat	5

5. REGULATIONS CONCERNING MEAT IMPORTED TO TÜRKİYE

Meat imported into Turkey must be accompanied by an Origin and Veterinary Health Certificate issued by the Official Veterinary Authority of the exporting country at the point of entry. Additionally, imported meat must comply with the following requirements.

- a) Meat may be imported in fresh, salted, dried, brined, smoked, chilled, or frozen form. All imported meat must comply with current food regulations in Türkiye.
- b) For large animals, meat must be imported as whole, half, or quarter carcasses. For small ruminants, whole or half carcasses are acceptable. The import of meat in cut-up or minced form is not permitted.
- c) Carcass meat must be wrapped in a hygienic covering, such as a stockinette (flexible cotton packaging material).
- d) Carcasses must be stamped under the supervision of a Government Veterinarian using ink or hot stamping. Specifically:

For carcasses weighing more than 60 kg, both halves must be stamped on the thigh, loin, back, chest, shoulder, and pleura surfaces.

For other carcasses, stamping is required at the shoulder and thigh areas.

- a) The official Veterinary Health Certificates for the meat must confirm that;

The meat comes from healthy animals, born and raised in the country of origin, free from contagious and epidemic animal diseases.

The meat is of good quality, sound, fit for human consumption, free from any artificial colouring agents, chemicals, or radioactive substances, and is consumed as food in its country of origin,

The meat contains no antibiotics or anabolic substances,

- b) Mould observed on frozen meat is typically due to poor hygiene or inadequate technical equipment. Detection of mould on imported meat results in its rejection.
- c) Chilled carcasses must be transported at temperatures between -1 and +1 degrees Celsius, while frozen carcasses must be transported in refrigerated vehicles at -18 degrees Celsius. These vehicles must;
 1. The inner surfaces or parts that come into contact with meat must be made of a stainless material that does not alter the properties of the meat or render it harmful to human health.
 2. Surfaces must be smooth and easy to clean and disinfect.
 3. When carcasses are transported, they must not touch the ground when hung on stainless hooks.
 4. Other organs and internal organs must be hung or placed in a stainless-steel carrier. Refrigerated vehicles must be at +1 degree for fresh shipments and -18 degrees for frozen shipments.
 5. Vehicles transporting fresh meat must not also transport any other products, unskinned heads, or feet.
 6. It must be documented that the meat was loaded under the official control and supervision of a veterinarian.

DISPOSAL OF CONFISCATED MEAT

The disposal of confiscated meat and organs that are not permitted for consumption shall be carried out as follows.

- a) Confiscated meat shall be disposed of using physical methods such as boiling, pressurised steam, or burning, or by using chemical means.
- b) Meat to be disposed of is thoroughly chopped, treated with disinfectants such as phenol, tar, or creolin, and then disposed of by burying it in pits at least two meters deep in locations away from wells, streams, pastures, animals, people, and roads, in accordance with the relevant procedures.
- c) Internal organs to be disposed of shall be stored in locked transport containers specially designed for this purpose until disposal.
- d) Meat and organs to be disposed of shall be kept under strict administrative and disciplinary control to prevent their removal from the slaughtering sites.

EVALUATION OF CONFISCATED MEAT

Meat that has been confiscated may be used in industry after undergoing the following treatment.

- a) Confiscated meat may be used in the production of pig, chicken, and dog feed after being boiled sufficiently under the supervision of a veterinarian.
- b) Confiscated meat and organs are rendered harmless using the most preferred method today, known as thermal sterilisation, which involves high-pressure steam. This method destroys even the most resistant microbial spores by raising the temperature to 160 degrees.

After these methods are applied, the fat obtained from the carcasses is purified by physical and chemical means and used in soap production or as machine oil, while the meat-bone meal obtained can be consumed as a raw material for feed.

INSPECTION OF FROZEN AND CHILLED MEAT

Systematic inspection of frozen and chilled meat is carried out as follows:

A - External Examination: External examination is essential to determine whether the frozen meat retains its proper characteristics.

Frozen meat is generally darker in colour than fresh meat and covered with a thin surface layer. Other aspects to consider during external examination include;

- 1) Meat stamps are inspected.
- 2) Wrapping materials (stockinette, etc.) are examined. Serum stains at the edges of the wrapping may indicate that the meat partially thawed and sweated during storage or transport, leaving dried serum marks on the wrap. However, if wrapping is applied to fresh carcasses stored for 18–24 hours, meat juice may also create stains. Therefore, it must be distinguished whether the stains originated from thawing or packaging.
- 3) Flattening of carcasses indicates thawing.
- 4) Ensure that casings and bags are clean, free from mud or suspicious stains.
- 5) Palpation is performed manually.

- 6) Olfactory inspection is conducted to detect spoilage. For chilled and frozen meat, odour inspection is performed after thawing.

