



Focus on turkey output

On farm, during transport and at the time of killing





On farm



- **List** of welfare indicators to assess turkeys' welfare on-farm
- **Description** of the main husbandry systems used for turkey farming in the EU
- **Guidelines** for the assessment of turkey welfare on farm using relevant welfare indicators to assess compliance with requirements laid down in Directive 98/58 EC





On farm

Reviews

Factsheets

• Injurious pecking in turkeys

• On-farm assessment of footpad dermatitis in turkeys

• Environmental enrichment and winter garden in a turkey barn

• Use of sick pens in turkey farming



European Union Reference Centre for Animal Welfare Poultry SFA
Indicator Factsheet

Injurious pecking in turkeys

What is injurious pecking?
In contrast to gentle feather pecking which is a social and investigatory pecking of a turkey to another turkey, typically directed at debris on the plumage (Serres, 1995; Dalton et al. 2018), aggressive pecking can cause tissue damage and mortality (e.g. Dalton et al. 2011; Digges et al. 2014; Dalton et al. 2018). In fattening turkeys, injurious pecking is one of the main welfare and health issues (e.g. Barsh et al. 2020). It includes head pecking - an aggressive act targeted at the head, neck and neck of another turkey (e.g. Serres, 1995); and severe feather pecking - repeated, forceful pecking and pulling of the plumage and/or skin of another turkey, with or without feather removal. Injurious pecking often results in plumage and tissue damage to the victim (Serres, 1995). Whereas head pecking is considered an act of aggression, the causes of severe feather pecking are multi-faceted (stocking density, group size, light conditions, diet...) although it is mainly related to high stocking density (Serres et al. 1999; Dalton et al. 2008; Dalton et al. 2018). Depending on the type of pecking, the body area targeted will differ. Aggressive pecking will target the head and neck area, whereas severe feather pecking will target the back and tail area (Jansman et al. 2022).

Legislation
There is no specific law protecting turkeys welfare. These provisions are therefore subject to the general indications derived by the Council Directive 98/58/EC, which defines the minimum general requirements for the protection of animals kept for farming purposes. Council Directive 98/58/EC sets down general standards. Article 3 states that:
"Member States shall make provision to ensure that the owner or keeper takes all reasonable steps to ensure the welfare of animals under their care and to ensure that those animals are not caused any unnecessary pain, suffering or injury."

Method of assessment
The number of turkeys victims of injurious pecking in a flock could be assessed with the transect method. The birds are usually observed while the observer slowly walks through the barn along longitudinal predetermined lines (transect) of equal width according to the house width (AWTS, 2015; Mastorova et al. 2015). The number of turkeys observed showing pecking signs is then converted into a percentage of the flock. Vigilance is required with observers' vision to avoid double counting the same birds.

Figure 1: Body areas targeted by aggressors in case of injurious pecking in turkeys (AWTS, 2015).

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On-farm assessment of footpad dermatitis in turkeys

Definition and risk factors
Footpad dermatitis (FFD) is a contact dermatitis of the plantar surface of birds' feet which can affect the skin but also subjacent tissue and show different severity grades (Stracke et al. 2021) (Figure 1). FFD is associated with abnormalities of the footpad, such as redness, swelling, hyperkeratosis, tissue necrosis, or ulcers. Painful to the birds and with a high prevalence in flocks, footpad dermatitis is a common welfare issue in commercially reared turkeys (Allan et al. 2013; Weber Wyneken et al., 2015).

