



# Risk factor analysis of *Fasciola hepatica* infections in Danish dairy cattle



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Egg of *Fasciola hepatica*

## Background

The prevalence of liver fluke (*Fasciola hepatica*) infections in cattle is increasing in Denmark<sup>1</sup>, therefore establishment of appropriate guidelines for control is urgently needed.

### Aims:

- To identify potential farm level risk factors for liver fluke infection in Danish dairy cattle using slaughter inspection and questionnaire data.
- To compare two different diagnostic methods: slaughter inspection and antibody ELISA of bulk tank milk (BTM).

## Results and discussion

### RISK FACTORS identified:

- Grazing of heifers on wet areas ( $p < 0.001$ )
- Grazing of dry cows on wet areas ( $p < 0.001$ )
- Co-grazing animals of different age groups ( $p < 0.01$ )
- Performing preventive measures on farm (higher numbers in case than control farms) ( $p < 0.05$ )
- 12 case farms practiced zero-grazing for all animals!

	No. Case farms	No. Control farms
ELISA +/ve	99	8
ELISA -/ve	33	56

These farms all had low apparent prevalence (<6%).

No obvious trend in these farms in terms of herd size, apparent prevalence and age at slaughter etc.. Underdiagnosis at the abattoirs<sup>2</sup> may account for this finding.

## Materials and methods

### 132 Case farms

- at least 50 animals were slaughtered in 2013
- minimum 3 animals with liver condemnation due to fasciolosis at slaughter in 2013

### 64 Control farms

- at least 50 animals were slaughtered in 2013
- no animal diagnosed with fasciolosis at slaughter for the last 3 years
- within 10 km from the case farms

- Telephone interviews** regarding the types of production, grazing pattern, anthelmintic treatments and management routines during 2013.
- ELISA on BTM (during housing 2013/14)** for *F. hepatica*-specific antibodies using Fasciolosis Verification Test (IDEXX).

### Statistics

- Univariable analysis** for each variable using Chi-square or Fisher's exact test.
- Comparison of number of ELISA positive and negative herds against case and control herds.** (Inconsistencies were examined in terms of herd size, apparent prevalence and age at slaughter etc..)

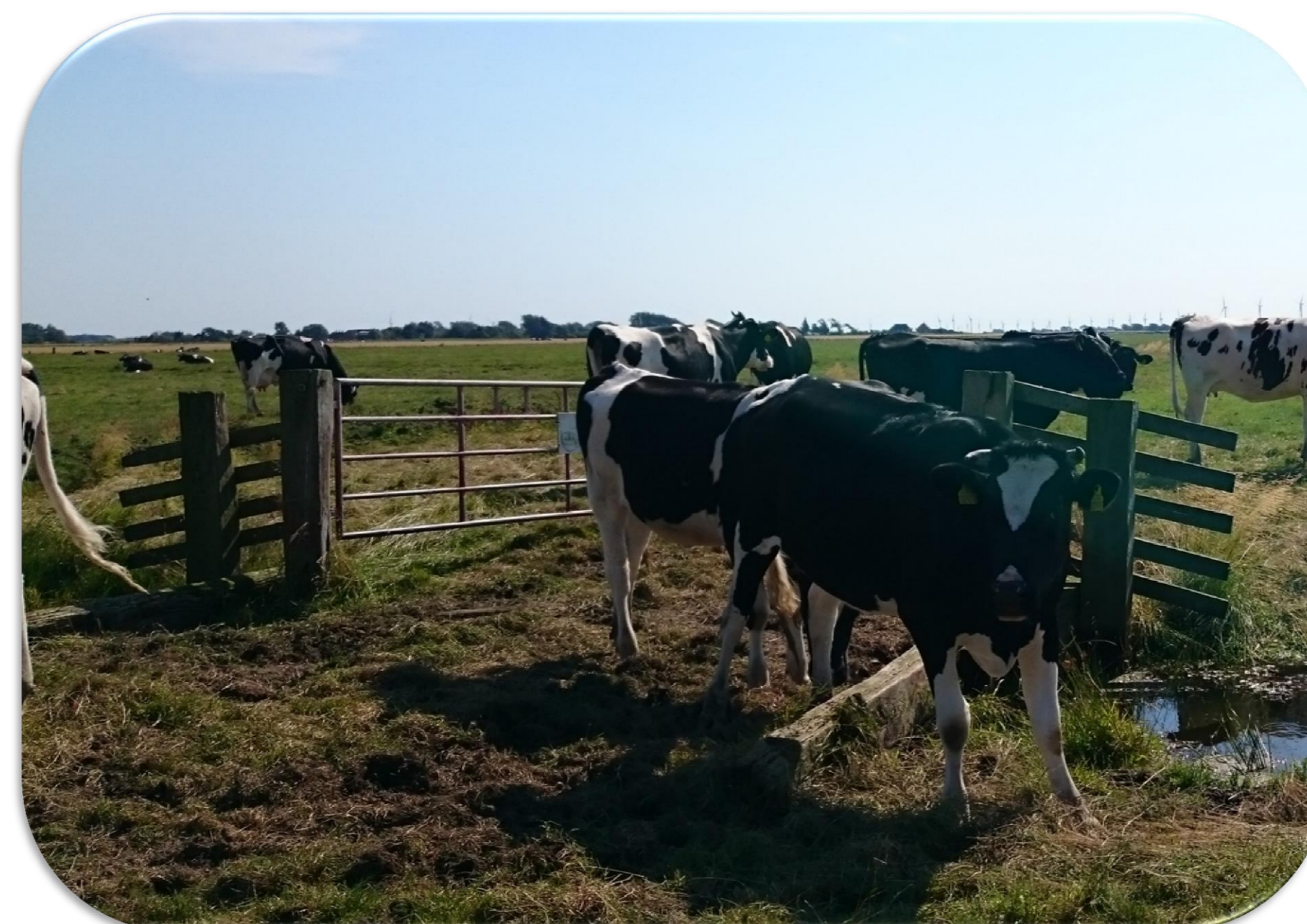
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### References

- Olsen et al. (2015) "Prevalence, risk factors and spatial analysis of liver fluke infections in Danish cattle herds." *Parasites and Vectors* 8:160
- Rapsch, C., et al. (2006) "Estimating the true prevalence of *Fasciola hepatica* in cattle slaughtered in Switzerland in the absence of an absolute diagnostic test." *International journal for parasitology* 36: 1153-1158.



## Conclusions and perspectives

- Grazing heifers and dry cows on wet areas seem to be associated with fasciolosis in Danish dairy cattle.
- Multivariable analysis is warranted to account for confounders and interaction with other variables.
- It should be kept in mind that diagnosis of fasciolosis by slaughter inspection and ELISA on BTM differ due to e.g. apparent herd prevalence and low sensitivity of slaughter inspection.
- The difficulty of liver fluke control was highlighted as many case herds are already trying to minimise the problems by some preventive measures.