B- Deep Examination:

Deep examination is performed when pathological or post-mortem defects are suspected during surface inspection. The systematic approach includes.

- 1) Surface spoilage: Observing mould growth or microbial colonies and other post-mortem defects,
- 2) Deep spoilage: If external examination raises suspicion, further inspection involves probing and removal of muscle masses to detect Gram-positive bacteria or other spoilage microorganisms.
- 3) Visual and laboratory inspections: Assess superficial spoilage and bone decomposition. In large frozen carcasses, improper freezing may cause bone deterioration. Chemical and bacteriological laboratory tests are used to confirm spoilage.

Mouldy or denatured fibrous areas in frozen meat must be removed and condemned. In cases of superficial spoilage, affected portions are trimmed and discarded. If probing reveals deep spoilage or rancidity in frozen meat, the affected carcass sections must be wholly condemned.

6. SENDING SAMPLES FOR LABORATORY DIAGNOSIS AND CONFIRMATION

Samples must be sent to laboratories to reinforce the veterinarian's opinion regarding the diagnosis of physiological disorders and diseases identified during ante-mortem and post-mortem examinations and to provide an objective basis for legal proceedings (see Table 40: Institute laboratories and provinces under their responsibility). It is essential to plan the samples to be taken according to the purpose of sending them (bacteriological, virological, parasitological, pathological, toxicological). Samples should be sent to the laboratory with a morbid substance sending protocol (report) (Figure 72).

Table 40. Institute laboratories and provinces under its responsibility

Institute Name	Provinces
Veteriner Kontrol Merkez Araştırma Enstitüsü Müdürlüğü, Etlik, Ankara	Ankara, Kırıkkale, Kırşehir, Nevşehir, Kayseri, Yozgat, Çorum, Çankırı, Karabük, Bartın, Kastamonu, Eskişehir, Bolu, Zonguldak.
Pendik Veteriner Kontrol Enstitüsü Müdürlüğü, İstanbul	İstanbul, Tekirdağ, Kırklareli, Edirne, Çanakkale, Balıkesir, Bursa, Yalova, Bilecik, Kocaeli, Sakarya, Düzce.
Bornova Veteriner Kontrol Enstitüsü Müdürlüğü	İzmir, Manisa, Aydın, Muğla, Denizli, Uşak, Kütahya.
Konya Veteriner Kontrol Enstitüsü Müdürlüğü	Konya, Niğde, Aksaray, Karaman, Antalya, Burdur, Isparta, Afyon.
Adana Veteriner Kontrol Enstitüsü Müdürlüğü	Adana, Mersin, Hatay, Gaziantep, Kilis, Osmaniye, Kahramanmaraş, Adıyaman, Şanlıurfa
Samsun Veteriner Kontrol Enstitüsü Müdürlüğü	Samsun, Sinop, Amasya, Tokat, Sivas, Ordu, Giresun, Trabzon, Rize
Erzurum Veteriner Kontrol Enstitüsü Müdürlüğü	Erzurum, Erzincan, Gümüşhane, Bayburt, Artvin, Ardahan, Kars, Ağrı, Iğdır
Elazığ Veteriner Kontrol Enstitüsü Müdürlüğü	Elazığ, Malatya, Tunceli, Bingöl, Muş, Diyarbakır, Mardin, Batman, Bitlis, Siirt, Şırnak, Van, Hakkari
Şap Enstitüsü	Whole provinces of Türkiye

6.1. Sampling for Bacteriological Diagnosis and Confirmation

Blood: Blood should be collected aseptically from the jugular vein and transferred into sterile blood culture bottles under aseptic conditions. During collection, the culture bottles must be ready at the animal's side. A minimum of 5 mL of blood is required per bottle. After injecting the blood, gently mix the sample. Blood culture bottles should be kept at room temperature. Blood flowing from natural orifices can be absorbed onto sterile cotton and sent to the laboratory.

Blood Serum: Blood is collected from the jugular vein into dry, sterile tubes under aseptic conditions. The tubes are left at a slight incline for 30 minutes at room temperature to allow serum separation. Once separation begins, the tube edges are sterilised with a sterile wire, and blood is kept at room temperature for an additional 4 hours. The tubes are then refrigerated overnight. After coagulation, the serum is carefully separated from the clot and transferred into a sterile tube near a flame. No preservatives are added, and the serum must be free of red blood cells.

Blood Frotis: Place a drop of blood near the short edge of a clean microscope slide. Contact the drop with a coverslip and spread it toward the far edge to prepare a smear. Allow the smear to air dry. If multiple smears are prepared, ensure the slides do not touch each other. In suspected anthrax cases, smears must be fixed using flame.

Pus: Pus is collected from closed, unruptured abscesses formed due to localised inflammation using a sterile syringe and placed into a sterile tube.

