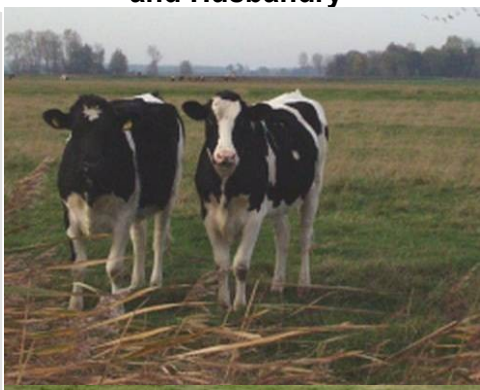
Faculty of Agricultural and Nutritional Science

Christian-Albrechts-University Kiel
Institute of Animal Breeding and Husbandry

EAAP Annual Meeting 2008
Session 9

Grazing cattle on re-wetted areas: a long-term observation on the endoparasitic burden



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Aim of the Project

- Determine the effect of grazing and wettening of the prevalence of endoparasites

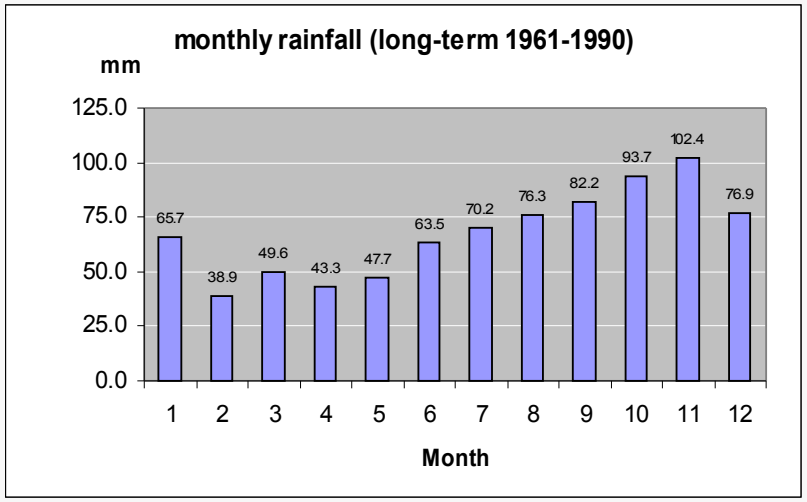
History

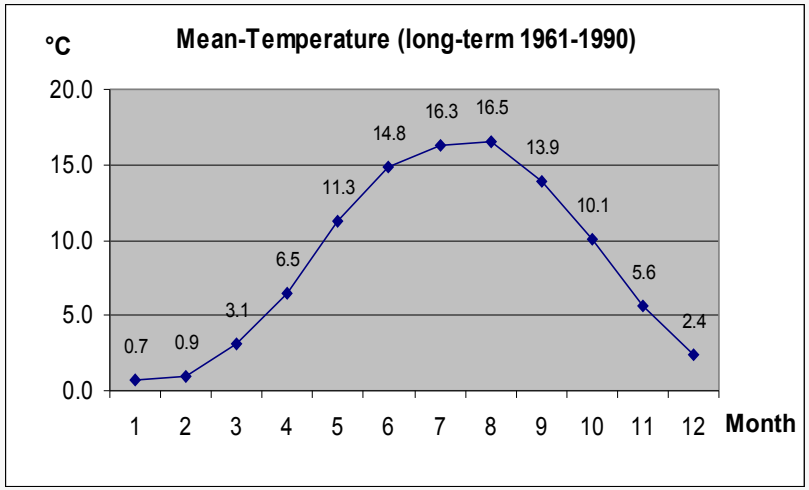
- In the 1970s pastures were drained in a large scale
- In combination with anthelmintic treatments, the prevalence of endoparasites was reduced
- In the last decade several nature protection programs were implemented => Big areas of pasture were re-wetted

Location of the Peninsula Eiderstedt

Characteristic of the Peninsula Eiderstedt

- German North-Sea coast
- Formed by land reclamation and embankment
- Atlantic climate
- Altitude 0-1 m above sea level
- Mean -Temperature 8.3 °C (0.7 – 16.5 °C)
- Rainfall 755 mm



