



Public event on the scientific opinions: transport of
animals and welfare of pigs on farm

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EFSA Scientific Opinion on the welfare of pigs on farm ON-7421



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Pig welfare mandate: fundamentals of the assessment

EFSA is requested to give an independent view on the welfare of pigs on farm

- **Six pig categories:** gilts and dry sows, farrowing and lactating sows, suckling piglets, weaners, rearing pigs, boars
- **Five General ToRs:** 21 husbandry systems
- **Five Specific ToRs:** 10 exposure variables, 3 mutilations, ABMs to collect at slaughter
- **Outcomes:** 105 Conclusions (with level of certainty) & 71 Recommendations
- **Timeline:** June 2020- June 2022



A. Five General ToRs

For **each pig category**:

1. Describe the current **husbandry systems and practices**
2. Describe the **relevant welfare consequences**
(based on expert opinion regarding the severity, duration and occurrence)
3. Define **Animal-Based Measures** (ABMs) to assess the welfare consequences
4. Identify the **hazards** leading to these welfare consequences
5. Provide **recommendations to prevent, mitigate or correct** the welfare consequences

B. Five Specific scenario's

Propose detailed ABMs and preventive and corrective measures with, where possible, **either qualitative** (yes/no) **or quantitative** (minimum/maximum) criteria

1. Gilts and dry pregnant sows during **the first 4 weeks of pregnancy**
2. Gilts and dry pregnant sows **one week before farrowing**
3. Sows and piglets from **farrowing to weaning**
4. **Weaners** and **rearing pigs**, in particular with the risks associated with a) weaning, b) space allowance c) types of flooring, d) enrichment material, e) air quality, f) health status, g) diet and h) practice of mutilations (tail docking, tooth clipping, castration)
5. The assessment of **ABMs collected in slaughterhouses** to monitor the level of welfare on pig farms (e.g. tail damages, stomach ulcers, lung lesions)

Sources of Data:

- Literature
- Member States (AHAW Network)
- Stakeholders (Public Consultation)
- EFSA experts

Methodologies:

- Literature searches
- Expert opinion, WG discussions and specific elicitation exercises for:
 - Selection of the highly relevant welfare consequences
 - Development of outcome tables
 - Quantitative, semi-quantitative and qualitative assessments
- Certainty analysis

Table 8: Three ranges used to express agreed (consensus) certainty around conclusions (adapted from EFSA, 2019)

	Certainty range		
	> 50–100%	66–100%	90–100%
Quantitative assessment			
Qualitative translation	More likely than not	From likely to almost certain	From very likely to almost certain

*

**

Sometimes a 90% certainty range is presented

Results


European Food Safety Authority

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Farm to Fork: EFSA provides recommendations to improve welfare of farmed pigs

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EFSA has published a [scientific opinion on the welfare of pigs on farm](#), the first of several opinions on animal welfare to be delivered in the coming year in the context of the [Farm to Fork \(F2F\)](#) strategy. It provides detailed suggestions to improve the welfare of all categories of farmed pigs kept in the most relevant husbandry systems used in the European Union.

The opinion describes a total of 16 welfare consequences for different husbandry systems considered by EFSA's experts to be highly relevant due to their severity, duration, and frequency of occurrence. These include restriction of movement, group, heat or cold stress, and prolonged hunger or thirst. Related [animal-based measures \(ABMs\)](#) and hazards leading to welfare consequences are also described in the opinion for each welfare consequence.

The opinion provides measures that should be put in place to prevent or correct the hazards and to mitigate welfare consequences. EFSA's experts make a number of detailed recommendations, including ['End the Cage Age'](#). Among other topics covered are: [maternal deprivation](#), [weaning](#), and [transport](#).

