

Question to EURCAW-Pigs

Question

Received: January 22, 2020

In the Netherlands in 2018 a [brochure](#) was published about enrichment materials and the criteria that need to be met. In the brochure hanging jute sacks are scored as not edible. However, we have found other sources that say jute is (somewhat) edible. Please see page 14 of a research paper by WUR students: <http://edepot.wur.nl/507106>. Also on page 9 of an EU information website <http://pigstraining.welfarequalitynetwork.net/Pages/9>, here it is called 'hessian'.

- What are the considerations of the researchers who wrote the brochure to not score it as edible?
- Is it possible to provide a version of the brochure with references to the original sources? It would be very helpful for us, when making a report, to refer to scientific research that emphasizes the importance of certain criteria for enrichment materials other than simply referring to the brochure. Perhaps the question above can also be answered by providing these references?

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.

- The brochure is not the result of a literature study, but is based on expert opinion.
- Jute is edible, when edible is defined as 'ingestible'.
- Jute has no or very little nutritional value.

Further suggestions are given in the background section below.

Background

- *What were the considerations of the researchers who wrote the brochure to not score it as edible?*

The brochure was not the product of an extensive literature review, but rather a communication project aiming to make practical recommendations regarding related Commission documents, i.e. [Recommendation 2016/336](#) and the [Staff working document](#).

In the Recommendation, the definition of 'edible' in the context of enrichment is as follows:

*"4. Enrichment materials should enable pigs to fulfil their essential needs without compromising their health. For that purpose, enrichment materials should be safe and have the following characteristics: (a) **Edible**—so that pigs can eat or smell them, preferably with some nutritional benefits....".*

This formulation suggests that anything the pig can eat or smell may be considered 'edible'. This would indeed include jute sacks. However, common usage of the term 'edible' is related to nutritional value (e.g. to be a functional part of the diet) and the absence of toxicity or unpalatability.

Edible: Fit to be eaten (often used to contrast with unpalatable or poisonous examples)
<https://www.lexico.com/en/definition/edible> (Oxford)

Edible: Suitable or safe for eating: Only the leaves of the plant are edible
<https://dictionary.cambridge.org/dictionary/english/edible> (Cambridge)

In this sense, jute sacks are not edible, not primarily because they are unpalatable or toxic, but because they have no significant nutritional value as part of the pigs' diet. Although they do provide some fibre, it is, to our knowledge, not a physiologically functional contribution. This, however, is also true of organic ropes and to some extent of straw. Pigs in the wild normally do not eat straw, and they would not be interested much in ropes or jute sacks. However, these materials are fairly effective environmental enrichment for pigs, particularly when kept in conventional, barren conditions.

A closer look at the brochure reveals that although jute sacks are scored as not edible, the brochure says that ropes are. To us it is not clear on what basis the experts involved in the study came to these apparently contradicting conclusions.

When it comes to the enrichment 'value' of materials, it can be said that jute sacks and most organic ropes and (soft) wood are destroyed by the pigs and loose material is being ingested. This is also true for destructible materials made out of plastic. Of primary relevance is what time the pigs spend on interacting with and destroying the material, as a distraction from more harmful social behaviours such as tail biting.

EURCAW-Pigs has published a factsheet on the suitability of enrichment materials. It suggests that the qualities of hessian bags and natural ropes are similar: <https://edepot.wur.nl/513895>.

- *Is it possible to provide (a version of the brochure with) references to the original sources? It would be very helpful for us, when making a report, to refer to scientific research that emphasizes the importance of certain criteria for enrichment materials other than simply referring to the brochure. Perhaps the question above can also be answered by providing these references?*

Unfortunately this is not possible, because the brochure is not based on a literature review. However, for further reading, scientific references regarding the use of enrichment materials can be retrieved from using databases like Scopus, or Google Scholar. As a starting point, a short list of references is provided below.

Relevant references

Expert opinions

- Bracke, M.B.M. 2006. Expert opinion regarding environmental enrichment materials for pigs. Animal Welfare 15: 67-70.
- Bracke, M.B.M., Zonderland, J.J., Lenskens, P., Schouten, W.G.P., Vermeer, H., Spolder, H.A.M., Hendriks, H.J.M., Hopster, H., 2006. Formalised review of environmental enrichment for pigs in relation to political decision making. Applied Animal Behaviour Science 98: 165-182.
- Bracke, M.B.M., Zonderland, J.J., Bleumer, E.J.B., 2007a. Expert judgement on enrichment materials for pigs validates preliminary RICHPIG Model. Applied Animal Behaviour Science, 104: 1-13. Available at <http://dx.doi.org/10.1016/j.applanim.2006.05.005>
- Bracke, M.B.M., Zonderland, J.J., Bleumer, E.J.B., 2007b. Expert consultation on weighting factors of criteria for assessing environmental enrichment materials for pigs. Applied Animal Behaviour Science, 104: 14-23. Available at <https://www.wur.nl/nl/Publicatie-details.htm?publicationId=publication-way-333536373030>. Accessed 27-2-2018.

