



Report

The evaluation of existing training courses for the assessment of the state of consciousness after electrical stunning in rabbits at slaughter



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1 Executive Summary

In this document, the Centre for Animal Welfare for Poultry and other Small Farmed Animals (EURCAW-Poultry-SFA) reviews and assess the existing training courses and materials for the assessment of the state of consciousness after electrical stunning in rabbits at slaughter in use at Member States (MS). The Centre received only six courses to assess from five MS.

There is a lack of detailed description of the animal-based indicators (ABIs) for the assessment of the state of consciousness and confirmation of death of the animals in most of the training courses. More depth information such as definition, validity, sensitivity and specificity of the indicators, methodology to carry out the assessment and audio-visual support would be of interest to official veterinarians. There is also a lack of training about how the operators should do checks for the assessment of the state of consciousness of rabbits (i.e. frequency, distribution and calculation of sample size).

EURCAW-Poultry-SFA has delivered or is planning to deliver some reports and a factsheet that could be used as a basis or support material for future training courses. Moreover, at the end of 2024 a webinar will be held to address some of the gaps of knowledge identified and will be later available as support material for other training courses.

2 Introduction

EURCAW-Poultry-SFA aims to review and assess the existing training courses and materials for the assessment of the state of consciousness after electrical stunning in rabbits at slaughter in use at MS or at other levels (e.g., regional training courses). Assessment of the state of consciousness after stunning is required in Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing. Thus, EURCAW-Poultry-SFA requested the National training materials to all the EU MS. The Centre received feedback from ten MS. However, only five of them provided national training materials about this topic. The report includes a description of the existing courses and materials considering information on objectives, content and training materials as well as an identification of the gaps that the Centre might address in the future.

3 Methodology

During 2023 and 2024 EURCAW-Poultry-SFA requested the national training materials from the past ten years to all the EU MS. The Centre received feedback from ten MS. However, only five of them provided national training materials about this topic.

The available national training course materials related to the assessment of the state of consciousness after electrical stunning were revised. A summary of these reviewed courses, specifying the EU MS, the year of development of the material, and the general content of the training, is shown in Table 1. For additional information on national training content per edition, see Annex I.

Table 1: General information about the national training courses revised related to the state of consciousness after electrical stunning on rabbits

Title/topic	Year	Location
Electrical stunning of animals	2023	Bulgaria
Animal welfare indicators for poultry and rabbits at slaughter	2020	Spain
Animal welfare at slaughter	2019	Italy
Protection of animals at the time of slaughter or killing	2016	Cyprus
Animal welfare in rabbits' slaughterhouses	2010	Spain
Control of loss of consciousness and the reality of death: poultry slaughterhouses and lagomorphs.	2021	France

These lectures were reviewed in order to score at which extend the indicators for the assessment of the requirements of the legislation were covered. The welfare indicators were retrieved from those identified in the deliverable 2023-2024 WP3, D3.1, D14: *The main welfare aspects of the different stunning methods in rabbits* (EURCAW-Poultry-SFA, 2023, available online [here](#)) and the EFSA report (2020).

In the EU, the welfare of rabbits at slaughter is under Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing. This Regulation laid down minimum currents (A) for head-only electrical stunning in bovine, ovine, caprine, pigs, chickens, and turkeys. Nevertheless, it is stated that minimum voltage, maximum frequency, minimum time of exposure and maximum stun-to-stick intervals are also some of the key parameters. However, there is no specific legal requirements on rabbits, only key parameters used by EU countries (European Commission, 2017). For the aim of this review, all key parameters described in EURCAW-Poultry-SFA (2023) were reviewed, being resource-based indicators (RBIs).

On the other hand, the EFSA report (2020) describes key indicators for monitoring effective electrical stunning at 3 stages: immediately following after stunning, at the time of neck cutting, and during bleeding. As the same indicators are used in all three stages (except for the righting reflex, which is not used in the first stage), we did not differentiate the stages in the review of the lectures. The EFSA report also provides a flow chart with key indicators of death to be used before dressing of the animals, although these are generally judged as less sensitive than the indicators of consciousness. All these ABIs were included for review.