A. General ToR's: 16 highly relevant welfare consequences

Welfare consequences	PIG HUSBANDRY SYSTEMS																
	Gilts + dry sows			Farrowing and lactating sows			Piglets				Weaners			Rearing pigs			Boars
<div><div></div> highly relevant</div> <div><div></div> moderately relevant</div> <div><div></div> less relevant</div> <div><div></div> non-applicable</div>	Individual stalls	Indoor group	Outdoor paddock	Individual crates	Individual pens	Outdoor paddock	Individual crates	Individual pens	Artificial rearing systems	Outdoor paddock	Indoor group housing	Indoor with access to outdoor	Outdoor paddock	Indoor group	Indoor with access to outdoor	Outdoor paddock	Indoor individual pens
Restriction of movement	x	o		x	o	v	o	o	x		o	v		x	o	v	x
Resting problems	x	o	v	x	o	o	o	o	o	o	o	o	o	x	o	o	o
Group stress	x	x	x	x	o	o	x	x	x	x	x	x		x	x	o	
Sensorial under and/or overstimulation	o	v	v	v	v	v	o	o	o	v	o	v	v	o	o	v	v
Handling stress	o	o	o	o	o	o	o	o	o	o	o	o	o	v	v	v	o
Isolation stress	o			o	v	v											x
Separation stress	o	v	v	v	v	v	o	o	x	o	o	o	o				o
Inability to perform comfort behaviour	o	o	v	v	o	v	v	o	v	v	v	v	v	o	o	v	o
Inability to perform sexual behaviour	o	v	v			v								v	v	v	o
Inability to avoid unwanted sexual behaviour		o	o			v								o	o	o	
Inability to perform exploratory or foraging behaviour	x	x	v	x	o	v	x	o	x		x	x	v	x	x	v	x
Inability to express maternal behaviour				x	o	v											
Inability to perform sucking behaviour							o	o	x	o	o	o	o				
Inability to perform play behaviour	v	v	v	v	v	v	o	o	o	v	v	v	v	o	v	v	v
Predation stress						o			v	o			v				
Prolonged hunger	x	x	x	o	o	o	x	x	x	x	o	o	o	v	v	o	x
Prolonged thirst	o	o	o	o	o	o	x	x	o	x	o	o	o	o	o	o	v
Heat stress	o	o	o	x	o	o	v	v	v	o	o	v	o	o	o	o	o
Cold stress	o	v	o	v	v	o	o	o	v	x	o	o	x	v	v	o	o
Locomotor disorders (including lameness)	o	x	o	o	o	o	o	o	v	o	o	o	o	x	x	o	x
Soft tissue lesions and integument damage	o	x	o	x	o	o	x	x	o	x	x	x	o	x	x	o	o
Bone lesions (incl. fractures and dislocations)	v	o	v	v	v	v	o	o	v	o	v	v	v	v	v	v	v
Skin disorders (other than soft tissue lesions and wounds integument damages)	v	v	o	v	v	o	o	o	v		v	o	o	v	o	o	v
Respiratory disorders	v	v	v	v	v	v	o	o	o	v	o	o	o	x	x	o	o
Eye disorders	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Gastro-enteric disorders	v	v	v	v	v	o	o	o	o	o	x	x	x	o	o		
Reproductive disorders	o	v	v	o	o	o											
Mastitis				o	o	o											
Metabolic disorders	v	v	v			v	o	o	o	v	v	v	v	v	v	v	v
Umbilical disorders and hernias							o	o	v	o	v	v	v	o	o	o	

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A. General ToRs: outcome tables (one for each pig categories)

Welfare of gilts and dry sows: outcome table linking the highly relevant welfare consequences, ABMs, hazards, and preventive, corrective and mitigation measures in the three husbandry systems that have been fully assessed in the General ToRs (individual stalls, indoor group housing, outdoor paddock systems). Cross-reference to the sections describing the welfare consequences and related ABMs, and husbandry systems is provided.

Welfare consequence	Husbandry system(s) for which the welfare consequence is highly relevant	Hazard(s) with indication to which husbandry system(s) it applies to	Preventive measure(s) for the hazard*	Measure(s) correcting the hazard or mitigating the welfare consequence	ABM(s)**
Restriction of movement (overall description: Section 3.4.1; details in Section 4.1.1)	Individual stalls (Section 3.3.2.2)	Insufficient space	Change to a group housing system	None	(Table 12 -Section 3.4.1) Locomotory behaviour Lying behaviour Posture changes <i>Atypical lying down movements (mainly in sows)</i> <i>Pressure injuries (shoulder ulcers, calluses and bursitis)</i> <i>Dewclaw injuries</i>
		Poor floor quality	Select and maintain appropriate flooring	Provide adequate substrates or rubber mats on the floor	
Resting problems (overall description: Section 3.4.2; details in Section 4.1.2)	Individual stalls (Section 3.3.2.2)	Insufficient space	Change to a group housing system	None	(Table 14 -Section 3.4.2) Lying behaviour Pressure injuries: shoulder ulcers, calluses and bursitis <i>Pig cleanliness</i>
		Poor floor quality	Select and maintain appropriate flooring	Provide adequate substrates or rubber mats on the floor	
		Wet and dirty floor	Have more solid flooring	Clean the floor and/or provide bedding, if possible with floor design	
			Select and maintain appropriate flooring		

