

Status report 2005 - Stipend number 9. "Management and alternative crops as a means to reduce parasite infections in organic pig production systems"

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Background

Intestinal parasites is a potential problem of considerable importance for the production of out-door pigs. This is particularly true for the organic production systems that tries to minimize or completely avoid the use antiparasitic drugs. There is therefore an overall need for alternative methods of parasite control as parasite infections may have an negative effect on feed conversion and growth of pigs. Previous experiments have shown that it is possible to reduce infection levels by manipulating feed composition and it has been suggested that some plants may have antiparasitic effects. Ideally it would be possible for farmers to grow antiparasitic bioactive crops that could be used as roughage or other feed supplements.

However, bioaktive plants are probably not enough to control parasite infections. Future control strategies should be based on a good knowledge of parasite infection epidemiology and consist of not only selective feeding but also pasture management. Parasites such as the round worm and whip worm are transmitted between pigs as eggs that may survive in the soil for a minimum of 5 and 11 years, respectively. Pasture rotation may therefore only have a limited effect if contaminated pastures are not kept free of pigs long enough. It is therefore also of interest to examine if ploughing can reduce the availability of parasite eggs to pigs. In later years it has been shown that neonatal exposure to the round worm may increase the susceptibility to infections with the parasite. This means that pigs that are moderately infected at an early age does not become immune to this parasite to the same degree as pigs that are first exposed later in life. Overall, production losses is therefore expected to be larger in out-door herds where the piglets are born on contaminated pastures compared to an in-door intensive herd where parasite faeces containing eggs can be efficiently removed.

Objective

The project can be divided into 4 parts with the following aims:

1. To obtain knowledge on natural parasite infections in pigs that are born and raised on infected pastures.
2. To investigate the survival of free-living parasite stages on kontaminated pastures in relation to ploughing.
3. To test extracts of bioactive plants for potential antiparasitic effects using a "Larval Development Assay (LDA)" (this has been taken out of the Ph.D.).
4. To examine if bioactive plants can be used to reduce parasite infections in fatteners.

Status September 2005

The 4 manuscripts have been finalised and submitted. Time has been spent on writing the thesis and it is expected to be finalised by december 2006.

Plans 2006

To defend the thesis early 2006.

Publications

Mejer, Helena and Roepstorff, Allan (2003). Non-medical control of parasitic worms in pigs. Online at <<http://www.darcof.dk/enews/jun03/parasit.html>> Newsletter from Danish Research centre for Organic Farming (DARCOFenews) · June 2003 · No. 2.

Mejer, Helena and Roepstorff, Allan (2003). Ikke-medicinsk kontrol af indvoldsorm i grise. Online at <http://www.foejo.dk/enyt2/enyt/aug03/orm.html>. Nyhedsbrev fra Forskningscenter for Økologisk Jordbrug (FØJO enyt) · August 2003 · nr. 4

Mejer, H. 2004. Pløjning virker mod nogen indvoldsorm (2004). Online at <http://orgprints.org/00003228/>. Økologisk jordbrug 315, 10.

The thesis will include the following papers that will be uploaded on Organic Eprints once they have been published:

Mejer, H. & Roepstorff, A. *Ascaris suum* infections in pigs born and raised on contaminated paddocks. Submitted to Parasitology.

Mejer, H. & Roepstorff, A. *Oesophagostomum dentatum* and *Trichuris suis* infections in pigs born and raised on contaminated paddocks. Submitted to Parasitology.

Mejer, H. & Roepstorff, A. The survival and development of porcine helminths in relation to ploughing. Will be submitted to the International Journal of Parasitology in October 2005.

Mejer, H., Roepstorff, A., Thamsborg, S . M., Hansen, L. L. & Bach Knudsen, K. E. The effect of bioactive plants on *Oesophagostomum dentatum* and *Ascaris suum* infections in pigs. Will be submitted to Parasitology in October 2005.