

Survival and development of *Ascaris suum* and *Trichuris suis* eggs in deep-litter on an organic pig farm

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Background: Helminths are common in European organic pig production systems and the use of deep-litter has long been considered a serious risk factor contributing to this problem. However, until now hardly any data has existed to either support or reject this hypothesis, thus complicating formulation of farmer guidelines.

Methods: On an organic Danish pig farm, 3 different areas (latrine, resting area and the area in-between) of 2 indoor fattening pens with deep-litter (min. 2 months old) were examined for *Ascaris suum* and *Trichuris suis* eggs. The deep-litter was sampled vertically 10, 20, 30, 40, 50, and 60 cm from the surface, by pooling 4 sub-samples per level. In addition, eggs were isolated from the top, middle, and bottom of deep-litter (3-4 months old) of the same areas but in 3 other pens. Percentage embryonation was determined before and after incubation in H₂SO₄ at 25°C for 7 weeks. For comparison, control eggs isolated from fresh faeces were also incubated.

Results: Though less common in the resting areas, eggs of *A. suum* (0-481 eggs/g dry litter) and *T. suis* (0-58 eggs/g dry litter) were detected in all pen areas and vertically throughout the deep-litter, but the large majority of eggs was unembryonated and some were damaged. Hardly any eggs were partially or fully embryonated. Once isolated and given optimal conditions, eggs of both species from all 3 areas were able to develop to a larvated stage, but the ability to do so declined with the depth within the deep-litter. Compared to control eggs from faeces, *A. suum* eggs from deep-litter were less successful in embryonation while *T. suis* eggs from deep-litter had the same percentage embryonation as fresh eggs.

Conclusion: For the first time data has shown that deep-litter may not be a risk factor for *A. suum* and *T. suis* transmission within the pens as previously suspected. However, it does appear that a high number of eggs may survive and potentially embryonate if they are transferred to a more beneficial environment. The consequence being that manure should not be spread indiscriminately onto pastures, which may later be used for pigs. A solution may be to inactivate the eggs first.