

# **Final report 2006 - Stipend number 9. “Management and alternative crops as a means to reduce parasite infections in organic pig production systems”**

Ph.D.-student: Helena Mejer  
Universty: Royal Veterinary and Agricultural University (KVL)  
Department: Centre for Experimental Parasitology, Dept. of Veterinary Microbiology  
Supervisors: Allan Roepstorff (KVL), Lis Eriksen (KVL)  
Timeframe: July 2001 – Jan 2005  
e-mail/phone: [hem\[a\]kvl.dk](mailto:hem[a]kvl.dk) / 35 28 27 89  
Master´s degree: Biology, University of Copenhagen

## **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, bioactive 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.

## **Objectives**

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 contaminated 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.

## **Progress 2006**

The thesis entitled ‘Transmission, infection dynamics and alternative control of helminths in organic swine’ was finalised and defended June 23.

### **Peer-reviewed publications**

Mejer, H. and Roepstorff, A. (2006). *Oesophagostomum dentatum* and *Trichuris suis* infections in pigs born and raised on contaminated paddocks. Parasitology 133, 295-304. Online at <http://orgprints.org/9366/>.

Mejer, H. and Roepstorff, A. (2006). *Ascaris suum* infections in pigs born and raised on contaminated paddocks. Parasitology 133, 305-312. Online at <http://orgprints.org/9367/>.

Mejer, H. and Roepstorff, A. Long-term survival and infectivity of porcine helminths on paddocks in relation to ploughing. Submitted to the International Journal of Parasitology.

Mejer, H., Roepstorff, A., Thamsborg, S. M., Hansen, L. L. and Bach Knudsen, K. E. The effect of feeding with chicory roots on *Oesophagostomum dentatum* and *Ascaris suum* infections in pigs. Submitted to Parasitology.

### **Other publications**

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

Mejer, H. and Roepstorff, A. (2003). Non-medical control of parasitic worms in pigs. Newsletter from Danish Research centre for Organic Farming (DARCOFenews), June 2003, No. 2. Online at <http://www.darcof.dk/enews/jun03/parasit.html> and <http://orgprints.org/3230/>.

Mejer, H. and Roepstorff, A. (2003). Ikke-medicinsk kontrol af indvoldsorm i grise. Nyhedsbrev fra Forskningscenter for Økologisk Jordbrug (FØJO enyt), August 2003, nr. 4. Online at <http://www.foejo.dk/enyt2/enyt/aug03/orm.html> and <http://orgprints.org/3229/>.

Mejer, H. and Roepstorff, A. (2004). Alternativ kontrol af indvoldsorm hos svin, in Sørensen, Jan Tind, Eds. Produktionsstyring med fokus på husdyrsundhed og fødevarerikkerhed i økologiske svinebesætninger: Rapport fra workshop afholdt på Hotel Bygholm Park 23. april 2003. FØJO Intern rapport no. 54, chapter 3, page pp. 19-26. Forskningscenter for Økologisk Jordbrug. Online at <http://orgprints.org/3243/>.

Roepstorff, A., Mejer, H., Thomsen, L. T., Thamsborg., S. M., Byrne, D. V., Hansen, L. L., Bach Knudsen, K. B. and Møller, K. (2005). Cikorierødder forbedrer smag og lugt i økologisk svinekød. Nyhedsbrev fra Forskningscenter for Økologisk Jordbrug (FØJO enyt), Juni 2005, Nr. 3. Online at <http://www.foejo.dk/enyt2/enyt/jun05/cikorie.html> and <http://orgprints.org/9368/>.

Roepstorff, A., Mejer, H., Thomsen, L. T., Thamsborg., S. M., Byrne, D. V., Hansen, L. L., Bach Knudsen, K. B. and Møller, K. (2005). Chicory roots improves the taste and odour of organic pork. Newsletter from Danish Research centre for Organic Farming (DARCOFenews), September 2005, No. 3. Online at <http://www.darcof.dk/enews/sep05/chicory.html> and <http://orgprints.org/9369/>.