Table 35

* The preventive measures that may also be used to correct an ongoing problem have been marked with a star key (*).

**The ABMs considered neither sensitive nor specific (see Section 3.4) are presented in 'Italics' but for information purposes only and are not recommended to be used in practice.

Grouping ('mixing') dry sows and gilts

C5 ** The welfare consequences associated with grouping gilts and sows can be mitigated at any stage by adhering to the **principles of good mixing**.

C6a * Grouping gilts and dry sows in the period between **8 and 21 days post service**, will cause **detrimental effects** to farrowing rate indicative of stress

C6b * That farrowing rate of sows **grouped at weaning is comparable to that of sows housed in stalls** for the duration of pregnancy.

Photo: H. Vermeer

Gilts and sows pre-farrowing

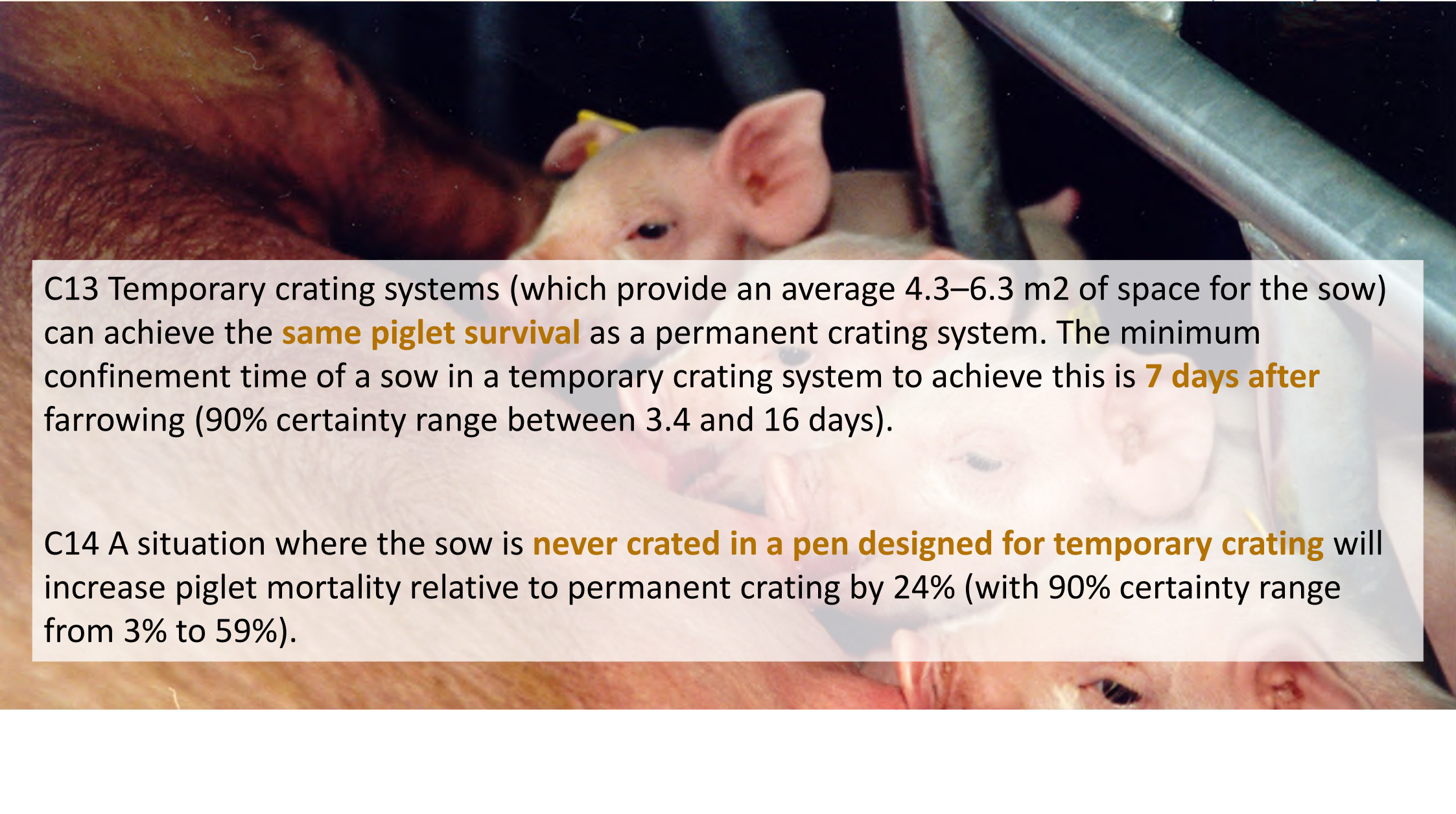
R13 Materials such as **long-stemmed or long-cut straw, hay and haylage** should be offered to sows and gilts [...]. These materials should be provided in an amount which will allow all behavioural elements of **nestbuilding** to be performed at a functional level.