There are several factors linked with FFD such as the age, sex as well as environmental and management factors. Wet, soiled litter is the main risk factor for FFD (Mayne et al., 2007; Krautwald-Junghans et al., 2011; Wu and Hocking, 2011; Weber Wyneken et al., 2015). Hence, the litter moisture control is a main way to decrease the severity and prevalence of FFD in turkeys flocks. Attention should be paid to drinker design and maintenance (in order to avoid leaking), the choice of (absorbent) litter materials, and the management of litter quality (removal of soiled litter, addition of fresh dry litter), as well as to relative air humidity and ventilation efficiency. Regarding the age of the birds, although the severity of skin lesions is higher in older birds, notably due to the more degraded litter quality as the birds grow, a significant number of turkeys may show footpad surface alterations as early as 6 weeks of age (Krautwald-Junghans et al., 2011). Mayne et al. (2006) even showed histopathological changes associated with FFD on footpads that show no visible skin alterations, from three weeks of age. Turkey hens may experience more footpad injuries and with greater severity compared to turkey toms (Krautwald-Junghans et al., 2011). This may be due to the higher density of hens per unit area (hens being lighter, their numbers are higher than those of toms on the same surface) and the amount of faeces being more numerous and downgrading the litter.

Methods of assessment
Several FFD scoring systems exist in turkeys, based on the surface of the foot affected and the nature of the lesions (Mayne et al., 2006; Mayne et al., 2007; Hocking et al., 2008; Allan et al., 2013). To perform the scoring of FFD in turkeys on farm, each assessed turkey should be caught (EURCAW-Poultry-SFA, 2024), gently held and the surface of the footpad examined. The adhering litter and excreta should be removed carefully, if necessary, with the help of water and a soft brush, not to confuse faecal staining with necrotic areas. Both bird feet should be scored and the most affected foot kept for final evaluation of each individual (Toppe et al., 2015). The scoring of each footpad is done according to the description in Figure 2, which is a scoring system developed by EURCAW-Poultry-SFA and adapted from Hocking et al. (2008), Michel et al. (2012), Allan et al. (2013) and Stracke et al. (2021).

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European Union Reference Centre for Animal Welfare Poultry SFA
Best Practice Factsheet

Environmental enrichment and winter garden in a turkey barn

Introduction
In October 2021, the EURCAW Poultry-SFA visited a turkey farm with a winter garden and environmental enrichment. These additions allow for the production of turkey toms and hens (over 1000) and, improving their welfare. A winter garden and natural light reduce stress added in 2021 to the 2020 m² barn during the 1980s. Since 2021, a partnership with a farm animal welfare NGO has helped in developing a winter living environment for the turkeys. During the visit, birds were 71 days old and, a slow-growing strain was being raised. Previously, a white Burgundy strain was housed in the same conditions.

The winter garden
The winter garden is an area of 223 m² which provides fresh air to the birds. It runs longitudinally along one full length of the barn, with two segments, and a net that separates turkeys from the outside. The area ground surface is covered with shagreen mats and drainage pipes (one in the base) and there is no access to feed or water in this area. The addition of clear lines is done by the gradient away from the winter garden and one in the other direction. The winter garden allows a space well-differentiated from the rest of the barn and stimulating for turkey who have a choice to move in different types of environments.

Environmental enrichment
Several types of environmental enrichment are available in the winter garden and inside the barn. They allow for different types of behaviours such as foraging, pecking, hiding from aggressors and drinking.

- Deep beds (grass when desiccated) (Figure 2 and 3)
- Enriched platforms with and without ramps and a glass to hide underneath (Figure 2 and 3)
- Plastic logs and barrels (Figure 7 and 8)
- Shells (Figure 7 and 10)
- Pecking blocks (Figure 11)

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On farm

Reviews

Factsheets

Training

- **Training**: Review of existing training, for the turkey welfare on farm assessment
- **Webinar**: Main welfare indicators and methods of assessment for turkeys on farm



During transport

An example of good welfare practice describing how to perform a veterinary inspection as a random check compliance with the transport regulation (COUNCIL REGULATION (EC) No. 1/2005)

 European Union Reference Centre for Animal Welfare Poultry SFA

 Best practice Factsheet

An example of inspections of compliance with the transport regulation (COUNCIL REGULATION (EC) No. 1/2005)



The EU transport regulation

The EU transport regulation (COUNCIL REGULATION (EC) No. 1/2005) sets forth provisions governing the transport of live vertebrate animals. It establishes transport conditions to be fulfilled in order to reduce negative animal welfare consequences and prevent suffering.

