Supplementary materials

Table S1. Requirements descriptions of the three different pig production systems.

Requirements	Production system		
	Conventional[26]	Conventional AB[1] [26][*]	Organic [27],[28]
Born outdoor/indoor	indoor		
Age at weaning	21-25 days		approximately 40 days
Tail docking	allowed, but as last resource measure		prohibited except under specific exceptions**
Teeth reduction	grinding or partially cut only if necessary, within the first 3 days		
Resting area with bedding	required		
Floors	slat/solid floor		slat/solid floor - at least 50% of the required minimum area should have solid floor
Access to an outdoor facility	optional		required
Batch mixing	allowed	not allowed	
Area required per pig	0.65 m²/head		indoor area - 1,1m²/head; outdoor area – 1m²/head
Access to roughage	optional		required
Treatment with antibiotics	allowed	prohibited from 65 days of life	prohibited***
Withdrawal time related to veterinary administrations	if the medication does not indicate the withdrawal time, it has got be at least 28 days	twice as long as the legislation indicates (if the time indicated by the medication is too short - at least 48h)	

[1] Antibiotic-free
[*] Conventional antibiotic-free is a commercial category established by the producing company
**Although most of the organically raised animals in this study presented docked tails, this is stated in the European regulation.
***Declassified as organic pig if: 3 or more treatments with antibiotics, within 12 months OR 1 or more treatment if its productive life cycle is less than one year.

[26]   Ministerio de Agricultura Pesca y Alimentación. Royal Decree 1135/2002 of October 31, Relative to the Minimum Standards for the Protection of Pigs. *Boletin Oficial Del Estado* **2002**, 1–8.

[27]   The Council of the European Union. Council Regulation (EC) No 834/2007 of 28 June 2007 on Organic Production and Labelling of Organic Products and Repealing Regulation (EEC) No 2092/91. *Official Journal of the European Union* **2007**, *L 189*, 1–23.

[28]   The Commission of the European Communities. Commission Regulation (EC) No 889/2008 of 5 September 2008 Laying down Detailed Rules for the Implementation of Council Regulation (EC) No 834/2007 on Organic Production and Labelling of Organic Products with Regard to Organic Production, Labelling and Control. *Official Journal of the European Union* **2008**, *L 250*, 1–84.

Table S2. Values (mean ± Standard Error and range) of batch-level (*n* = 73) tail lesions and scarring scores by production system and tail-docking practices in pigs' batches examined at the slaughterhouse.

	N	Batch tail lesion score		Batch tail scarring score	
		Mean ± SE	Range (min – max)	Mean ± SE	Range (min – max)
All batches	73	0.85 ± 0.03	0.26 – 1.74	0.17 ± 0.02	0 – 0.66
Production System					
Conventional	51	0.87 ± 0.04	0.37 – 1.74	0.18 ± 0.02	0 – 0.66
Conventional AB[1]	12	0.82 ± 0.06	0.55 – 1.22	0.14 ± 0.03	0 – 0.34
Organic	10	0.75 ± 0.10	0.26 – 1.12	0.13 ± 0.03	0 – 0.31
Tail-docking					
Fully docked	57	0.80 ± 0.03	0.26 – 1.39	0.16 ± 0.02	0 – 0.66
Docked at mid-length	7	0.88 ± 0.07	0.64 – 1.12	0.16 ± 0.03	0.06 – 0.31
Undocked	9	1.10 ± 0.10	0.76 – 1.74	0.19 ± 0.04	0.04 – 0.42

[1] Antibiotic-free

Table S3. Logistic regression model exploring batch-level variation in the occurrence of total condemnations due to pyaemia in pigs' batches (*n* = 73) at the slaughterhouse. For significant variables, odds ratio estimates (OR) and their 95% confidence interval (CI) are presented, with estimates for continuous scores calculated for a 0.5 unit increase. Significant p-values and ORs are highlighted in bold.

Response variable	Explanatory variable	Statistic	*p*-Value	Odds Ratio	
				Estimate	95%CI
TC[1] due to pyaemia	Batch tail lesion score	$\chi^2_1=6.22$	**0.0126**	**2.06**	**1.16 – 3.63**
	Batch scarring score	$\chi^2_1=13.79$	**0.0002**	**3.86**	**1.89 – 7.88**
	Production system	$\chi^2_2=2.30$	0.32		
	Tail length	$\chi^2_2=0.45$	0.80		

[1] Total condemnations

Table S4. Logistic regression model exploring batch-level variation in local condemnation due to abscesses probability within pigs' batches (*n* = 73) at the slaughterhouse. For significant variables, odds ratio estimates (OR) and their 95% confidence interval (CI) are presented, with estimates for continuous scores calculated for a 0.5 unit increase. Significant p-values and ORs are highlighted in bold.

Response variable	Explanatory variable	Statistic	*p*-Value		Odds Ratio	
					Estimate	95%CI
LC[1] due to abscess	Batch tail lesion score	χ^2_1=0.50	0.48			
	Batch scarring score	χ^2_1=44.69	**<0.0001**		**3.65**	**2.50 – 5.34**
	Production system	χ^2_2=2.01	0.37			
	Tail length	χ^2_2=17.24	**0.0002**	Undocked vs Fully docked	**1.70**	**1.13 – 2.57**
				Undocked vs Docked at mid-length	0.81	0.49 – 1.33
				Docked at mid-length vs Fully docked	**2.10**	**1.43 – 3.10**

[1] Local condemnations