C8 *** **Confinement imposed prior to farrowing is detrimental** to sow welfare because it restricts the sows' possibility to move around and prevents the functional performance of highly motivated nest-building behaviour.

C9 ** **Delaying the crate closing time** until farrowing is completed results in **increased neonatal piglet mortality**.

Photo: L. Boyle

Temporary crating post farrowing



C13 Temporary crating systems (which provide an average 4.3–6.3 m² of space for the sow) can achieve the **same piglet survival** as a permanent crating system. The minimum confinement time of a sow in a temporary crating system to achieve this is **7 days after** farrowing (90% certainty range between 3.4 and 16 days).

C14 A situation where the sow is **never crated in a pen designed for temporary crating** will increase piglet mortality relative to permanent crating by 24% (with 90% certainty range from 3% to 59%).


The farrowing pen: space requirements

C19 The minimum space required to allow a sow to express the **same time in locomotor behaviour** as shown in an unrestricted environment is much higher than that currently offered in any indoor individual farrowing pen [...] at least **47 m²** (with a 90% certainty range of 12.2–179 m²). This is estimated to be 193 min per 24 h.

C22 Farrowing pens that provide at least **6.6 m² available space to the sow** (with a 90% certainty range from 4.5 m² to 9.8 m²) can achieve the same **mortality** as in a permanent crate. This roughly equates to a total pen space of at least **7.8 m²** (with a 90% certainty range from 5.7 m² to 11 m²).

Above 6.6 m², the behavioural freedom of sows and piglets increases, but piglet mortality does not further decrease.

Transition from farrowing crate to a pen system



C24 The use of a temporary farrowing crate system **cannot be advised as a step in a farm's transition from using farrowing crates to farrowing pens**, unless the size of the temporary farrowing crate system is the same as that of the future free farrowing pen.

C35a When converting from a system with farrowing crates to a system with farrowing pens, an **adaptation period** for individual sows, the herd as a whole and the stockperson will be needed before piglet survival levels will be similar or better than before the conversion.

C35b * A minimum of period of **6 months** is needed for this adaptation.

Piglets: large litters

C37 *** Selection for increasing litter size, such that **the number of piglets born alive typically outnumbers the number of functional teats**, is associated with negative welfare consequences for both the piglets and the sows.

C38 ** The use of **artificial rearing systems as a structural consequence** of large litters provides challenges to piglet welfare that can only be mitigated by adapting the herd's average litter size to the physical capabilities of the sow, by genetic selection.