This factsheet provides an example of how to do an inspection of compliance with the regulation.

Example of a cross-border transport within the EU

The target of the veterinary inspection was a flock consisting of 7300 female turkeys, age 17 weeks and with a body weight around 11 kg. The inspection took place at the farm in Denmark before departure and was carried out in November 2023. The destination for the transport was a German slaughterhouse. The journey duration was in total 8 h, including the mandatory break for the driver. The plan for emptying the house was loading two vehicles with turkeys one crossing and then another three vehicles the following evening. Each vehicle consisted of a rigid truck with a trailer of equal size. Cores were stacked 3 high and 5 deep, totaling 30 cores in each truck and the trailer, i.e., 60 in total.



Checking the travel documents.



The farm containing 7300 female turkeys, age 17 weeks and with a body weight of approximately 11 kg.

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 Best practice Factsheet

An example of inspections of compliance with the transport regulation (COUNCIL REGULATION (EC) No. 1/2005)

Inspection of transport – step-by-step (continued)

2. Checking the condition of the vehicle

The design and condition of the vehicle was checked to ensure the vehicle was suitable for the transport of turkeys. The cores on the vehicle were inspected regarding proper ventilation, suitability for being closed/dismantled and whether the floor was solid and free of sharp edges. The driver explained and showed that the outermost edge of the container had been smoothed to avoid damage to the turkeys when they are pushed into the container. The floor was solid such that faeces were prevented from dropping to lower-placed containers. The curtains and how they were attached to the sides were inspected to ensure that the turkeys were protected against harsh weather conditions during transport. The containers were checked, ensuring that they were in place and firmly locked. The requirement of a sign on the back of the vehicle warning other road users that live animals were on board was checked.



Left: the floor in the container; Right: the curtain in the storage points.

3. Catching the turkeys

The procedure consisted of first coralling a sub-flock of turkeys into the bucket of a wheel loader. Then the wheel loader was driven a short distance (approx. 200 m) to the vehicle and the turkeys were loaded manually from the bucket into the containers. The veterinary inspector followed this procedure for multiple sub-flocks.

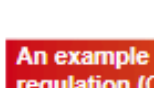



Coralling the turkeys from the barn into the bucket of the wheel loader.



A full load of turkeys in the bucket of the wheel loader, ready to leave the barn and go the short distance to the vehicle.

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 Best practice Factsheet

An example of inspections of compliance with the transport regulation (COUNCIL REGULATION (EC) No. 1/2005)

Inspection of transport – step-by-step (continued)


4. Fitness for transport

Before the loading of the turkeys, the veterinary inspector asked the farm owner if he had sorted out the turkeys that were not fit for transport. The veterinary inspector observed the turkeys both during the process of coralling them into the bucket of the wheel loader and after being loaded from the bucket into the containers on the vehicle. She looked for dead birds and birds showing signs of sickness or reduced welfare, including birds with broken wings/legs or injuries.

5. Loading the turkeys

At the vehicle, the bucket with the turkeys was raised so that the catches were in line with the containers to be loaded. The veterinary inspector checked how the catches handled the turkeys during the manual loading of the birds from the bucket to the containers on the vehicle. This included whether the catches:

- Only lifted one bird at a time,
- Used both hands; one hand partly supporting the body by grabbing under the thigh while keeping the wing in the right place, while the other hand kept the other wing folded up against the body,
- Walked all the way up to the container before placing the turkeys inside, including ensuring that the driver used when starting to fill a container was not too rough, while at the same time ensuring that no turkeys fell out due to being placed too close to the opening of the container.



Manual loading of the turkeys from the bucket into the containers of the vehicle.