Organ Samples: For bacteriological examination, organ samples should be palm-sized and taken from lesioned areas. Pathological material must be placed into sterile containers following aseptic and antiseptic procedures. If the laboratory is nearby, organs can be sent fresh. If there is a delay, samples should be preserved in a 50% glycerine-saline solution.

Foetal Membranes: Cotyledons that have lost their standard bright red colour and appear dirty, greyish-yellow should be collected into sterile containers under aseptic and antiseptic conditions.

6.2. Sampling for Virological Diagnosis and Confirmation

Blood: Collect 10 mL of blood from the jugular vein into sterile tubes containing anticoagulants (e.g., EDTA, heparin). The blood should not clot and must be transported to the laboratory cold, but not frozen, as quickly as possible.

Blood Serum: Blood is collected from the jugular vein into dry, sterile tubes under aseptic conditions. The tubes are left at a slight incline for 30 minutes at room temperature to allow serum separation. Once separation begins, the tube edges are sterilised with a wire, and blood is kept at room temperature for an additional 4 hours. Then, the tubes are refrigerated overnight. After coagulation, the serum is carefully separated from the clot and transferred into a sterile tube near a flame. No preservatives are added, and the serum must be free of red blood cells. The serum is sent to the laboratory as quickly as possible, cold but not frozen.

Skin: In suspected ecthyma cases, collect 2–3 fresh papules, 0.5–1 cm in size, as sterilely as possible, and place them in a 50% glycerine-saline solution. In suspected sheep and goat pox (Orf) cases, collect papules. In suspected Lumpy Skin Disease (LSD) cases, collect nodules or nodule fluid. All skin samples must be sent under cold chain conditions. If the cold chain cannot be maintained, samples should be transported in a 10% glycerol solution.

Organ Samples: Tissue samples from the lung, spleen, liver, and lymph nodes should be placed in 50% glycerine or physiological saline. If these are unavailable, they can be sent directly to the laboratory in a clean plastic bag with ice packs as quickly as possible, under cold conditions.

Intestinal Contents and Faecal Samples: Collect at least 2 grams of intestinal content or faeces from the rectum of live animals and send in a tube or clean bag to the laboratory. If sending a portion of the intestine directly, tie both ends of the intestinal segment and transport it under cold conditions.

6.3. Submitting Samples for Pathological Diagnosis and Confirmation

For pathological diagnosis, samples are taken from newly deceased animals before signs of decomposition appear. Materials taken from tissues and/or organs suspected of being affected by the disease are transported in 10% formalin solution under cold conditions, but without freezing.

6.4. Sample Submission for Parasitological Diagnosis and Confirmation

Faeces: A fresh faecal sample, without undergoing any processing, should be sent to the laboratory within 24 hours in a clean container containing 5-10 g of material, using a cold chain.

Blood and Blood Serum: Blood samples should be sent to the laboratory within 24 hours in tubes containing anticoagulants such as EDTA, Heparin, or 10% sterile sodium citrate, in a quantity of 10 mL, and under cold chain conditions. Blood serum samples should be sent to the laboratory in vacuum-sterile

tubes or Eppendorf tubes, without haemolysis, in a volume of at least 2 mL, and under cold chain conditions.

6.5. Sample Submission for Toxicological Examination

In cases of suspected poisoning, the stomach and intestinal contents, liver, spleen, kidneys, blood (serum, plasma), urine, muscle, and milk of the animals should be sent to the laboratory in a cold chain.

MARAZİ MADDE GÖNDERME PROTOKOLÜ

KURUM ADI :/20...

A-GÖNDERENİN

Adı-Soyadı :
Adresi :
Tel-Fax :
e-mail :

B-HAYVAN SAHİBİNİN:

Adı-Soyadı :
Adresi :
Tel. No :

C-HAYVANA AİT BİLGİLER:

1- Kulak No:.....
2- Türü:.....
3- Irkı-Cinsiyeti:.....
4- Yaşı:.....
5- Verilen Besin Maddeleri: Slaj (.....), Konsantre Yem (.....), Kaba Yem (.....)
6- Bakım ve Beslenme: Ahırda (.....), Merada (.....)

D-NUMUNEYE AİT BİLGİLER :

1- Gönderilen Numunenin Türü :
2- Numune Adedi :
3- Numunenin Alındığı Tarih :
4- Atık ise kaç günlük olduğu :
5-Uygulanan Aşılar :
6- Uygulanan Aşı Seri No'ları :
7- Aşı Uygulama Tarihleri :
8- Numunenin gönderilme şekli : Formolde (), Dondurulmuş (), Soğuk şartlarda ()
Taşyıcı besiyeri içinde (), Normal şartlarda (), Diğer ()

E-HASTALIK DURUMU:

1- Sürüdeki hayvan sayısı (.....), Hastalanan (.....), Ölen (.....), İyileşen (.....), Sirayete maruz (.....)
2- Hayvanın daha önce geçirdiği hastalık veya hastalıklar :
.....
3- Daha önce yapılan tedavi ve tarihi:.....
.....
4- Hastalık Hakkında Bilgi: (Klinik Belirtiler, lezyonlar, süresi, etkilenen hayvan sayısı ve otopsi bulguları).....
.....
5- Şüphelenilen Hastalık: (.....)