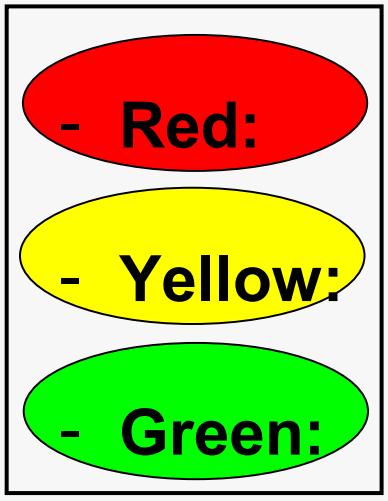


Material and Method

Data from the Peninsula Eiderstedt

(2005 - 2007)

- **Three states of re-wetting** according to a traffic-light principle



- **Red:** Re-wetted area (~10% of surface open water)
- **Yellow:** Area is slightly rewetted (no open water)
- **Green:** Area is in unaltered state of draining

Material and Method

Data from the Peninsula Eiderstedt

(2005 - 2007)

- Contiously grazing during the summer season (April to November)
- No rotation
- 4 adult animals / hectare
- Animals in their first grazing season and animals in their second or higher grazing season

Material and Method

Data from the Peninsula Eiderstedt

(2005 - 2007)

- **692 faecal samples analyzed for**
  - Eimeria ssp. oocysts
  - Strongylid nematode eggs
  - Fasciola hepatica eggs
  - Lungworm larvae
- **Samples** were taken on six farms three times a year
- **Cattle** were usually Holstein Friesian (and some Short Horns)

Statistical analyses

- Binomial distribution with either „event“ or „no event“ if a sample contains eggs of the respective species or not
- Analyses of the data was done with the procedure GENMOD of SAS-Statistic Software
- The LS-Means of the linear predictor were transformed to the normal scale
- =>LS-Means of PREVALENCE

Statistical analyses

Dependent Variable:

- Occurence of the respective event

Fixed effects:

- Farm (6 values)
- Status of the wetted area (3 values)
- First or second+ grazing period (2 values)
- Test day (9 values)

(Test day includes all climatic aspects of year and season)

Results

- Fasciola hepatica eggs (3/692, 0.43 %) and lungworm larvae (11/692, 1.59 %) only very rarely => not included in the study

Raw-Data

- Prevalence for nematodes eggs 42.2 % (292/692)
- Prevalence for Eimeris ssp. oocysts 29.48 % (204/692)

Results

Transformed estimated LS-Means and 95 % confidence intervals for prevalence of nematodes and Eimeria ssp. for the area status (different letters show significant differences, p<0,05)

	Green		Yellow		Red	
Nema-todes	0.19[a]		0.55[b]		0.37[b]	
95 % CI	0.36	0.08	0.68	0.42	0.51	0.24
Eimeria ssp.	0.07[a]		0.34[b]		0.23[ab]	
95 % CI	0.25	0.01	0.51	0.20	0.40	0.11

Results

Transformed estimated LS-Means and 95 % confidence intervals for prevalence of nematodes and Eimeria ssp. for the grazing periods (different letters show significant differences, p<0,05)

	First Grazing Period		Second Grazing Period	
Nematodes	0.36^{a}		0.35^{a}	
95 % CI	0.46	0.27	0.42	0.27
Eimeria ssp.	0.29^{a}		0.12^{b}	
95 % CI	0.41	0.19	0.18	0.07

Conclusions

- Prevalence of Fasciola hepatica eggs and lungworm larvae is very low
- Result of historic anthelmintic treatment and draining (Reduction of prevalence from 80 % in 1969 to 0.005 % in 1992)
- In the Future the risk will increase again

- Eimeria ssp. occurs more often during first grazing period => higher immunity in older cattle

Conclusions

- Up to now re-wetting has not yet provoked an increase in endoparasites
- Low historic prevalences may influence the results (fasciola hepatica)
- The stocking rates in this study were low, which influences the prevalences in general

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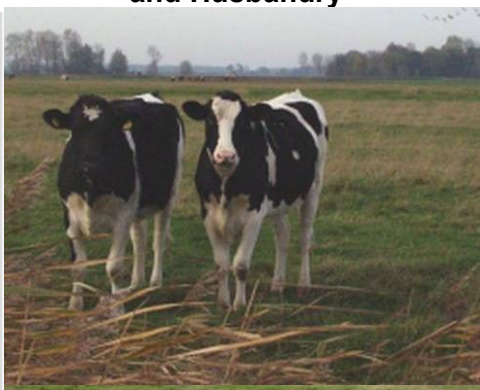

Thanks for your interest