

# Longitudinal monitoring of parasite infections in two Danish organic pig farms with agroforestry

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# Acknowledgements

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<https://www.roam-free.eu/>



# Background

This study is a part of a larger project: ROAM-FREE  
**RO**bst **A**nimals in sustainable **M**ixed **FREE**-range systems

"The ROAM-FREE project will examine the possibilities for a mixed production system of pigs with other livestock or crop production, to offer an alternative to some of the issues with free-range production"

- Challenges in free range production includes:
  - Lower biosecurity
  - Increased land rec
  - Increased work lo



# Introduction

## In Denmark: **Agroforestry**



→ Production of pigs and trees in the same system

- May contribute to increased welfare (more stimuli), self-supply of feed, less nutrient leaching and affect parasite levels
- Trees used in these systems may be selected for potential nutritional and anti-parasitic effects.

**Objective:** to describe the occurrence of gastrointestinal nematodes (GIN) in pigs at farms with poplar trees, based on faecal egg counts (FEC).

# Materials and Methods

Longitudinal, repeated cross-sectional study on two similar pig farms, located in Jutland, Denmark.

- Quarterly visits throughout one year

At each visit, 20 random faecal samples (fresh droppings from the ground) were collected from five different age groups:

- Lactating sows, dry sows, small weaners (approx. 10-12 weeks), large weaners (approx. 15 weeks), finishers (>55kg).

Faecal egg counts by McMaster flotation (Threshold: 20 eggs/g faeces (EPG) )



# Materials and Methods

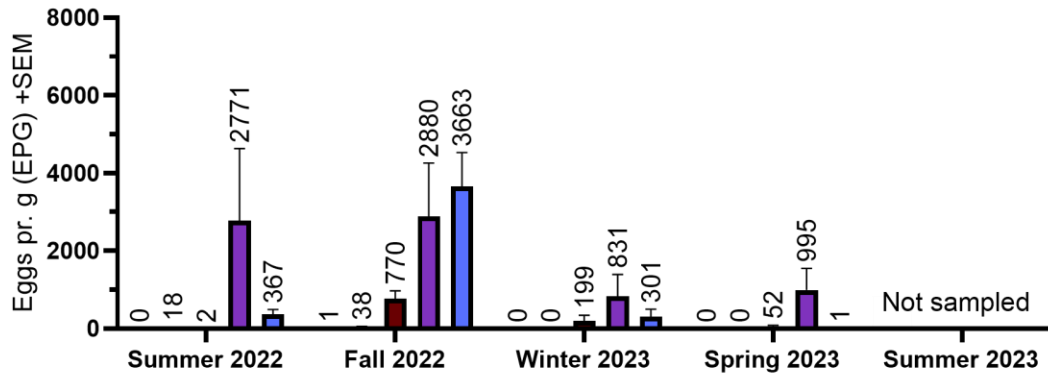
	Farm 1	Farm 2
<b>Farm size</b>	333 ha	160 ha
<b>Year sows</b>	650	350
<b>Reared piglets/year</b>	11000	6000
<b>Weaning age</b>	8 weeks	10 weeks
<b>Housing of dry sows</b>	Outdoor, free-range	
<b>Housing of lactating sows</b>	Outdoor, free-range	
<b>Housing of weaners</b>	0-8 weeks: with sow, outdoor, free-range 8-15 weeks: outdoor, free-range	0-10 weeks: with sow, outdoor, free-range At 10 weeks: Moved indoors, access to outdoor concrete area
<b>Housing of finishers</b>	Indoor, access to outdoor concrete area	
<b>Deworming</b>	Piglets at weaning (Fenbendazole). Sows 1 week prior to farrowing (Fenbendazole).	
<b>Tree species on farrowing paddocks</b>	Poplar ( <i>Populus</i> spp.)	
<b>Tree coverage of fields</b>	20-30%	
<b>Pasture management</b>	Crop rotation including pigs every 2 <sup>nd</sup> year.	

# Results: *Oesophagostomum* spp.

## ABUNDANCE

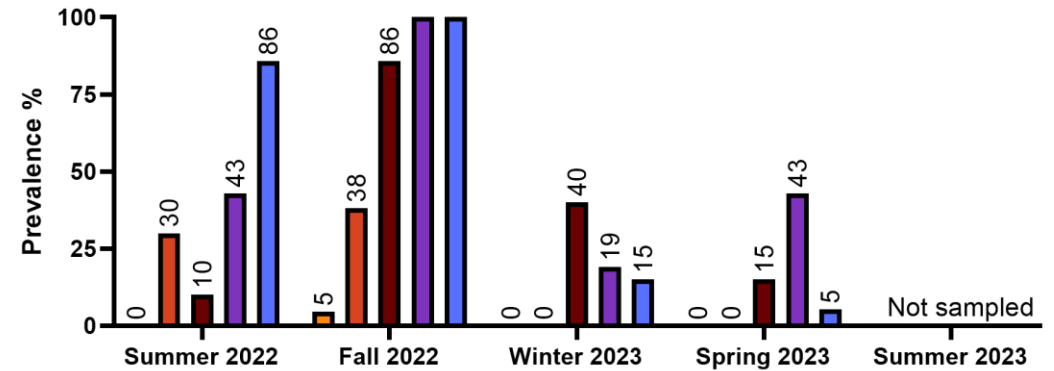
- Small weaners
- Large weaners
- Finishers
- Lactating sows
- Dry sows