Weaned piglets: tooth reduction

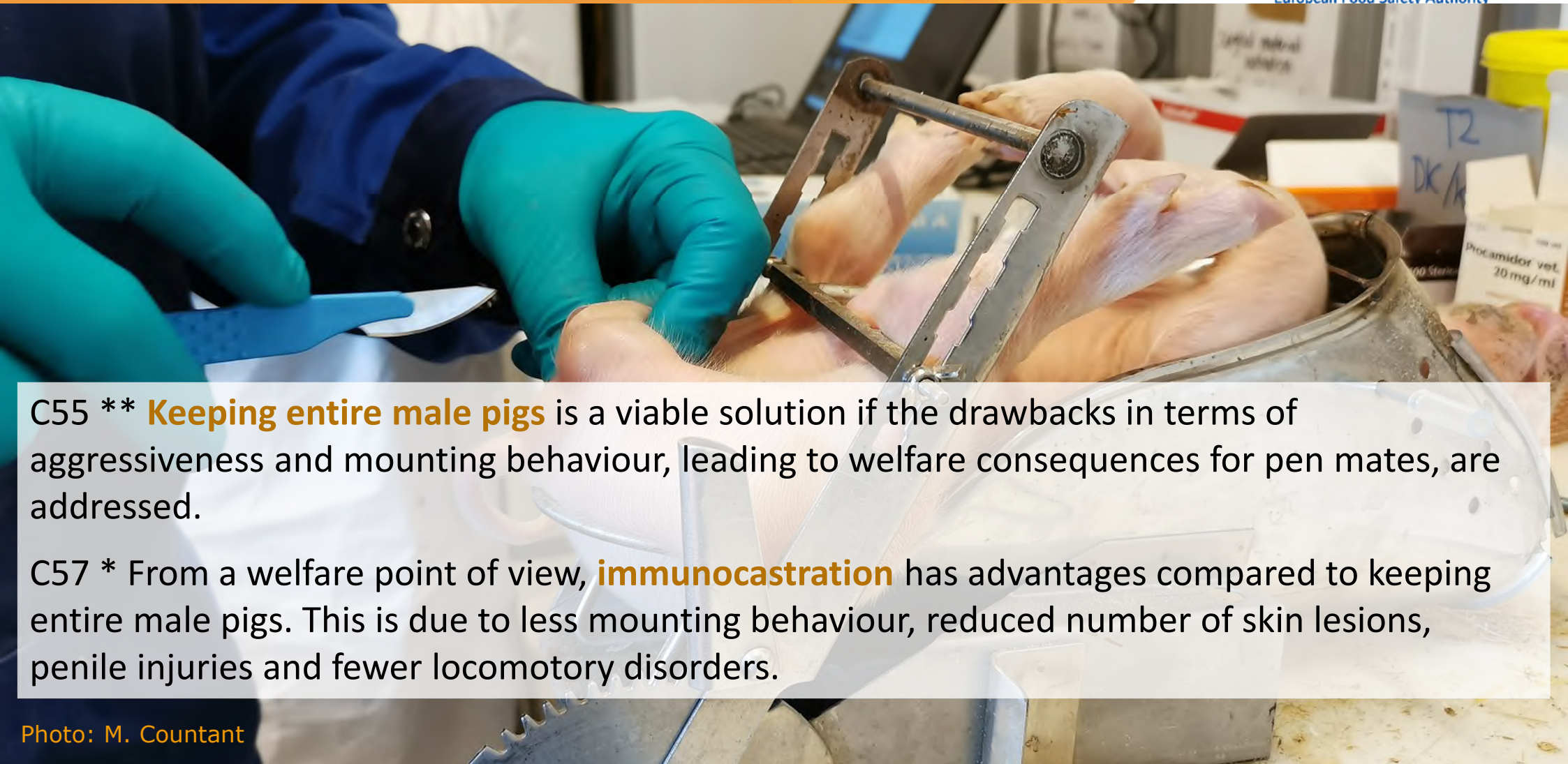
C48 ** Tooth reduction is a stressful procedure that if performed incorrectly causes short- and long-term pain. In particular, **clipping is inherently injurious**.

C49 ** **Grinding to only blunt** the sharp tip of the tooth does not injure sensitive tissue when correctly performed.

C50 ** The necessity for teeth reduction can be **minimised by risk mitigation**; this includes sow management to promote optimal milk supply, and balancing litter size with the number of teats.

C51 *** **Training of staff** in correct procedures is the most effective measure to prevent and mitigate welfare consequences in individual litter situations where tooth reduction can be justified.

