

Long-term survival of *Ascaris suum* and *Trichuris suis* eggs in relation to pasture management

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Background: Organic pig production systems are commonly characterized by high helminth prevalences. This problem is partly associated with access to outdoor facilities such as pastures and more knowledge is needed on long-term pasture infectivity patterns to improve farmer advisory services and guidelines on pasture management.

Methods: Six identical paddocks were originally contaminated in the spring to autumn of 2001 by pigs infected with high levels of *Ascaris suum* and low levels of *Trichuris suis*. Since then, no further eggs have been deposited and 3 of the paddocks have been ploughed to a depth of 20 to 28 cm and re-sown once a year while 3 paddocks remained untouched apart from yearly cutting of the vegetation. In the late spring and late autumn of 2001, 2002, 2003, and 2004 as well as in the autumn of 2005, 2007, and 2010, survival of parasite eggs was measured by analysis of soil samples and by recovery of worms from short-term exposed helminth naïve tracer pigs.

Results: Following a high initial egg mortality in 2001-2002, the number of parasite eggs in the soil declined slowly over time for both species. In 2001, very few *T. suis* eggs developed to infectivity. The tracer data show that overall pasture infectivity for *T. suis* did not peak until 3-4 years after the initial contamination. Preliminary data from 2010 indicate that *T. suis* is still present on the paddocks, though at very low levels. Infective *A. suum* eggs were detected in 2001 and paddock infectivity levels peaked within 2 years after contamination, resulting in livers with very high numbers of white spots, irrespective of paddock treatment. Transmission of *T. suis* was more consistently reduced by ploughing compared to *A. suum*.

Conclusion: Development and maturation of *A. suum* eggs and especially *T. suis* eggs was overall slower than expected, indicating that pasture rotation schemes should ideally exceed 3 years. However, 9 years after initial contamination, both species were still detected and *A. suum* pasture infectivity was still too high for the paddocks to be suitable for pigs. Overall, transferring the eggs deeper into the soil by ploughing appeared to reduce parasite transmission.