6. Containers

Stocking density within the containers was checked. While the catches were loading the turkeys, the veterinary inspector counted the number of turkeys loaded into each container. This was done for several of the containers. A total of 27 turkeys were loaded into each container, with 18 loaded from one side and 12 from the other side of the vehicle. The driver informed that up to 33 turkeys were permitted in each container. The height in the containers was 38 cm. The veterinary inspector checked whether the turkeys were able to sit comfortably with their head held in a natural position when loaded into the containers.



Turkeys in a storage position when loaded into the containers.

Additional information

An inspection of the transport regulation should always include the loading of at least one full vehicle. In this case, loading started at 18:00 and was done at 19:45 when both the truck and the trailer were fully loaded and ready for departure.

Two days prior to the described inspection, a veterinary inspection of the flock was done, which is a legal requirement for every poultry transport across borders (COMMISSION DELEGATED REGULATION (EU) 2020/682).

The inspection checklist (Denisk) used during the inspection is available upon request.

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At slaughter



- **List** of the relevant indicators for the assessment of consciousness of turkeys after waterbath stunning
- **Description** of the considered validated indicators and associated methodology
- **Identification** of gap of knowledge regarding indicators





At slaughter



- Repeatability and feasibility of indicators of consciousness in turkeys after waterbath stunning and the impact of electrical key parameters on stunning efficiency





At slaughter

Reviews

Scientific study

Factsheets

• **Factsheet: How to assess the state of consciousness in turkey (waterbath stunning)**

• **Good Practice Factsheet: Captive bolt as back-up stunning method during slaughter of turkeys**

• **Good Practice Factsheet: Automatic assessment of Footpad Dermatitis**

European Union Reference Centre for Animal Welfare Poultry SFA

Indicator Factsheet

How to assess the state of consciousness in turkeys (waterbath stunning)

Introduction

Waterbath Stunning (WBS) is intended to induce unconsciousness until death that occurs due to bleeding.

It is required to ascertain that turkeys are unconscious at the exit of the WBS and do not regain consciousness before death. Hence, turkeys that show indicators of consciousness should be reassessed using backup methods to avoid those unnecessary pain, distress and suffering.

This factsheet contains:

- The method for the assessment of the state of consciousness after WBS
- The most relevant Animal-Based Indicators (ABI)
- The method for sample size calculation.

Method for the assessment

Place for the assessment: At two different stages (Figure 1):

- Stage 1: From the exit of the WBS and before bleeding to assess the effective stunning.
- Stage 2: During bleeding, to assure that unconscious turkeys do not recover consciousness before death.

Wing-flapping

Wing-flapping is a reflexive reaction of the turkey to the pain caused by the capture bolt. It is observed as a reflexive reaction of the turkey to the pain caused by the capture bolt.

Figure 1. Place for the assessment. The red squares are the observation area.

Figure 2. Relevant ABI of consciousness. Red squares indicate where to put the situation on the turkey's body. Videos linked to QR codes.

Although less particular and less repeatable between observers, presence of vocalizations in stage 1 and presence of head-tucking in stage 2 should not be employed as ABI of consciousness (see Table 1).

Any bird showing at least one outcome of consciousness should be reassessed as conscious or recovering consciousness.

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Best practice Factsheet

Captive bolt as a back-up stunning method during slaughter of turkeys

Introduction

Stunning methods do not always effectively cause failure of inducing unconsciousness and recovery of consciousness of turkeys before death might happen.

Legislative requirements on the protection of animals at the time of killing include ensuring the state of consciousness of the animal regularly and ensuring that appropriate backup equipment is immediately available on the spot to be used in the case of failure of the stunning equipment usually used.

However, re-assessing turkeys that show outcomes of consciousness after the stunning procedure is a process that remains pending for most of poultry slaughterhouses. In most of the cases, takers use manually methods after bleeding when stunning or bleeding is not efficient.