F- İSTENİLEN LABORATUVAR MUAYENELERİ:

1- Bakteriyolojik (), 2- Serolojik (), 3- Parazitolojik (), 4- Toksikolojik ()
5- Patolojik (), 6- Virolojik ()

İMZA

Figure 72. Morbid substance sending protocol

7. LEGAL BASIS OF MEAT INSPECTION

All activities related to veterinary services, food, and feed safety in Türkiye are legally ensured under Law No. 5996 on Veterinary Services, Plant Health, Food and Feed, published in the Official Gazette No. 27610 on June 13, 2010.

This Law covers:

- all stages of production, processing, and distribution of food, materials and articles in contact with food, and feed,
- controls of residues and contaminants, including those of plant protection products and veterinary medicinal products,
- the prevention and control of epidemic or contagious animal diseases,
- the control of harmful organisms in plants and plant products,
- the welfare of farm animals, laboratory animals, companion and ornamental animals,
- matters related to zootechnics,
- veterinary medicinal and plant protection products,
- veterinary and plant health services,
- import and export procedures of live animals and products thereof,
- and official controls and sanctions related to these areas.

Article 31, paragraph 8 of the Law No. 5996 on Veterinary Services, Plant Health, Food and Feed states that:

“The Ministry shall assign official veterinarians to carry out ante-mortem and post-mortem inspections at slaughterhouses, as well as inspections and other official controls in establishments where meat cutting operations are performed”.

Based on this article, to prevent, eliminate or reduce to acceptable levels the risks that may directly or indirectly (through the environment) affect humans and animals, to protect consumer interests, including matters related to food and feed labelling and other forms of consumer information, and to prevent unfair competition and establish the procedures and principles of official controls on food and feed, the Regulation on Official Controls of Food and Feed (Official Gazette Date: 17.12.2011, No: 28145) entered into force.

Furthermore, taking into account the principles of food hygiene, public health, animal health and animal welfare, the Regulation Laying Down Specific Rules for the Official Controls of Products of Animal Origin (Official Gazette Date: 17.12.2011, No: 28145) was enacted to specify the official control requirements for products of animal origin.

Article 9 of the Regulation Laying Down Specific Rules for the Official Controls of Products of Animal Origin defines the inspection and examination duties of the official veterinarian, while Article 10 specifies the procedures related to the application and verification of the health mark.

In performing their duties, official veterinarians also operate in accordance with the provisions of several regulations designed to ensure food safety and consumer protection. These include:

- the Regulation on Food Hygiene (Official Gazette Date: 17.12.2011, No: 28145), which lays down general rules of hygiene that food business operators must comply with from primary production to final consumption;

- the Regulation on Specific Hygiene Rules for Food of Animal Origin (Official Gazette Date: 27.12.2011, No: 28155), which sets out additional hygiene requirements for establishments producing food of animal origin; and
- the Regulation on the Transport of Live Animals and Animal Products Within the Country (Official Gazette Date: 17.12.2011, No: 28145), which defines the rules governing the transport of semen, ova, embryos (as amended in the Official Gazette No. 31318 dated 28.11.2020), live animals—excluding nomadic herds—and animal products.

Furthermore, the Regulation on General and Specific Hygiene Rules for Small-Capacity Slaughterhouses (Official Gazette Date: 03.03.2018, No: 30349) establishes the general and specific hygiene requirements, as well as the procedures and principles for approval, applicable to slaughterhouses with a daily capacity not exceeding 8 cattle/buffalo/camels, 24 sheep/goats, 8 equines, or 24 pigs.

Annex-2

Health Certificate for the Transport of Live Animals to the Slaughterhouse Following On-Farm Ante-Mortem Inspection

This official document certifies the health status of live animals that have undergone ante-mortem inspection on the farm before transport to the slaughterhouse.

Annex-3

Health Certificate for the Transport of Carcasses from On-Farm Slaughtered Animals Following On-Farm Ante-Mortem Inspection

This certificate records the health inspection results for animals slaughtered on the farm whose carcasses or parts are to be transported to a slaughterhouse.

Annex-4

Health Certificate for the Transport of On-Farm Slaughtered Animals to the Slaughterhouse in Accordance with Article 25(3)(a) of the Regulation on Specific Hygiene Rules for Food of Animal Origin

This official report confirms compliance with the requirements set out in Article 25(3)(a) of the Regulation, ensuring that animals slaughtered on the farm meet the necessary health and hygiene standards for transport to a slaughterhouse.