Weaned piglets: castration



C55 ** **Keeping entire male pigs** is a viable solution if the drawbacks in terms of aggressiveness and mounting behaviour, leading to welfare consequences for pen mates, are addressed.

C57 * From a welfare point of view, **immunocastration** has advantages compared to keeping entire male pigs. This is due to less mounting behaviour, reduced number of skin lesions, penile injuries and fewer locomotory disorders.

Weaned piglets: tail docking

R32 **Tail docking should not be performed.**

R33 Tail biting should be prevented by applying **preventive measures** that are farm-specific after a risk assessment analysis for which tools currently exist.

R34 In the cases where tail docking is allowed, the procedure should be done **as early as possible**.

R35 In the cases where tail docking is allowed, a **cautery method** should be used.

R36 In the cases where tail docking is allowed, practical and effective methods of **pain relief during and after** tail docking is performed, should be developed.

C64a ** **Docking the tail close to the first coccygeal vertebrae** has a larger impact on soft tissue, bone and nervous tissues than leaving a longer length of tail

C64b ** **Cutting only the tip of the tail** is less effective in preventing biting lesions

Weaning age

C67 * **Tail biting risk** is not directly affected by weaning age.

C68 ** Welfare consequences (e.g. health-related) are particularly pronounced at weaning ages **of less than 21 days** and with artificial rearing systems.

C69 ** There are welfare benefits of increasing weaning age over the range **between 21 and 28 days**, because of the increasing maturity of behavioural, digestive and immunological systems over this period.

C70 * There are few, if any, welfare benefits of increasing weaning age **above 28 days**.

Finishing pigs - Space

From a welfare point of view 'sufficient space' is not easy to determine....

Sufficient for what:

To be able to lie down?

To be able to lie down with all limbs stretched out?

To reduce the risk of tail biting as much as possible....?



Table 59

m ² for each 110 kg pig (total available space)	Effect on Behaviour	Relative effects on tail biting
0.44	Space required for sternal lying (Petherick and Baxter, 1981) ^(a)	229%
0.65	Reference value: Approximation of the minimum k-value in the current legislation (Council Directive 2008/120/EC)	100%
0.77	Space needed for all pigs to lie at thermoneutral conditions (where 20–40% space sharing will occur) based on an estimated floor area for half recumbent pigs (Ekkel et al., 2003) ^(a)	63%
0.79	EPFA (2005) reported the evidence of impaired physiological function, live weight gain and food intake of pigs on fully- or partially-slatted floors at k-values of less than this ^(a)	58%
0.91	Space below which growing-finishing pigs kept on a slatted floor will start to reduce the % of lying behaviour in response to the reduction in space (Averós et al., 2010) ^(b)	36%
1.10	Space required for pigs to lie separated in a lateral position (Petherick and Baxter, 1981) ^{(a)***}	17%
1.68	Space below which growing-finishing pigs kept on a solid floor will start to reduce the % of lying behaviour in response to the reduction in space (Averós et al., 2010) ^(b)	2%