Back-up stunning method

This factsheet shows a good practice related to a back-up stunning method for turkeys.

- Penetrative capture bolt systems adapted for turkeys are being used with an excessive speed from the ceiling and placed at the business operator's shoulder height.
- When a taker is showing at least one sign of consciousness, the business operator in charge takes with one hand a U-shaped, 1-centimetre fish and releases the bird's head while moving on the shoulder line.
- With the other hand, the capture bolt is taken and placed perpendicular to the bird's head and is fired through the skull into the brain causing instant death to the bird.
- Several capture bolts are placed along the slaughter line allowing for re-stunning of animals at any place from stunning to the holding tank.

Advantage for welfare: It allows re-stunning on the line of heavy birds difficult to unhandle and spaces avoidable pain, distress and suffering to inefficiently stunned turkeys. Flares in most of slaughterhouse design does not allow to re-stun turkeys between the exit of the conveyor, and bleeding because of lack of space and time before catch cutting.

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Automatic assessment of Footpad Dermatitis (FPD)

Introduction

Footpad dermatitis (FPD) is a contact dermatitis that can lead to ulcerative lesions on the plantar surface of footpads in poultry. It is considered a welfare indicator of poultry welfare on farm, since footpad health sometimes directly to meat quality, particularly wetness.

FPD monitoring is a common practice across the EU and different scoring scales have been defined that classify the extent and severity of FPD.

The scoring protocols most widely used in the EU are based on a 5-point scale system adopted from the Swedish scoring system (Sjerg, 1992), although at present, no common standardized FPD scoring protocol has been adopted in the EU.

Monitoring at the processing plant is generally performed manually, either on a random sample of feet severed from the carcasses or assessed on the slaughter line through the sight line speed often making it difficult. In general, extensive control in 100-200 feet per batch, while performing the scoring of all the feet manually would be too time consuming. Furthermore, manual scoring can result in grading inconsistencies because of human interpretation and therefore requires frequent calibration.

These issues can be addressed using automated monitoring systems based on image analysis. Currently available on the market and installed in many EU poultry slaughter plants, image analysis seems to be a promising approach to automatically evaluate FPD at the slaughterhouse, and the use of this technology is encouraged by product quality certification bodies in some EU member states.

Footpad Inspection Systems

The automated camera systems are installed as a fixed part of the slaughter line, positioned at the end of the line. At this stage, feet are more or less free of dirt, due to the preceding slaughter process (e.g. after scalding, plucking, and evisceration). After hooves are separated from the birds, they remain in the tracks and are transferred to a foot processing unit, that separates hooves and positions correctly for an optimal image to be taken by the camera, aided by a bright LED light for optimal resolution and a blue back plate for optimal contrast.

For a proper image, the feet must be positioned accordingly on the tracks. Feet that are blocked/turned in the tracks, cannot be measured and are considered non-assessed in the software.

Using camera-based visual analysis, the system determines the size of black discoloration on the footpad and classifies the defects. The feet are scored according to the green classification scheme (3- or 5-point scale).

