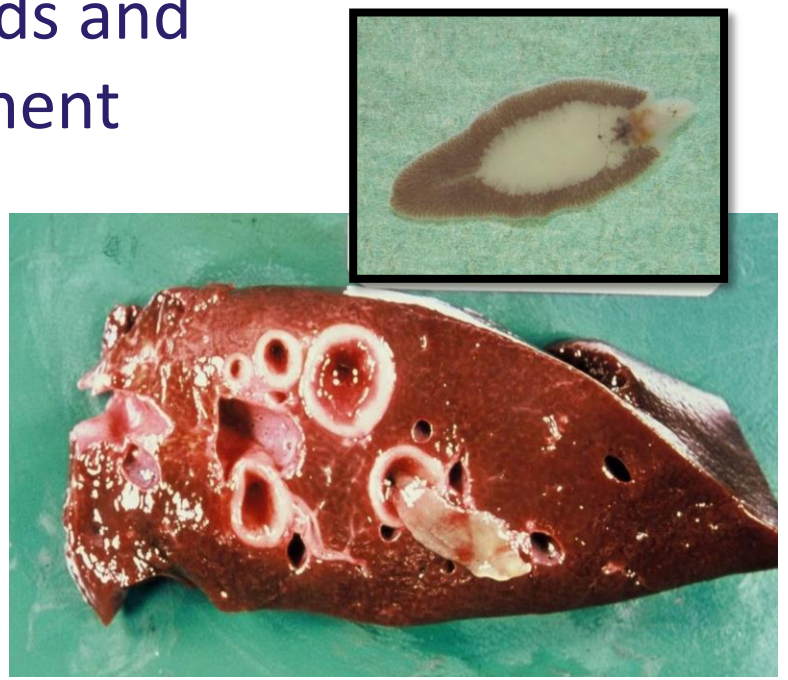
Farm specific transmission patterns of *Fasciola hepatica* in Danish dairy cattle based on different diagnostic methods and monitoring of grazing managment



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When?
New

Fasciolosis as a herd health problem is suspected if:

- diagnosed in a single animal
- condemned livers in culled animals
- clinical symptoms such as
  - poor body condition
  - diarrhoea
  - metabolic disorders (especially ketosis)

Bulk milk serology (ELISA; eg. Pourquier® ELISA)

Sampling of animal groups: At least 5 animals / group

Treat before turning onto pasture

Fasciolosis unlikely

Dairy cows[2]

- Don't sample animals in 1st lactation
- 2nd lactation: Fecal sample[3]
- 3rd lactation and older: Milk, serum or fecal sample[2]

Treatment of all dairy cows in winter, additionally treatment of dry cows in summer

Feeding of fresh grass?

Search pastures for habitats

Yes

No

Search grassland for habitats

Fasciolosis as a herd health problem unlikely

Feed herbage as barn dried hay or as silage

Sn

Sn

Snail

Pasture rotation system described by Boray (1971)

- Spring and autumn: Animals on pastures without snail habitats
- June and July: Move to pastures with snail habitats
- Treat all cows with a flukicide until moving on pastures with snail habitats the following year

Olsen et al. (2015
Knubben-Schweiz

Fasciolosis – longitudinal study

Up-to-date knowledge and experience from Danish dairy farms is lacking

→ Longitudinal study of 4 dairy farms

Aims:

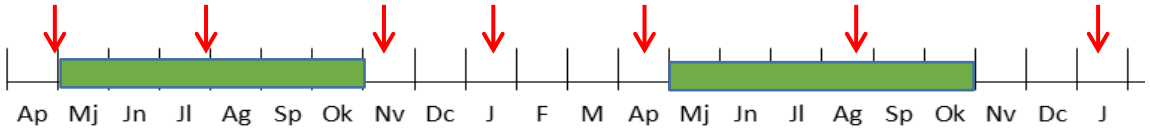
To describe infection dynamics on the 4 farm in terms of age groups (grazing history) and seasons

To compare seasonal changes in sensitivity and specificity of the different diagnostic methods