Tail biting & enrichment

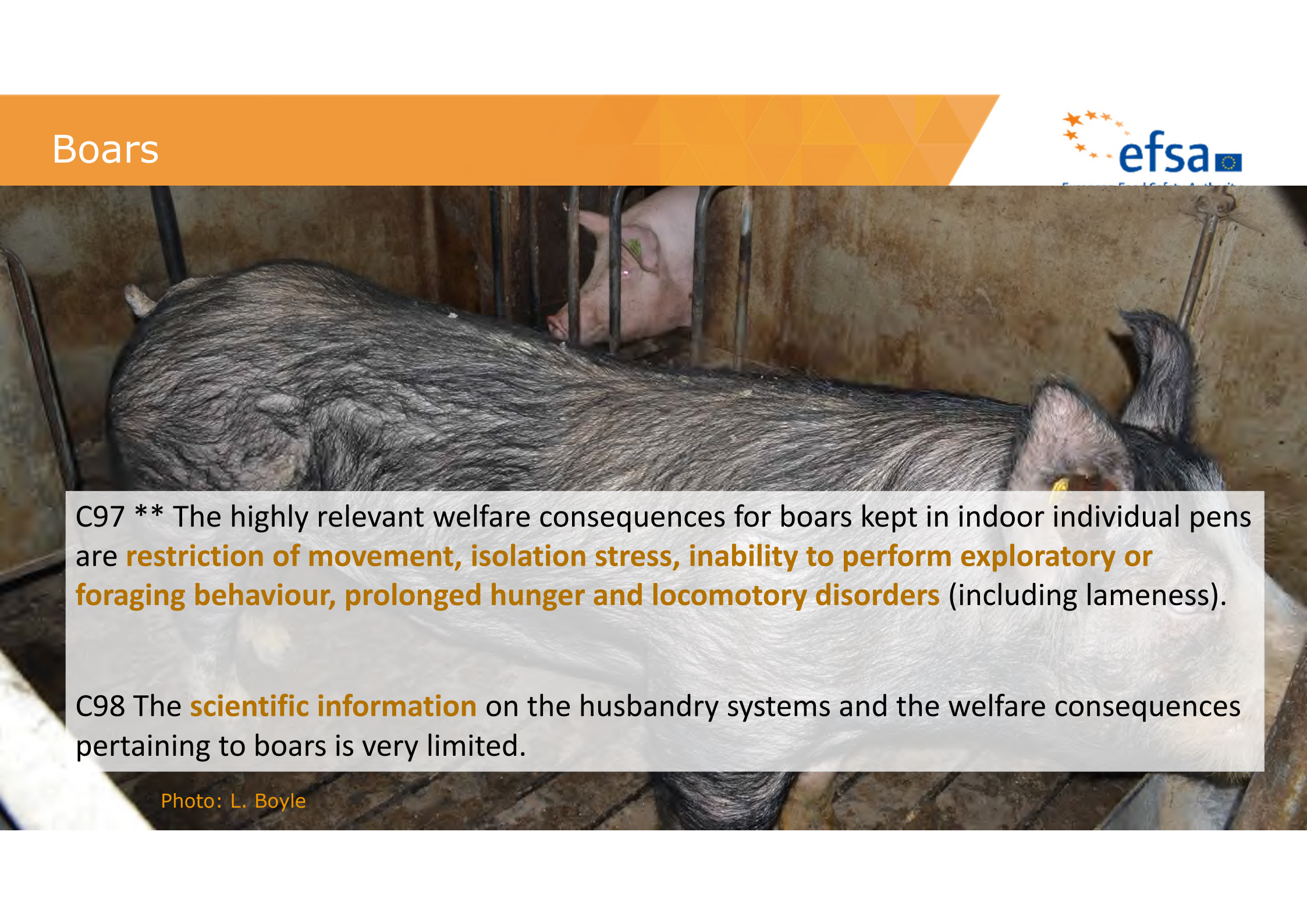
C79 *** **Straw, hay, silage or other loose organic substrates** are more effective in reducing tail biting than enrichment materials which are suspended from a ceiling or fixed to a wall.

C80 ** Loose organic substrates are more effective in reduce tail biting than **pressed straw blocks and dispensers** that require extensive manipulation to obtain the substrate.

C81 * Regarding **objects on the floor or fixed on the wall, jute bags and fresh wood** can be effective in reducing tail biting whereas other objects (e.g. rubber toys) are not as effective, unless replaced regularly to maintain novelty.

C83 ** A reduction in tail biting can be achieved in undocked pigs if they are offered **20 g per day of straw or similar substrate**. However, quantities that are larger (e.g. up to 400 g/pig per day) are more effective.