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At slaughter



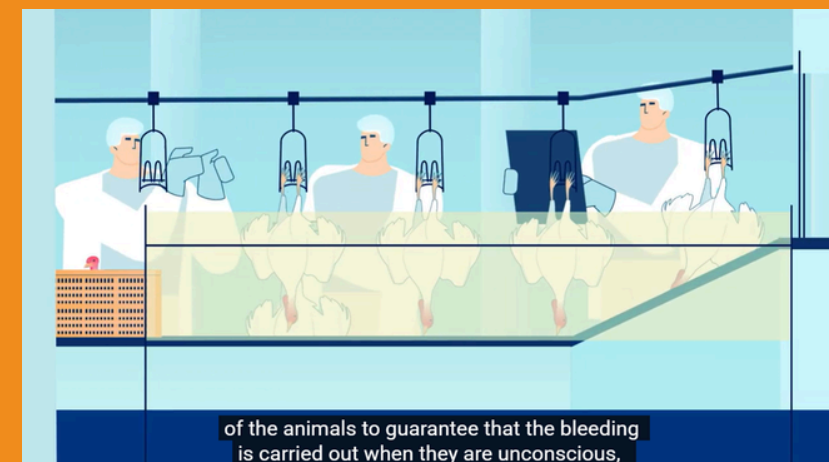
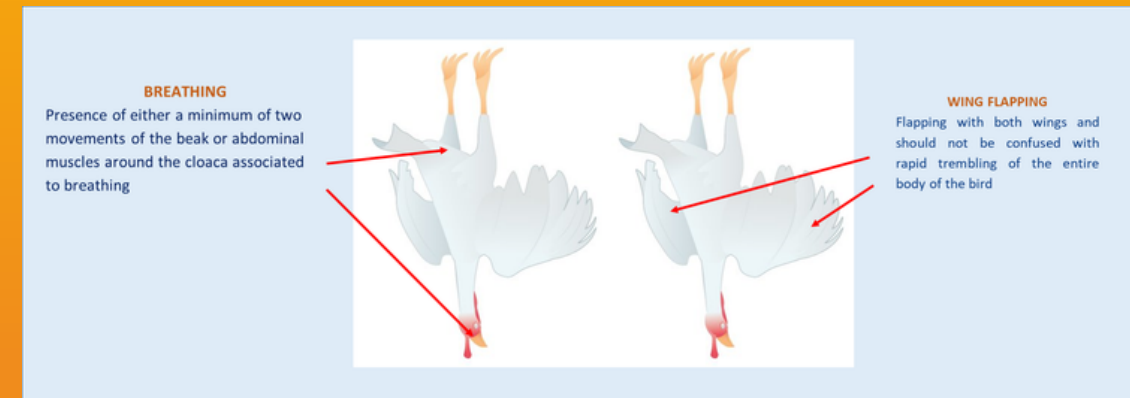
- **Training:**

1) **Review of existing training:** State of consciousness after waterbath stunning of broilers and turkeys

2) **Report about minimum standards** for training courses on animal welfare assessments for official control of waterbath stunning of turkeys

- **Webinar:** assessment of consciousness after waterbath stunning of turkeys

- **Video:** assessment of the state of consciousness after waterbath stunning of turkeys



Emergency killing



Joint activity since 2023 with FRCAW to promote more ethical depopulation practices in the event of Avian Influenza.

Two surveys and 1 workshop: Depopulation methods used in the EU led to 3 reports on:

- the welfare impacts
- the efficacy and welfare consequences
- the selection of the most appropriate depopulation methods