SAĞLIK RAPORU

**Ölüm-Öncesi Muayenesi Çiftlikte Yapılan Canlı Hayvanların
Kesimhaneye Nakli İçin**

Yetkili birim:

Rapor Numarası:

1. Hayvanların tanımlanması

Tür:

Hayvan sayısı:

Tanımlama işareti:

2. Hayvanların menşei

Menşe çiftliğinin adresi:

Hayvan barınağının tanımlama işareti*:

3. Hayvanların varış yeri

Hayvanlar.....adresindeki.....kesimhanesine nakledilecektir.

Nakilde kullanılacak araç bilgileri:

4. Diğer ilgili bilgiler:

5. Beyan

Yukarıda tanımlanan hayvanları kesim öncesinde yukarıda belirtilen çiftlikte/...../..... (tarih)'te saat..... muayene ettiğimi ve sağlıklı olduklarını tespit ettiğimi,

Bu hayvanlara ilişkin kayıtlar ve belgelerin yasal gereklilikleri sağladığımı ve bu hayvanların kesimine engel teşkil etmediğini,

beyan ederim.

Tarih:/.../.....

Raporun hazırlandığı yer

Kaşe/Mühür

.....

(Resmi veteriner hekimin imzası)

* Gerekli olduğunda doldurulur.

SAĞLIK RAPORU

**Ölüm-Öncesi Muayenesi Çiftlikte Yapılan ve Çiftlikte Kesilen Hayvanların
Kesimhaneye Nakli İçin**

Yetkili birim:

Rapor Numarası:

1. Hayvanların tanımlanması

Tür:

Hayvan sayısı:

Tanımlama işareti:

2. Hayvanların menşei

Menşe çiftliğinin adresi:

Hayvan barınağının tanımlama işareti*:

3. Hayvanların varış yeri

Hayvanlar.....adresindeki.....kesimhanesine nakledilecektir.

Nakilde kullanılan araç bilgileri:

4. Diğer ilgili bilgiler

5. Beyan:

Yukarıda tanımlanan hayvanları kesim öncesinde yukarıda belirtilen çiftlikte/...../..... (tarih)'te saat..... muayene ettiğimi ve sağlıklı olduklarını tespit ettiğimi,

Bu hayvanların çiftliktetarihinde ve saat..... kesildiğini, kesimin ve kanın akıtılmasının doğru bir şekilde gerçekleştirildiğini,

Bu hayvanlara ilişkin kayıtların ve belgelerin yasal gereklilikleri sağladığını ve bu hayvanların kesimine engel teşkil etmediğini,

beyan ederim.

Tarih:/..../.....

Raporun hazırlandığı yer

Kaşe/Mühür

.....

(Resmi veteriner hekimin imzası)

* Gerekli olduğunda doldurulur.

SAĞLIK RAPORU

Hayvansal Gıdalar İçin Özel Hijyen Kuralları Yönetmeliğinin 25 inci Maddesinin Üçüncü Fıkrasının (a) Bendindeki Hükümle Uyumlu Olarak Çiftlikte Kesilen Hayvanların Kesimhaneye Nakli İçin

Yetkili birim:

Rapor Numarası:

1. Hayvanların tanımlanması

Tür:

Hayvan sayısı:

Tanımlama işareti:

2. Hayvanların menşei

Menşe çiftliğinin adresi:

Hayvan barınağının tanımlama işareti*:

3. Hayvanların varış yeri

Hayvanlar.....adresindeki.....kesimhanesine nakledilecektir.

Nakilde kullanılan araç bilgileri:

4. Diğer ilgili bilgiler

5. Beyan:

Yukarıda tanımlanan hayvanları kesim öncesinde yukarıda belirtilen çiftlikte/...../..... (tarih)'te saat..... muayene ettiğimi ve sağlıklı olduklarını tespit ettiğimi,

Bu hayvanlara ilişkin kayıtların ve belgelerin yasal gereklilikleri sağladığını ve bu hayvanların kesimine engel teşkil etmediğini,

beyan ederim.

Tarih:/...../.....

Raporun hazırlandığı yer

Kaşe/Mühür

.....

(Resmi veteriner hekimin imzası)

* Gerekli olduğunda doldurulur.

7.1. Reportable Mandatory Diseases

Pursuant to Law No. 5996, the “Regulation on Notifiable Animal Diseases and Reporting” published in the Official Gazette dated January 22, 2011 and numbered 27823, entered into force. The principles and information to be provided regarding disease notifications are regulated by the 2023 Circular on Animal Disease Control and Animal Movement Control of the Ministry of Agriculture and Forestry of the Republic of Turkey and the Animal Disease Control and Animal Movement Control Program of the Food and Control Directorate General. In this regard, the list of animals sent to slaughterhouses or of diseases that may infect them is provided below. The list may be updated annually as needed based on current information.