Moreover, information regarding the frequency and distribution of the checks of the animals and how to do the sampling of animals was also revised (as required in Council Regulation (EC) No 1099/2009), as management-based indicators (MBIs).

Each indicator was scored according to the coverage level found in the training material as follows:

0 = indicator “not covered” as there was no evidence to be mentioned in any lecture of the training material reviewed.

1 = indicator “partially covered” as it was mentioned in training material but without evidence of detailed description of the methodology (*i.e.*, found in text).

2 = indicator “well covered” as it was mentioned in the training material and with evidence of detailed description of the methodology and assessment (*i.e.*, found in text along with audio-visual support such as photography or videos, or case studies).

4 Assessment of the training material

The available lectures from national training courses were analyzed, and the coverage of the welfare indicators were scored and are shown in Table 2 (split in 2.1, 2.2, and 2.3). As the material provided by Bulgaria was only the European Commission factsheet (European Union, 2018), it is not listed in the tables for analysis. This factsheet recommends parameters for electrical stunning and killing, so all the key parameters are addressed, and a range is provided (i.e., voltage, current, frequency, duration, and stun-to-stick interval). The factsheet also names some ABIs for the confirmation of death but without description. This factsheet is a good support document, but a training course should include a wider description of all this concepts.

Table 2.2: Coverage scores of the selected indicators from the revised national training material

Assessment	Indicator	Type of indicator	Training material, year	Coverage score
State of consciousness	Corneal or palpebral reflex	ABI	Spain, 2020	1
			Italy, 2019	0
			Cyprus, 2016	1
			Spain, 2010	1
			France, 2021	1
	Tonic/clonic seizures	ABI	Spain, 2020	1
			Italy, 2019	2
			Cyprus, 2016	1
			Spain, 2010	1
			France, 2021	1
	Breathing	ABI	Spain, 2020	1
			Italy, 2019	2
			Cyprus, 2016	1
			Spain, 2010	1
			France, 2021	1
	Spontaneous blinking	ABI	Spain, 2020	1
			Italy, 2019	2
			Cyprus, 2016	1
			Spain, 2010	0
			France, 2021	1
Vocalizations	ABI	Spain, 2020	1	
		Italy, 2019	1	
		Cyprus, 2016	1	
		Spain, 2010	0	
		France, 2021	1	
Righting reflex	ABI	Spain, 2020	0	
		Italy, 2019	1	
		Cyprus, 2016	1	
		Spain, 2010	0	
		France, 2021	1	

Table 2.2: Coverage scores of the selected indicators from the revised national training material

Assessment	Indicator	Type indicator	of Training material, year	Coverage score
Confirmation of death	Breathing	ABI	Spain, 2020	0
			Italy, 2019	0
			Cyprus, 2016	1
			Spain, 2010	1
			France, 2021	0
	Cessation of bleeding	ABI	Spain, 2020	0
			Italy, 2019	0
			Cyprus, 2016	0
			Spain, 2010	0
			France, 2021	0
	Muscle tone	ABI	Spain, 2020	0
			Italy, 2019	0
			Cyprus, 2016	1
			Spain, 2010	0
			France, 2021	0
	Hear beat	ABI	Spain, 2020	0
			Italy, 2019	1
			Cyprus, 2016	0
			Spain, 2010	0
			France, 2021	0
Dilated pupils	ABI	Spain, 2020	0	
		Italy, 2019	0	
		Cyprus, 2016	1	
		Spain, 2010	0	
		France, 2021	0	

Table 2.3: Coverage scores of the selected indicators from the revised national training material