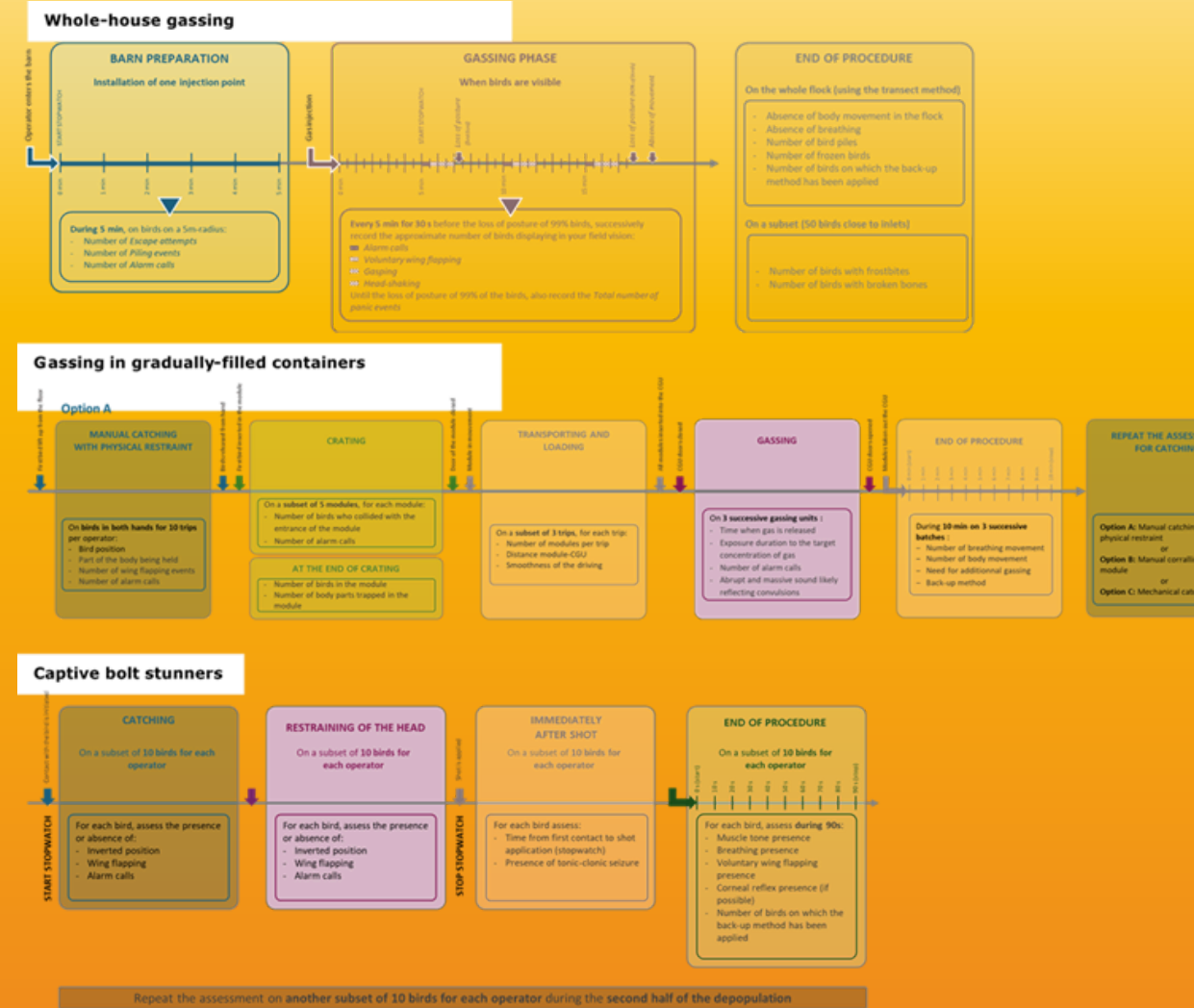


Emergency killing



• Suggestions for welfare assessment on depopulation site

• Descision tree












Selection of the most appropriate depopulation method for the welfare of poultry



Emergency killing



Webinar: Online guide for the selection of a method



The graphic features logos for EURCAW Poultry SPA and the French Reference Centre for Animal Welfare at the top. It includes social media icons for YouTube, Facebook, Twitter, and LinkedIn. The central text reads "WEBINAR" and "Online guide for the selection of a method". The illustration includes a bar chart, a line graph with an upward arrow, a calendar icon with a checkmark, and a line drawing of two chickens.



Questions to EURCAW-Poultry-SFA (Q2E)

[Q2E-Poultry-SFA-2021-006](#) Overview of the different on-farm killing methods for turkeys and ducks, due to disease control situations (avian influenza).

[Q2E-Poultry-SFA-2022-001](#) Minimum height of the cages for transport of turkeys.

[Q2E-Poultry-SFA-2023-007](#) Catching of turkeys in a loose house





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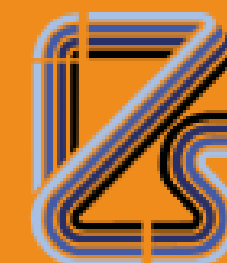
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