Mean *Oesophagostomum* spp. FEC Farm 1

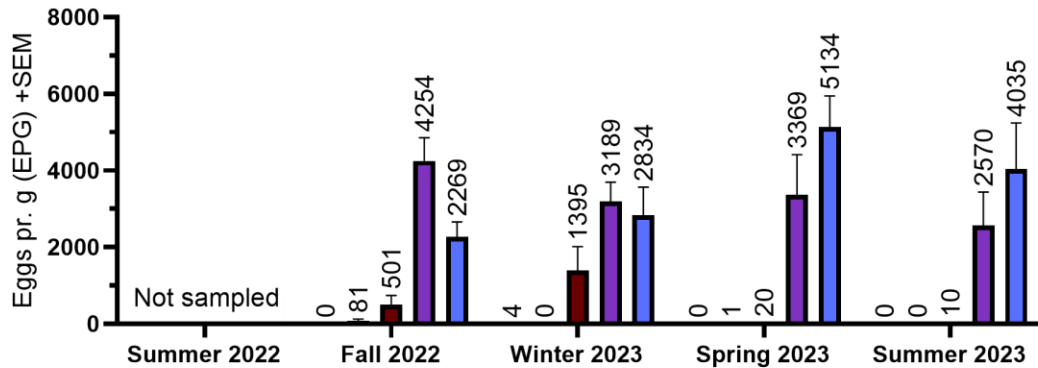


## PREVALENCE

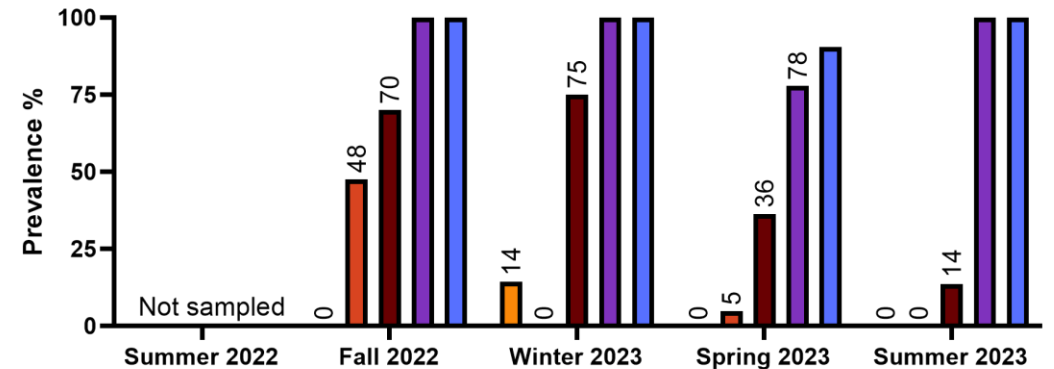
*Oesophagostomum* spp. prevalence Farm 1