Assessment	Indicator	Type of indicator	of Training material, year	Coverage score
Key parameters	Minimum current	RBI	Spain, 2020	2
			Italy, 2019	2
			Cyprus, 2016	0
			Spain, 2010	2
			France, 2021	0
	Frequency	RBI	Spain, 2020	2
			Italy, 2019	1
			Cyprus, 2016	0
			Spain, 2010	0
			France, 2021	0
	Voltage	RBI	Spain, 2020	2
			Italy, 2019	2
			Cyprus, 2016	0
			Spain, 2010	2
			France, 2021	0
Minimum time of exposure	RBI	Spain, 2020	2	
		Italy, 2019	2	
		Cyprus, 2016	0	
		Spain, 2010	2	
		France, 2021	0	
Maximum stun-to-stick interval	RBI	Spain, 2020	2	
		Italy, 2019	1	
		Cyprus, 2016	0	
		Spain, 2010	2	
		France, 2021	0	
Other	Frequency and distribution of the checks	MBI	Spain, 2020	0
			Italy, 2019	0
			Cyprus, 2016	0
			Spain, 2010	0
			France, 2021	0
	Representative and sufficient sample of animals	MBI	Spain, 2020	0
			Italy, 2019	0
			Cyprus, 2016	0
			Spain, 2010	0
			France, 2021	0

The indicators for the assessment of the state of consciousness are partially covered in most of the training courses, i.e. mentioned on the text. However, there is no audio-visual material (photos or videos) linked except for some of the indicators in the training course of Italy (2019).

The indicators to assess the confirmation of death are mostly not covered, only mentioned in some of the trainings.

However, the key indicators (RBIs) to ensure a proper electrical head-only stunning are well covered in the training courses of Spain (2020 and 2010) and Italy (2019), except for the frequency.

The ABIs shown in table 2 should be assessed on a representative sample size. The frequency and distribution with which the operators should do these checks is lacking in all training materials. In past reviews of training materials (see 2020-D4.1.1., EURCAW-Poultry-SFA 2021, available online [here](#)), we found this topic well covered in the Better Training for Safer Food (BTSF) 2014 poultry edition, that included the calculation of the sample size, but it was removed in the following editions. However, France (in 2020) covered the description of the sample size and frequency of sampling, at least for the training courses related to poultry. As additional information, Spain provided a Standard Operating Procedure (SOP) for the official control of the stunning process of all species. In this SOP, they include a section describing how to do the checks, but it doesn't describe how to calculate the sample size. This is a good support document, but a training course should include a deeper explanation of this topic.

5 Gaps of knowledge

ABIs for the assessment of the state of consciousness are partially covered in most of the training courses, but ABIs for the confirmation of death are mostly not covered. It seems necessary to put attention on both lists of welfare indicators for a more complete training, and to provide some audiovisual material to complement the definitions.

Related to this topic, EURCAW-Poultry-SFA is currently working on a study in commercial slaughterhouses of rabbits. This study is aimed at investigating the pertinence of different ABIs for the assessment of rabbit's state of consciousness immediately after head-only electrical stunning and during bleeding. The inter-observer repeatability of these indicators has been studied to assess the repeatability of already validated ABIs that can be used for the assessment of the state of consciousness in commercial slaughterhouses. Moreover, the correlation among the outcomes of the ABIs and the effectiveness of stunning according to key parameters (current, frequency, voltage and exposure time) used in different commercial slaughterhouses has been assessed. The report of this study will be delivered in 2024 together with a factsheet, and a webinar is planned to show the results of this study to the inspectors at the end of the year.

In order to assess the welfare of rabbits during electrical stunning, it is essential to assess ABIs in a representative sample of sufficient size any time there is a change in the slaughtering (e.g. category or size of the animals, etc.) having possibly an effect on stunning efficiency. However, training on how to calculate the sample size and which animal should be selected at which frequency is usually missing in trainings. In this sense, this should be taken into consideration, and the Centre will address it in the webinar that is planned at the end of 2024.

