

Question to EURCAW-Pigs

Question

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Several years ago Johan Zonderland *et al.* (2011) published a report about the costs of tail biting in the Netherlands (<https://edepot.wur.nl/188443>). These costs, even in pigs with docked tails, are substantial.

At the time, the authors concluded:

- With an average prevalence of tail damage among weaned piglets and finishers of 2.12%, the annual damage is € 2,142 for a sow farm with 500 sows and € 2,383 for a farm with 4,000 finishing pigs.
- The financial damage for the slaughterhouse is limited (€ 2.19 per 1,000 slaughtered pigs) and is charged to the pig farmers concerned for about 2/3.
- The damage for the entire Dutch pig sector is more than € 8 million per year (based on 23.9 million weaned piglets and 19 million finishing pigs on an annual basis).

Since then, a lot has changed in the pig industry. The requestor therefore asked if the 2011 conclusions are still valid now.

Answer

Several EURCAW experts contributed to the response below. The EURCAW secretariat did the final editing, and may be contacted for queries: info.pigs@eurcaw.eu.

EURCAW-Pigs obtained the model originally used by Zonderland *et al.* (2011) and replaced their financial indices with the most recent ones. Most indices are readily available, but unfortunately we could not obtain new and accurate estimates of the level of tail biting. Dutch industry sources estimate it to be "between 2 and 3%". We therefore decided to use the estimate in the 2011 report: 2.12%.

The resulting updated conclusions are:

- With an average prevalence of tail damage among weaned piglets and finishers of 2.12%, the annual damage is now much greater: € 4,093 for a sow farm with 500 sows and € 4,557 for a farm with 4,000 finishing pigs.
- Each 1% prevalence of tail damage leads to an annual damage of € 1,930 for a sow farm with 500 sows and € 2,159 for a farm with 4,000 finishers.
- The financial damage for the slaughterhouse remains limited (€ 2.24 per 1000 slaughtered pigs) and is charged to the pig farmers concerned for about 2/3.
- The damage for the entire Dutch pig sector is increased and now amounts to an estimated € 13 million per year (based on a prevalence of tail damage of 2.12%, 24.6 million weaned piglets and 17.5 million finishing pigs on an annual basis (2019)).

Therefore, the cost of tail biting in a national population of pigs which is largely docked has increased substantially over the last 9 years. This suggests that reducing the risks for tail biting can result in a considerable economic benefit, even in herds with tail docked pigs.

Further information on the indices used is provided in the Background section and tables below.

Background

There are no recent figures about the prevalence of tail biting, so the prevalence has been assumed to be the same as in the original report (see Table 1).

Table 2 present an overview of the cost indices used with regard to pigs with tail damage. These are the starting points for the calculations. Table 3 presents the subsequent calculation of financial loss due to tail damage (related to weaned piglets, fattening pigs and costs at slaughter). The economic indices in Tables 2 and 3 were actualized with figures from Vermeij (2019a and 2019b).

Table 1 Prevalence of the different kinds of tail damage among weaners, fattening pigs and finishers

Ref*		Prevalence (%)
	Pig farm (weaned pigs and fattening pigs)	
II-IV	Percent weaned piglets or fattening pigs with tail bites	2.12
a+d	tail bites with very small biting dots	1.26
B+e	tail bites with small wounds	0.40
C+f	tail bites with serious damage with inflammation	0.46
C+G	Alternative way to remove fattening pigs due to tail bites	0.6
F	Culling and destruction of fattening pigs due to tail damage	0.05
	Slaughterhouse	
L	Category 2 pigs due to tail damage (separated and slaughtered at the end of the day)	0.016
M	Category 3 pigs due to tail damage (discarded and destructed)	0.0002
VI	Pigs on slaughter line with tail damages	1.005
N	Pigs at evisceration place	0.005
O	Pigs from whom small pieces of carcass are cut away.	1.0

Source: Zonderland et al. (2011).

* These are the reference numbers used by Zonderland et al (2011) to identify various items in their calculations.