Mean *Oesophagostomum* spp. FEC Farm 2



*Oesophagostomum* spp. prevalence Farm 2



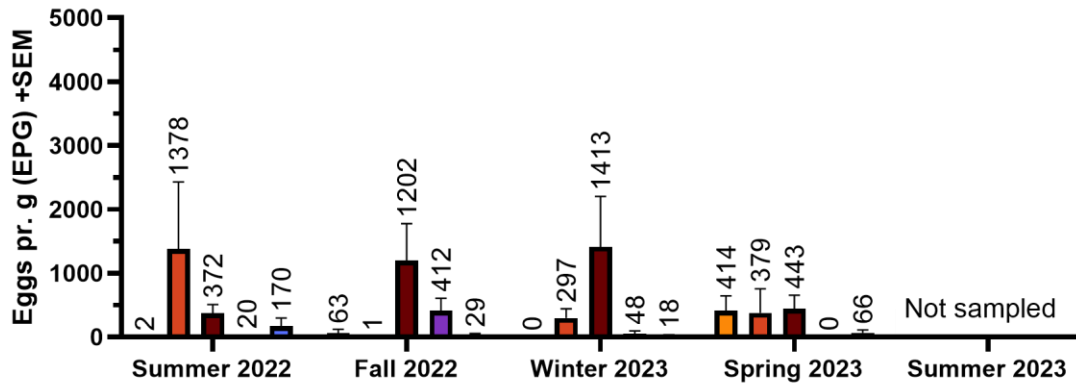
# Results: *Ascaris suum*

- Small weaners
- Large weaners
- Finishers
- Lactating sows
- Dry sows

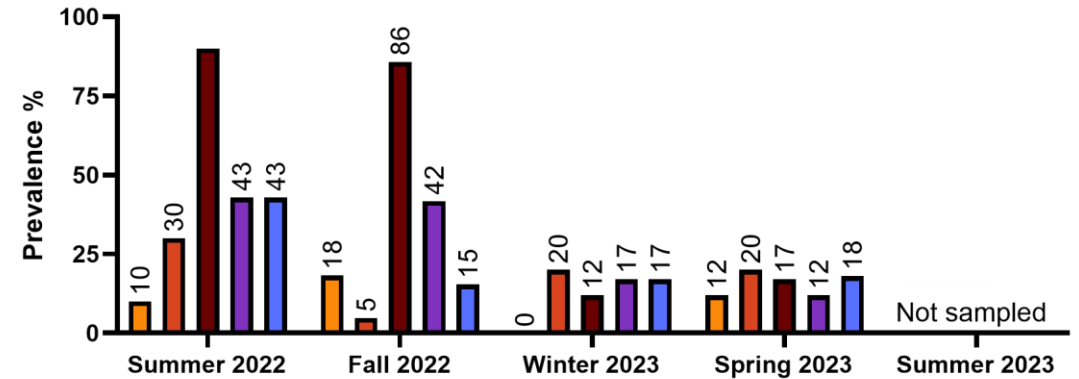
## ABUNDANCE

## PREVALENCE

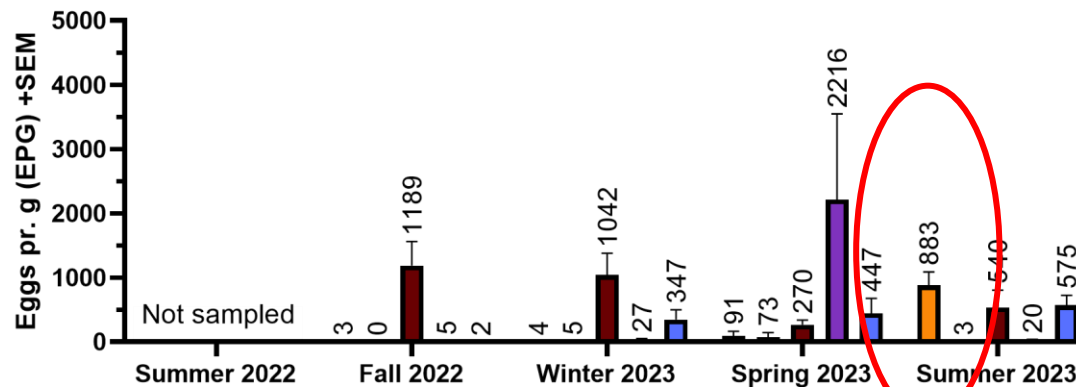
Mean *Ascaris suum* FEC Farm 1



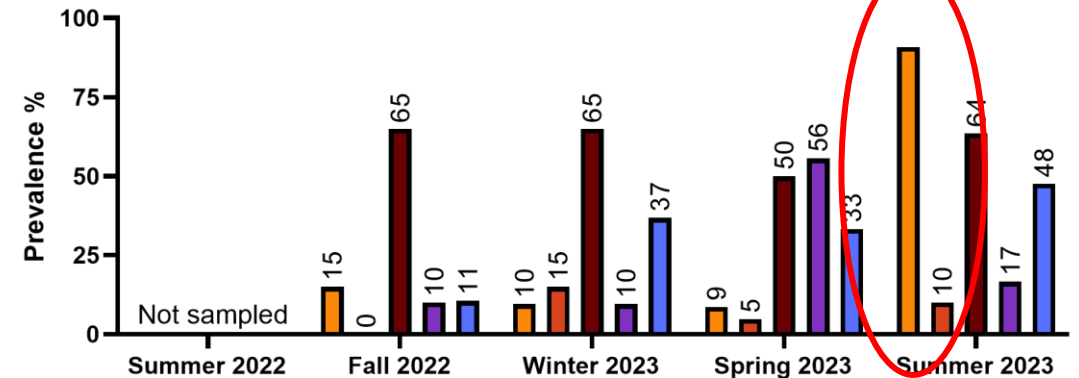
*Ascaris suum* prevalence Farm 1



Mean *Ascaris suum* FEC Farm 2



*Ascaris suum* prevalence Farm 2



# Discussion

Low FEC in weaners: Deworming shortly before sample collection

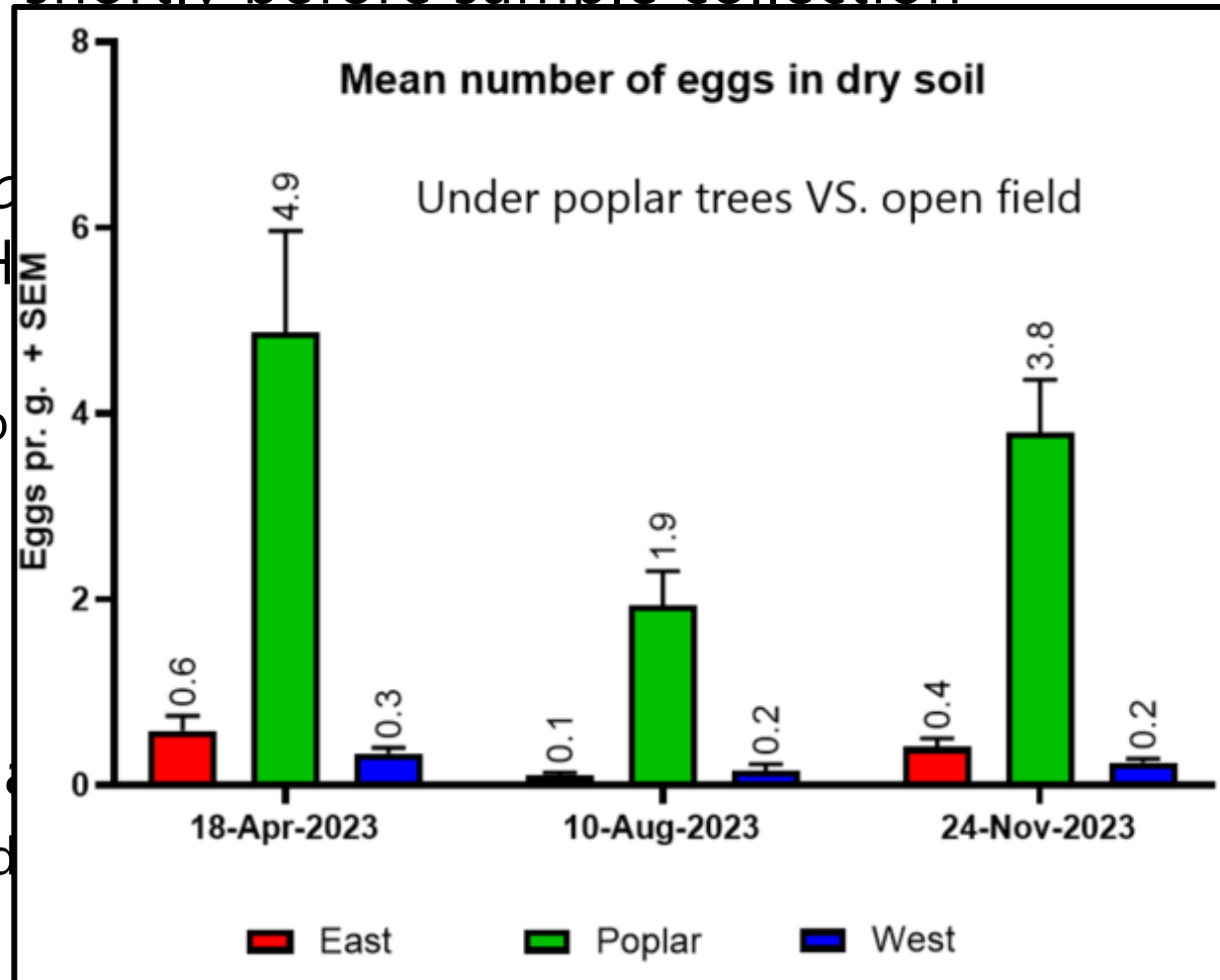
High transmission of *Oesophagostomum* reflected in the lactating sows: High FEC from farrowing to farrowing.

Could the tree cover provide environmental benefits?

- Leading to higher transmission?
- Experiences from another study

No indication of any immediate effects of tree cover on parasite levels. Ingestion of poplar bark, leaves and roots by pigs → welfare.

Parasite levels similar to other organic pig farms



# Keypoints

- High transmission of *Oesophagostomum* spp. to sows in farrowing paddocks despite routine deworming
- Pigs utilized the trees for performing natural behaviour, i.e rooting, scratching, defaecation.
- Ascaris dominates in finishers in-doors
- The infection dynamics and levels were comparable to other organic Danish pig farms.