1- Foot-and-Mouth Disease (FMD)	14- Newcastle Disease
2- Bovine Brucellosis	15- Pullorum
3- Bovine Tuberculosis (cattle)	16- Fowl Typhoid (Avian Typhoid)
4- Rabies	17- Ruam
5- Bluetongue	18- African Swine Fever
6- Rinderpest	19- Classical Swine Fever
7- Bovine Spongiform Encephalopathy (BSE)	20- Swine Vesicular Disease
8- Malta Fever (Sheep and Goat Brucellosis)	21- Bovine Nodular Exanthema (Lumpy Skin)
9- Sheep and Goat Plague (PPR)	22- Contagious Stomatitis (Vesicular Stomatitis)
10- Sheep and Goat Pox	23- Rift Valley Fever
11- Anthrax	24- Contagious Bovine Pleuropneumonia
12- Scrapie	25- Enzootic Bovine Leukosis
13- Avian Influenza	26- Epizootic Haemorrhagic Disease of Deer (EHD)

7.2. Compensable Diseases

As part of efforts to control animal diseases, in exceptional cases, compensation is paid to owners of sick animals to prevent the spread of disease and protect public health. Compensation corresponds to the value of the animal or animal-derived product that has been ordered to be destroyed due to disease.

For animals that are infected with or suspected of having a compensable disease, the authorised personnel of the Provincial or District Directorate of Agriculture and Forestry decide on slaughter or destruction. The value of the consumable meat, hide, and other parts of the animals that are ordered to be slaughtered is deducted from the compensation entitled to the animal owner.

In the case of rabies only, if the owners of animals bitten by a rabid animal or suspected of having the disease do not consent to the euthanasia of their animals, cattle are quarantined for six months, and sheep and goats for three months, at the expense of the animal owner. During the quarantine period, the animals are held in trust for the owner.

Provisions regarding compensation are specified in the “Regulation on Compensation in Animal Diseases.” The diseases eligible for compensation in slaughter animals and the applicable rates are presented in Table 41.

Table 41. Compensation payable for livestock diseases and rates

Diseases	Condition	Compensation Amount
Bovine tuberculosis	Tuberculin test (+)	9 / 10
	Post-slaughter detection	3 / 4
Bovine brucellosis	Serological and bacteriological test (+)	9 / 10
Malta fever (Sheep and goat brucellosis)	Serological and bacteriological test (+)	9 / 10
Rinderpest	Diagnosed by laboratory examination	Full
Sheep and goat plague (PPR)	Diagnosed by laboratory examination	Full
Rabies	Animals bitten by a rabid or suspected animal	4 / 5
Bluetongue	Diagnosed by laboratory examination	3 / 4
FMD	Diagnosed by laboratory examination	Full
Bovine nodular exanthema (Lumpy Skin Disease-LSD)	Diagnosed by laboratory examination	Full
Bovine spongiform encephalopathy (BSE)	Diagnosed by laboratory examination	Full
Scrapie	Diagnosed by laboratory examination	Full
Anthrax	Diagnosed by laboratory examination	3 / 4

For Foot-and-Mouth Disease, Sheep and Goat Pox, compensation is only paid for cases detected in regions designated by the Ministry.

For Brucellosis, Rabies, Bovine Lumpy Skin Disease (LSD), BSE, Scrapie, Bluetongue, and Anthrax, detection by official laboratories is required for compensation. For other diseases, detection by veterinarians assigned to the Provincial or District Directorates of Agriculture and Forestry is sufficient. Official veterinarians collect samples for laboratory examination to aid diagnosis.

The local value appraisal commission determines compensation amounts based on local market value. The commission consists of three members: the chairperson (an official veterinarian), a member appointed by the local administrative authority, and a member chosen by the relevant civil society organisation representing the animal owner.

The commission also determines the payment for the value of animal products, feed, materials, and equipment, as well as the costs of destruction, transportation, and disinfection. Payments may vary depending on the disease as follows;

- For Bovine Rinderpest, the full value of destroyed animal products, feed, materials, and equipment, including destruction, transport, and disinfection costs, is compensated.
- For Foot-and-Mouth Disease, Bovine Tuberculosis, Bovine Brucellosis, and Sheep and Goat Brucellosis (excluding milk), the full value of other destroyed animal products, feed, materials, and equipment, including destruction, transport, and disinfection costs, is compensated.
- For Rabies, the full value of destroyed feed, materials, and equipment, including destruction, transport, and disinfection costs, is compensated.

In addition, animals that die or are euthanised prior to slaughter due to vaccination or serum application administered by an official veterinarian to protect against a notifiable disease are fully compensated according to the official veterinarian's report.