Table 2 Overview of costs and yield loss with regard to pigs with tail damage

	Costs per unit (€)
Costs weaned piglets	
Costs for labour and medicine per treatment (2 times)	2.10
Costs for moving pigs to hospital pen	6.05
Labour costs for splitting pen and costs for fattening pig place	4.54
Costs for enrichment material giving straw by hand 2 times a day in 5 days	4.05
Costs of enrichment material (straw) given by hand 2x a day for 5 days to pens with half of the pigs having tail damage (incl. labour)	0.34
Profit lost due to pigs being sold as "abnormal pig"	22.00
Profit lost due to piglets being taken out (euthanized)	32.25
Costs fattening pigs	
Costs for labour and medicine per treatment (2 times)	2.68
Costs for moving pigs to hospital pen	18.85
Labour costs for splitting pen and costs for fattening pig place	17.00
Costs for enrichment material giving straw by hand 2 times a day in 5 days	4.10
Costs of enrichment material (straw) given by hand 2x a day for 5 days to pens with half of the pigs having tail damage (incl. labour)	0.68
Profit lost due to pig being sold as "abnormal pig"	78.00
Profit lost due to piglets being taken out (euthanized)	0.16
Costs for transport	
Costs for a driver removing damaged/unfit pigs	1.67
Costs slaughterhouse	
Costs related to category 2 slaughter (separated and slaughtered at the end of the day)	12.00
costs related to category 3 slaughter (rejected and destructed)	9.20
Costs evisceration area (i.e. pigs taken out of the line to cut away parts of carcass)	0.02
costs cutting away small spots on tail	6.86

Source: data in Table 2 are from Zonderland et al. (2011), and were updated with figures from Vermeij et al. (2019a en 2019b).

Table 3 Calculation of financial loss due to tail damage related to weaned piglets, fattening pigs and costs at slaughter

	Prevalence (%)	Cost per animal with damage (€)	Costs per 1000 animals (€)
Weaned piglets			
Reduced growth	2.12	0.15	3.18
Enrichment material with individual animal with small tail wounds.	1.26	4.05	51.03
Enrichment material for animals with serious wounds + moving weak piglets	0.75	8.16	60.77
Re-grouping animals +group treatment +offering enrichment material to animals with serious tail wounds.	0.12	6.39	7.35
Profit lost due to sale of fattening piglet with tail wounds	0.61	22.50	138.15
Profit lost due to loss of weaned piglets	0.05	34.69	15.96
<i>Costs (financial damage) per weaned piglet with tail damage</i>			13.05
<i>Total financial damage per 1000 delivered (in this case it means they went from weaned piglets to fattening piglets) weaned piglets</i>			277
<i>Total financial damage for a farm with 500 sow</i>			4,093
Fattening pigs			
Reduced growth	2.12	0.21	4.49
Enrichment material with individual animal with small tail wounds.	1.26	4.10	51.66
Enrichment material for animals with serious wounds + moving weak pigs	0.75	21.53	160.41
Re-grouping animals +group treatment +offering enrichment material to animals with serious tail wounds.	0.12	20.37	23.42
Lost profit because fattening pig is taken out/ lost due to tail damage	0.05	97.80	44.99
Lost profit because fattening pig is taken out/lost due to euthanasia	0.05	156.70	79.72
Lost profit because of tail damage (through slaughter house)	1.02	0.16	1.62
<i>Costs (financial damage) per Slaughter pig with tail damage</i>			17.28
<i>Total financial damage per 1000 delivered fattening pigs</i>			367
<i>Total financial damage for a farm with 4000 fattening pigs</i>			4,557
Slaughter house			
Costs related to category 2 slaughter (separated and slaughtered at the end of the day)	0.016	12.00	1.88
costs related to category 3 slaughter (rejected and destructed)	0.0002	9.20	0.02

Costs evisceration area (i.e. pigs taken out of the line to cut away parts of carcass)	0.005	6.86	0.34
Costs cutting away small spots	1.015	0.01	0.11
<i>Total costs per slaughter pigs with tail damage</i>			0.22
<i>Total costs for 1000 slaughter pigs</i>			2.24
<i>Costs for the slaughter pig farmer for a pig with tail damage</i>			0.16

Source: data in Table 3 originate from Zonderland et al. (2011), and the Costs per animal with damage was updated with figures of Vermeij et al. (2019a en 2019b) and Handboek Varkenshouderij (2018).

Relevant references

- Handboek Varkenshouderij, 2018. Wageningen Livestock Research, Wageningen. Available for subscribers at www.handboekvarkenshouderij.nl. ISBN 978-94-6257-533-2. (Normen en economische waarderingen voor de rentabiliteitsindex 2017 en het productiegetal 2018).
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- Zonderland, J.J., Bosma, B., Hoste, R. 2011. Financiële consequenties van staartbijten bij varkens. Rapport 543. Abstract: Report on the financial consequences of tail damage due to tail biting among pigs in conventional pig farms in the Netherlands. Available at <https://edepot.wur.nl/188443>.