From the information retrieved in EURCAW-Poultry-SFA (2023), we know that almost all the rabbits are stunned with head-only electrical stunning in commercial conditions. Also, according to the data collected, approximately 62 million rabbits were slaughtered in the EU, of which Spain, France and Italy accounted for 88% of the total, while other MS have a much smaller to almost negligible share. Given the variation in key parameters recommendations and practical usage, it seems appropriate to spend time in the training courses addressing this RBIs in depth, especially in the three countries with the main slaughtering. As this topic has been addressed in the ongoing study carried out by the Centre, the outcomes of it can be used as a basis for future training courses specifically addressed to official inspectors.

6 Conclusions

1. Some Member States have developed training courses about the state of consciousness after electrical stunning in rabbits at slaughter.
2. There is a lack of detailed description of the ABIs for the assessment of the state of consciousness and confirmation of death of the animals in most of the training courses. More depth information such as definition, validity, sensitivity and specificity of the indicators, methodology to carry out the assessment and audio-visual support would be of interest to official veterinarians.
3. There is a lack of training about how the operators should do checks for the assessment of the state of consciousness rabbits (i.e. frequency, distribution and calculation of sample size).

7 Further actions

1. EURCAW-Poultry-SFA delivered a review about the main welfare aspects of the different stunning methods in rabbits. This document could be used as a basis for future training courses.
2. EURCAW-Poultry-SFA plans to offer during 2024 a report on the scientific study in commercial slaughterhouses of rabbits. This report will include information about indicators, inter-observer repeatability and the correlation among the outcomes of the ABIs and the effectiveness of stunning according to key parameters encountered in commercial slaughterhouses. This document could be used as a basis for future training courses.

3. EURCAW-Poultry-SFA plans to offer at the end of 2024 a factsheet based on the report of the scientific study. This document could be used as a support document for future training courses.
4. EURCAW-Poultry-SFA plans to offer at the end of 2024 a webinar based on the report of the scientific study. This webinar will address most of the gaps of knowledge presented and will be later available as support material for other training courses.

8 References

- EFSA (2020). Stunning methods and slaughter of rabbits for human consumption. *EFSA Journal*, 18(1), 106, 5927. <https://doi.org/10.2903/j.efsa.2020.5927>
- EURCAW-Poultry-SFA (2021). Review of existing courses and materials for poultry. Zenodo. <https://doi.org/10.5281/zenodo.7437083>
- EURCAW-Poultry-SFA (2023). The main welfare aspects of the different stunning methods in rabbits. Zenodo. <https://doi.org/10.5281/zenodo.8386626>
- European Commission (2017). Preparation of best practices on the protection of animals at the time of killing: executive summary. Publications Office. http://publications.europa.eu/resource/cellar/ea4ef3e9-cda5-11e7-a5d5-01aa75ed71a1.0001.01/DOC_1
- European Council (2009). COUNCIL REGULATION (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing. In (pp. 30-30). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R1099>
- European Union (2018). How to stun / kill rabbits on-farm. Publications Office. https://food.ec.europa.eu/system/files/2019-01/aw_prac_slaughter_factsheet-2018_farm_rabbits_en.pdf

Annex 1 - National training material

Short description about the National training courses revised.

Country	Spain
Year	2010
Title	<ul style="list-style-type: none"> - <i>Bienestar animal en mataderos de conejos</i>. Animal welfare in rabbits slaughterhouses. - <i>Control oficial del Bienestar animal en mataderos de aves y lagomorfos</i>. Official control of animal welfare in poultry and lagomorph slaughterhouses.
Content	2 lectures
Additional information	They also provided a SOP in relation to stunning, where the EFSA indicators of consciousness after electrical stunning in rabbits are described.