Bracke, M.B.M., Koene, P. 2019. Expert opinion on metal chains and other indestructible objects as proper enrichment for intensively-farmed pigs. PLOS ONE. Available at <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0212610>. Accessed 23-2-2019

Bracke, M.B.M., 2008. RICHPIG: a semantic model to assess enrichment materials for pigs. Animal Welfare 17: 289-304.

Hothersall, B, L Whistance, H Zedlacher, B Algers, E Andersson, M Bracke, V Courboulay, P Ferrari, C Leeb, S Mullan, J Nowicki, M-C Meunier-Salaün, T Schwartz, L Stadig, D Main, 2016. Standardising the assessment of environmental enrichment and tail docking legal requirements for finishing pigs. Animal Welfare 25: 499-509. Available at <https://hal.archives-ouvertes.fr/hal-01425796/>, accessed 1605-2017. E-learning tool: <http://www.euwelnet.eu/en-us/euwelnet-pig-training/> <http://www.ingentaconnect.com/content/ufaw/aw/2016/00000025/00000004/art00011>

Bracke, M.B.M. 2018. Chapter 6. Chains as proper enrichment for intensively-farmed pigs? In: Spinka, M. Advances in Pig Welfare. 2017, pp 167-197. Elsevier. Available at <http://www.sciencedirect.com/science/article/pii/B9780081010129000058> Accessed 27-8-2018. Author version available at <http://edepot.wur.nl/416659>. Book chapter with supplement and technical details available at <http://farewelldock.eu/chain-as-enrichment-with-supplement/>. Author version at Wageningen UR: <https://www.wur.nl/en/Publication-details.htm?publicationId=publication-way-353232373832>

Experimental work on pig preferences

Bracke, M.B.M., 2007. Multifactorial testing of enrichment criteria: pigs 'demand' hygiene and destructibility more than sound. Appl. Anim. Behav. Sci. 107, 208-232. Available at [http://www.appliedanimalbehaviour.com/article/S0168-1591\(06\)00337-6/fulltext](http://www.appliedanimalbehaviour.com/article/S0168-1591(06)00337-6/fulltext), accessed 3-5-2017.

Bracke, M.B.M., Spoolder, H.A.M., 2008. Novel object test can detect marginal differences in environmental enrichment in pigs. Appl. Anim. Behav. Sci. 109, 39-49. Available at [http://www.appliedanimalbehaviour.com/article/S0168-1591\(07\)00045-7/fulltext](http://www.appliedanimalbehaviour.com/article/S0168-1591(07)00045-7/fulltext), accessed 3-5-2017.

Vermeer, HM, NCPMM Dirx-Kuijken, MBM Bracke. 2017. Effects of exploration feeding and space allocation on welfare of growing finishing pigs. Animals 7: 36. doi:10.3390/ani7050036. Available at <http://www.mdpi.com/2076-2615/7/5/36/htm>

Zonderland, J.J., Wolthuis-Fillerup, M., van Reenen, C.G., Bracke, M.B.M., Kemp, B., den Hartog, L.A., Spoolder, H.A.M., 2008. Prevention and treatment of tail biting in weaned piglets. Appl. Anim. Behav. Sci. 110, 269-281.

Ursinus, W.W., 2014. A tale too long for a tail too short? : identification of characteristics in pigs related to tail biting and other oral manipulations directed at conspecifics. PhD thesis, Wageningen University. Available at <https://library.wur.nl/WebQuery/wurpubs/457142>. Accessed 30-1-2020.

Zonderland, J.J., Vermeer, H.M., Vereijken, P. and Spoolder, H.A.M., 2003. Measuring a pig's preference for suspended toys by using an automated recording technique. *Agricultural Engineering International: the CIGR journal of scientific research and development*. Manuscript BC01010, February 2003.

Zonderland, J.J., Wolthuis-Fillerup, M., Van Reenen, C.G., Bracke, M.B.M., Kemp, B., Den Hartog, L.A. and Spoolder, H.A.M., 2008. Prevention and treatment of tail biting in weaned piglets *Applied Animal Behaviour Science*, 110: 269-281.

Van de Weerd, H.A., Caroline M. Docking, Jon E.L. Day, Peter J. Avery, Sandra A. Edwards, 2003. A systematic approach towards developing environmental enrichment for pigs. *Applied Animal Behaviour Science* 84: 101-118. [https://doi.org/10.1016/S0168-1591\(03\)00150-3](https://doi.org/10.1016/S0168-1591(03)00150-3)

Jute sacks

Ursinus, W.W., H.J. Wijnen, A.C. Bartels, N. Dijvesteijn, C.G. van Reenen, J.E. Bolhuis, 2014. Damaging biting behaviors in intensively kept rearing gilts: The effect of jute sacks and relations with production characteristics. *Journal of Animal Science* 92: 5193-5202, <https://doi.org/10.2527/jas.2014-7918>.