Boars

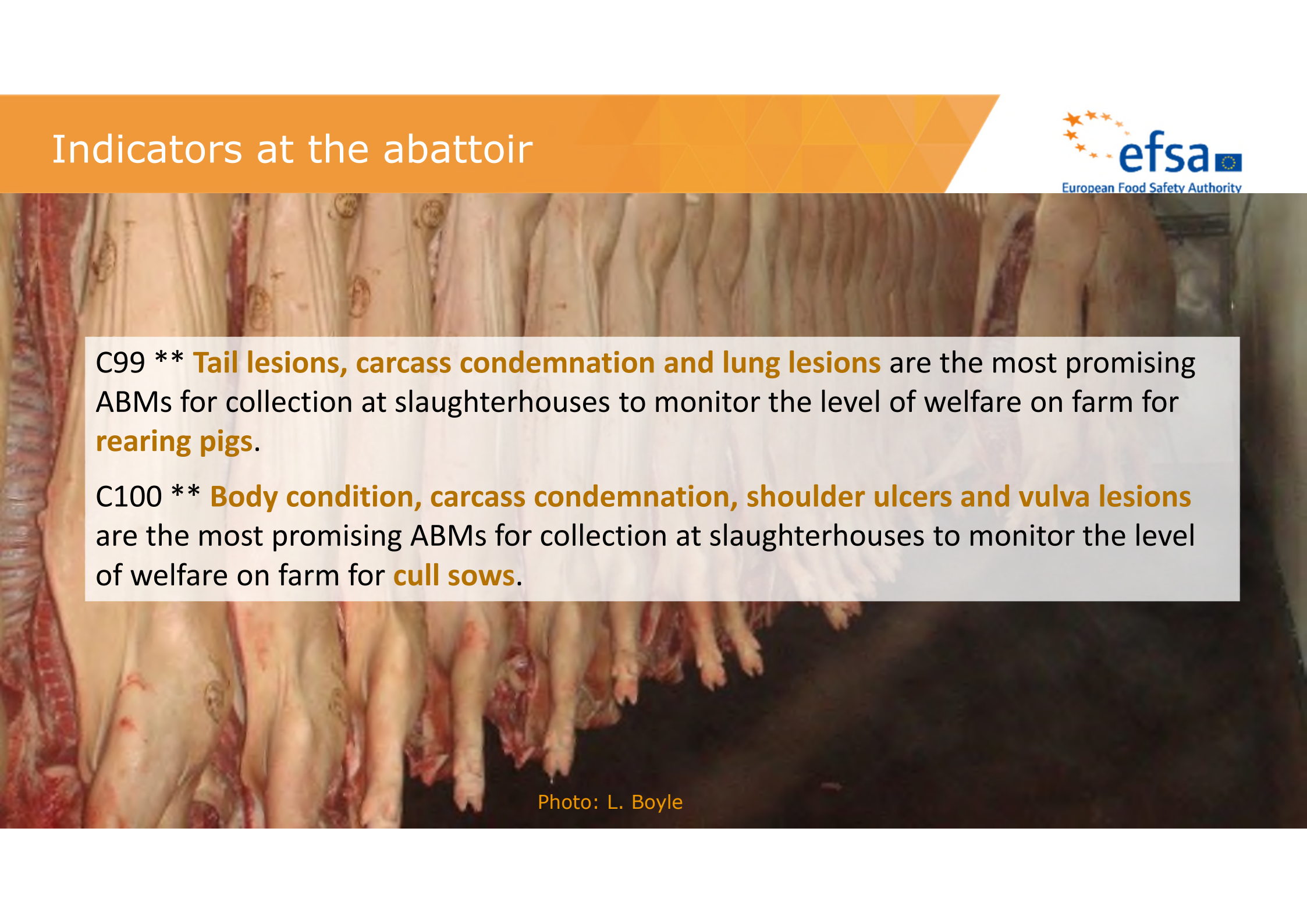
A photograph of a large, dark-furred boar lying in a metal cage. The boar's head is turned away from the camera, and its body is pressed against the metal bars. In the background, another pig is visible behind the bars. The cage floor is made of metal grates.

C97 ** The highly relevant welfare consequences for boars kept in indoor individual pens are **restriction of movement, isolation stress, inability to perform exploratory or foraging behaviour, prolonged hunger and locomotory disorders** (including lameness).

C98 The **scientific information** on the husbandry systems and the welfare consequences pertaining to boars is very limited.

Photo: L. Boyle

Indicators at the abattoir



C99 ** **Tail lesions, carcass condemnation and lung lesions** are the most promising ABMs for collection at slaughterhouses to monitor the level of welfare on farm for **rearing pigs**.

C100 ** **Body condition, carcass condemnation, shoulder ulcers and vulva lesions** are the most promising ABMs for collection at slaughterhouses to monitor the level of welfare on farm for **cull sows**.

Photo: L. Boyle

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