Country	Spain
Year	2020
Title	<p>Animal welfare indicators for poultry and rabbits at slaughter.</p> <ul style="list-style-type: none"> - <i>Indicadors d'atordiment en conills (elèctric i mecànic) i atordiment per gas en aus</i>. Stunning indicators in rabbits (electrical and mechanical) and gas stunning in poultry.
Content	1 lecture
Additional information	The program of the training course also includes other topics that we didn't review (i.e., Results of the 2019 animal welfare control plan; animal welfare indicators in poultry after waterbath stunning and electrical stunning; ritual slaughter)

Country	Italy
Year	2019
Title	<ul style="list-style-type: none"> - <i>Protezione del coniglio nelle fasi di macellazione</i>. Protection of the rabbits during the slaughter phases. - <i>Protezione del coniglio all'abbattimento e nell'abbattimento in stalla</i>. Protection of the rabbit at slaughter and when killed in the stable.
Content	2 lectures related to rabbit welfare at slaughter.
Additional information	-

Country	Cyprus
Year	2016
Title	Προστασία των ζώων κατά τη σφαγή ή τη θανάτωσή τους. Protection of animals at the time of slaughter or killing.
Content	1 document (ISBN 978-9963-50-410-7) and the Factsheet developed by the European Commission.
Additional information	Training courses for the slaughterhouses personnel are held by delegated private bodies. The only available material they have regarding these topics has to do with the slaughter of animals in general. Furthermore, regarding the stunning of rabbits they also use the information contained in the factsheet provided by the EC in 2018.

Country	Bulgaria
Year	2023

Title	Electrical Stunning of animals.
Content	Factsheet developed by the European Commission.
Additional information	Virtual training. No lectures were available to review, only the Commission's factsheet. Specific training for stunning in the slaughterhouse of rabbits was not carried out, due to the fact that in Bulgaria at the moment are only 2 establishments/farms for rabbits.

Country	France
Year	2021
Title	<i>Contrôle de la perte de conscience et de la réalité de la mort : abattoirs de volaille et lagomorphe.</i> Control of loss of consciousness and the reality of death: poultry slaughterhouses and lagomorphs.
Content	Only 1 slide.
Additional information	They don't have specific training material for stunning rabbits by electronarcosis. Only a single slide that they have reproduced on the indicators recommended by EFSA.

About EURCAW-Poultry-SFA

EURCAW-Poultry-SFA is one of the four European Union Reference Centres for Animal Welfare. It focuses on poultry and other small farmed animals welfare and legislation, and covers the entire life cycle from hatch/birth to the end of life. EURCAW-Poultry-SFA's main objective is to scientifically and technically support the European Commission and Member States for implementation of welfare legislation. This includes:

- Directive 98/58/EC concerning the protection of animals kept on farms;
- Regulations 1/2005/EC and 1099/2009/EC concerning their protection during transport and slaughter;
- Directive 1999/74/EC laying down minimum standards for the protection of laying hens;
- Directive 2007/43/EC laying down minimum rules for the protection of chickens kept for meat production.

Partners

EURCAW-Poultry-SFA receives funding from DG SANTE of the European Commission and represents a collaboration between the following four partner institutions:

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Activities of EURCAW-Poultry-SFA

- Coordinated Assistance
Providing support, networking and Questions to EURCAW;
- Welfare indicators, Assessment & Good Practices
Identifying animal welfare indicators, including animal based, management based and resource-based indicators, that can be used to verify compliance with the EU legislation;
- Scientific and technical studies
Preparing Scientific Reviews of knowledge on welfare topics, identify research needs and perform scientific and technical studies to fill the gaps of knowledge;
- Training
Reviewing existing training activities and developing new training materials, webinars and knowledge pills for official inspectors and competent authorities;
- Communication and Dissemination
Increasing awareness of our outputs via the website, and newsletter.

Website and contact

EURCAW-Poultry-SFA's website offers relevant and actual information to support enforcement of poultry and other small farmed animals' welfare legislation.

We offer a 'Questions to EURCAW' service for official inspectors, policy workers, and other personnel providing advice or support for official controls of poultry and other small farmed animals welfare in the EU. For more information go to the Q2E webform available online [here](#) or <https://survey.anses.fr/SurveyServer/s/DSL/Queryw>. All Q2E answers are available [online](#).