Situations where compensation is not provided include:

- Animals owned by official institutions or municipalities,
- Animals whose illness was not reported by the owner in accordance with the Ministry's procedures,
- Animals purchased while known to be sick,
- Animals that die without being examined by an official veterinarian,
- Animals transported without the documents specified by the Ministry,
- Owners who do not comply with the vaccination, medication, or testing orders following a notifiable disease outbreak,
- Losses in productivity due to vaccination, serum, or medication applied against notifiable diseases.

8. DESCRIPTION OF SOME OF THE MOST COMMON DISEASES SEEN IN SLAUGHTER ANIMALS IN TÜRKİYE

DISEASES	DEFINITION	CATTLE	BUFFALO	SHEEP	GOAT
Hypocalcemia, Milk Fever	A metabolic disorder characterised by a rapid decline in blood calcium levels after parturition in dairy cows.	X	X	X	X
Grass Tetany (Hypomagneseemia)	A metabolic disorder characterised by a decrease in blood magnesium levels following turnout to pasture in spring due to nutritional imbalance in ruminants.	X	X	X	X
Pregnancy Toxaemia (Ketosis)	A metabolic disorder occurring predominantly in the late gestation of ewes and does, characterised by disturbances in glucose and fat metabolism, and accompanied by hyperketonemia and hypoglycemia.	X	X	X	X
High-Altitude Disease (Brisket Disease)	A disease characterised by right-sided heart failure resulting from pulmonary hypertension induced by hypoxia at altitudes of 1500 meters or higher.	X	X	X	X
Nutritional Muscular Dystrophy (White Muscle Disease)	A metabolic disease occurring in calves and lambs as a result of deficiencies in selenium, vitamin E, and sulphur-containing amino acids.	X	-	X	X
Actinobacillosis (Wooden Tongue)	A disease caused by <i>Actinobacillus lignieresii</i> , characterised by swelling and abscess formation in the soft tissues of the head and neck, particularly involving the tongue, lips, and the pharyngeal and maxillary lymph nodes.	X	X	X	X
Actinomycosis (Lumpy Jaw)	A chronic disease caused by <i>Actinomyces bovis</i> , characterised by thickening, deformation, excessive fibrosis, osteitis, and the formation of multiple abscesses in the mandible, maxilla, and other bones of the head region.	X	-	X	X
Anthrax	A highly fatal disease caused by <i>Bacillus anthracis</i> , characterised by staggering, dyspnea, inability to stand, tremors, weakness, and haemorrhagic discharges from natural body openings in affected animals.	X	X	X	X
Brucellosis - Malta Fever	A zoonotic disease caused by <i>Brucella spp.</i> , characterised by intermittent fever and predominant involvement of the genital organs.	X	X	X	X
Tuberculosis	A zoonotic disease caused by <i>Mycobacterium tuberculosis</i> and <i>M. bovis</i> , characterised by the formation of tubercles in the body.	X	X	X	X
Caseous Lymphadenitis - Thin Ewe Syndrome	A zoonotic disease caused by <i>Corynebacterium pseudotuberculosis ovis</i> , characterised by enlargement of superficial lymph nodes, particularly associated with skin lesions.	X	X	X	X
Johne's Disease, Paratuberculosis	A disease caused by <i>Mycobacterium paratuberculosis (M. johnei)</i> , characterised by contagious chronic diarrheal and thickening of the intestinal wall in cattle, sheep, and goats.	X	X	X	X
Weil's Disease, Leptospirosis	A zoonotic disease caused by <i>Leptospira icterohaemorrhagiae</i> , characterised by septicemia, jaundice, and hemoglobinuria.	X	X	X	X

