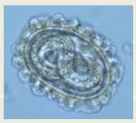
CONTROL OF PARASITIC WORMS IN ORGANIC PIGS

Incl. experiences from the COREorganic project RObust Animals in sustainable Mixed FREE-range systems (ROAM-FREE)

PIG PARASITES ARE COMMON ACROSS EUROPE IN ORGANIC AND OTHER OUTDOOR PRODUCTION SYSTEMS as they often favour parasite survival and transmission because parasite eggs and larvae cannot be removed from the environment and reliance on antiparasitic medication is not desirable in organic systems. However, parasites should be controlled as they may have a negative impact on health and welfare of the infected animals and reduce productivity causing financial loss for farmers.

CHARACTERISTICS OF MAIN PARASITIC WORMS IN PIGS

Data on development and survival og eggs and larvae in the environment are from a temperate climate (Denmark). In colder climates eggs and larvae may develop at a slower rate and survival during winters may be reduced though thick snow cover on the ground can protect the parasites and thus increase survival. In contrast, development may be faster in a warmer climate, but heat, desiccation and UV-light increases parasite mortality.

	***Large roundworm* (*Ascaris suum*)**	***Nodular worm* (*Oesophagostomum* spp)**	***Whipworm* (*Trichuris suis*)**
Size of adult worms in the host	15-30 cm	1-1½ cm	5 cm
Infective stage (thick-shelled eggs or more fragile larvae)			
Period from infection to egg production	6 weeks	2½-3 weeks	7-8 weeks
Egg output/worm	Very high	Low	Low
Infective stage	Third stage larva in egg	Free third stage larva	Third stage larva in egg
Development of eggs/larvae on pasture	6-12 months	Few days	>12 months
Survival of eggs/larvae on pasture	>13 years	Weeks-months, no frost	>13 years
Reservoir	Environment	Animals	Environment
Acquired immunity	Strong	Weak	Strong
Occurrence	Most common in fatteners and gilts	Most common in older animals (sows)	Most common in fatteners and gilts
Impact: • Reduced weight gain+feed conversion • Mortality • Others:	 Yes At high levels in naïve animals Coughing Liver condemnation Red effect of vaccines.	 Yes No Temporary anorexia (Reduced reproduction?)	 Yes At high levels in naïve animals Bloody diarrhoea Weight loss

CONTROL MEASURES

It is not possible to establish one universal strategy to prevent and control parasite infections. This is due to the great diversity in climatic conditions, size, structure and management practices on individual organic, low input or outdoor farms. Strategies therefore have to be adapted to the specific needs and challenges on individual farms. However, farmers should explore the following approaches:

MONITORING to determine parasite species and infection levels
- Small farms: animals on a case-to-case basis
- Medium to large farms: 5-10 animals in each age group (large weaners, large fatteners/gilts and sows)

PASTURE MANAGEMENT
- Open cultivated pastures: rotation schemes ideally 5 years with alternating crops and/or other grazing animal species
- Range- and woodlands: rotation schemes and alternating animal species though duration is not well examined, permanent vegetation cover may protect parasites from desiccation and UV-light and thus increase survival of parasite eggs and larvae in the soil
- Co-grazing of different animal groups (e.g. sows-cattle and pigs-sheep) may help remove parasite contamination

STABLES AND OUTDOOR RUNS
- Pens should be completely cleaned, all biological material (bedding material and faeces) removed and then washed
- Pens should be allowed to dry out completely as desiccation is very effective in killing parasite eggs and larvae
- A gas weed burner is highly effective in killing eggs and larvae if structures are concrete and metal
- Disinfectants may only work if surfaces are clean, dry and free from biological material (straw and faeces)

INACTIVATION OF PARASITES IN MANURE AND SLURRY
- Bedding material and manure can be composted, if it is too hot to touch (approx. 70°C) eggs will be dead, but at approx. 50°C it will take a week to kill the eggs though eggs in the surface of the manure heap may survive
- Slurry is to be stored for one year at 25°C or treated in a biogas facility (time is again dependent on temperature)

ANTIPARASITIC TREATMENT OF ANIMALS
- Researchers are trying to identify plants with natural antiparasitic properties to be grown on-farm and fed to/foraged by the pigs, but concentrations of active compounds are often too low to be effective enough – work is ongoing
- Treatment may not always be avoidable but should be used strategically for optimal impact and timing may depend on local conditions and transmission pathways