Circling Disease, Listeriosis	A zoonotic disease caused by <i>Listeria monocytogenes</i> , characterised by a head bent to the side, circular turning movement, holding feed in the mouth without chewing, blindness, abortion, and mastitis.	X	X	X	X
Haemorrhagic Septicemia, Pasteurellosis	A disease caused by <i>Pasteurella multocida</i> , arising from exposure to contaminated feed and water, unsanitary conditions, hygiene deficiencies, and injuries.	X	X	X	X
Salmonellosis	A zoonotic disease caused by <i>Salmonella</i> spp., characterised by diarrhoea, dehydration, anorexia, high fever, reduced milk production, and polyarthritis.	X	X	X	X
Campylobacteriosis	A zoonotic disease caused by <i>Campylobacter jejuni</i> , <i>C. coli</i> , and <i>C. fetus</i> , characterised by gastroenteritis or genital bacteriosis.	X	X	X	X
Tetanus, Lockjaw	A disease caused by <i>Clostridium tetani</i> , resulting from consumption of contaminated feed or wounds, and characterised by spasmodic contractions of striated muscles.	X	X	X	X
Botulism, Forage Poisoning	A disease caused by <i>Clostridium botulinum</i> , characterised by neurological symptoms, leading to respiratory paralysis and death.	X	X	X	X
Malignant Oedema, Gas Gangrene	A disease caused by <i>Clostridium septicum</i> , characterised by anorexia, depression, and acute toxemia.	-	-	X	X
Blackleg, Clostridial Myositis	A disease caused by <i>Clostridium chauvoei</i> , arising from consumption of contaminated feed or injuries during shearing, characterised by gas gangrene due to degeneration of collagen fibers by its toxins.	X	X	X	X
Query Fever	A zoonotic disease caused by <i>Coxiella burnetii</i> , transmitted via ticks, characterised by abortion, mastitis, orchitis, rhinitis, conjunctivitis, bronchopneumonia, and joint swelling.	X	X	X	X
Tularemia, Rabbit Fever	The disease is characterised by foul-smelling, dark-coloured diarrhoea, frequent urination, and swollen, painful lymph nodes, caused by the transmission of <i>Francisella tularensis</i> via ticks, lice, and flies to wild animals.	-	-	X	-
Coryza Gangrenosa Bovum, Necrotic Rhinitis	A zoonotic viral disease caused by bovine herpesvirus 1 and 2, characterised by head and eye symptoms and often leading to death.	X	X	-	-
Infectious Bovine Rhinotracheitis (IBR)	A viral disease caused by bovine herpesvirus 1, affecting the respiratory, intestinal, and genital systems in cattle.	X	X	-	-
Rabies	A viral disease caused by rhabdovirus, manifested by neurological symptoms, subject to slaughter ban and mandatory reporting.	X	X	X	X
Rinderpest, Cattle Plague	A viral disease caused by morbillivirus, primarily affecting the digestive system in cattle.	X	X	-	-
Ovine Rinderpest, PPR	A viral disease caused by morbillivirus, primarily affecting the digestive system in sheep and goat.	-	-	X	X
Foot-and-Mouth Disease (FMD), Aphthous Fever	A notifiable zoonotic viral disease caused by aphtovirus, characterised by exanthema on the feet, hooves, and mouth.	X	X	X	X
Enzootic Bovine Leukosis	A viral disease caused by oncornavirus, characterised by lymphadenitis, body oedema, and paralysis of the hind limbs.	X	X	X	X
Bluetongue	A disease caused by orbivirus, primarily affecting the digestive and respiratory systems, characterised by bluetongue in small ruminants.	X	X	X	X

Pox	A notifiable zoonotic viral disease caused by poxvirus, characterised by red papule formation on the skin and mucous membranes.	X	X	X	X
Lumpy Skin Disease (LSD)	A viral disease caused by a poxvirus, primarily affecting neonatal calves and animals up to two years of age.	X	X	-	-
Cysticercosis, Beef Measles	A parasitic infestation caused by the larval form of <i>Taenia saginata</i> (<i>Cysticercus bovis</i>).	X	-	X	X
Coenurosis	A parasitic infestation caused by the larval form of <i>Taenia multiceps</i> (<i>Coenurus cerebralis</i>) in the brain.	-	-	X	X
Sarcocystosis	A parasitic infestation caused by <i>Sarcocystis</i> spp., affecting muscle tissue.	X	X	X	X
Toxoplasmosis	A zoonotic parasitic infestation caused by <i>Toxoplasma gondii</i> .	X	X	X	X
Liver Fluke Infestation	A parasitic infestation caused by <i>Fasciola hepatica</i> , <i>F. gigantica</i> , and <i>Dicrocoelium dendriticum</i> , primarily affecting the liver and gallbladder.	X	X	X	X
Ascariasis	A parasitic infestation caused by <i>Ascaris suum</i> , <i>Ascaris ovis</i> , and <i>Neoascaris</i> (<i>Toxocara</i>) <i>vitulorum</i> , causing haemorrhages and necrosis in internal organs.	X	X	X	X
Hydatidosis	A zoonotic parasitic infestation caused by <i>Echinococcus granulosus</i> and <i>E. multilocularis</i> , known as Hydatid Cyst Disease.	X	X	X	X
Gastrointestinal Nematodiasis	A parasitic infestation in the stomach and intestinal tissues caused by <i>Trichostrongylus</i> sp., <i>Ostertagia</i> sp., <i>Cooperia</i> sp., <i>Nematodirus</i> sp., <i>Haemonchus</i> sp., <i>Oesophagostomum</i> sp., and <i>Moniezia expansa</i> .	X	X	X	X
Lungworm Infestation	A parasitic infestation of the lungs and other respiratory organs caused by <i>Metastrongylus</i> spp. and <i>Dictyocaulus</i> spp.	X	X	X	X
Hemoparasitosis	A parasitic infestation caused by <i>Babesia</i> spp. (<i>Piroplasma</i> spp.), <i>Theileria</i> spp., and <i>Anaplasma</i> spp.	X	X	X	X
Warble Fly Infestation	A parasitic infestation caused by <i>Hypoderma bovis</i> , characterised by larvae penetrating and damaging the skin.	X	-	X	X

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