Fasciolosis – Materials and Methods

- 4 dairy farms – 2 organic and 2 conventi
  - Grazing animals
  - Milk control
  - Known high liver condemnation
- 7 visits during 2015-2017

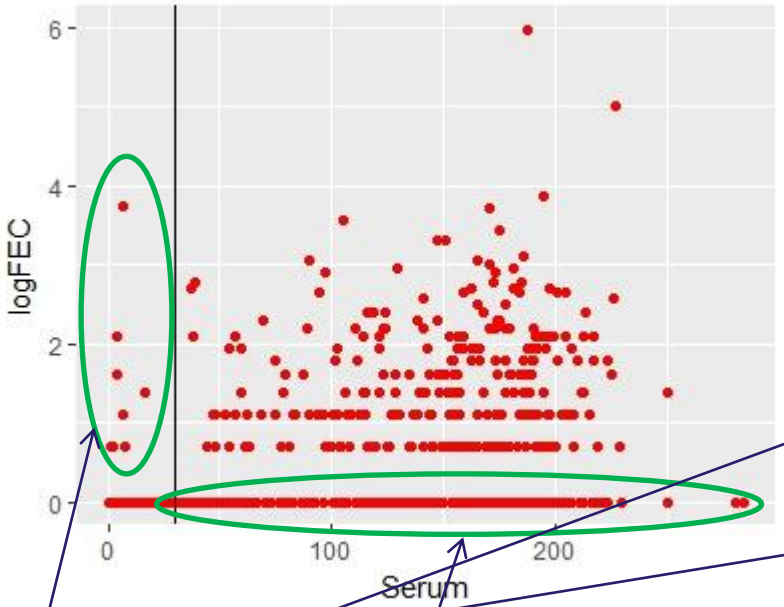
Farm	Prev. at slaughter (2013)	BTM ELISA value (2014)
O1	33.3%	221.4
O2	27.7%	206.9
C1	30.4%	179.3
C2	16.1%	181.2

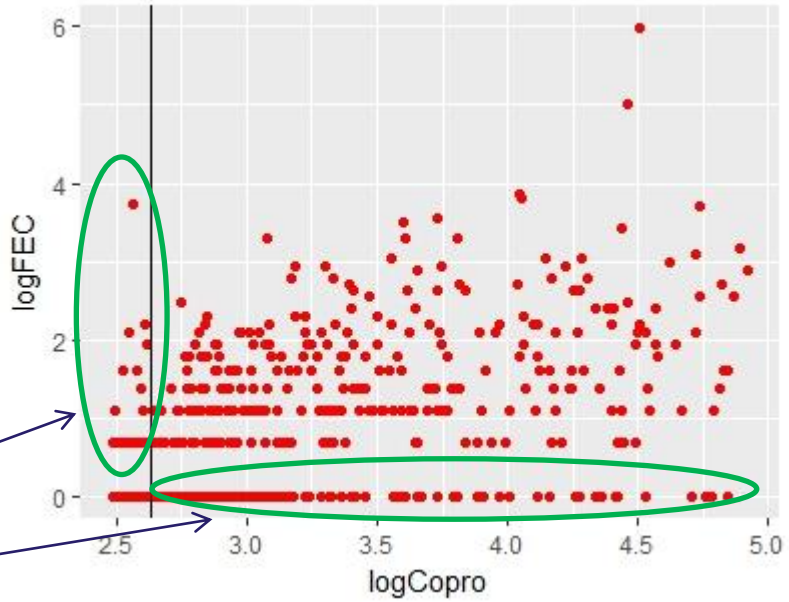


- Blood and feces from:
  - 11 X calves (never grazed)
  - 11 X heifers (grazed in 2014)
  - 11 X primiparous cows (grazed twice)
  - 11 X multiparous cows(grazed >twice)

Diagnostic methods
1. Monthly BTM ELISA
2. FEC by sedimentation
3. Serum ELISA (IDEXX)
4. Coproantigen ELISA (BioX)

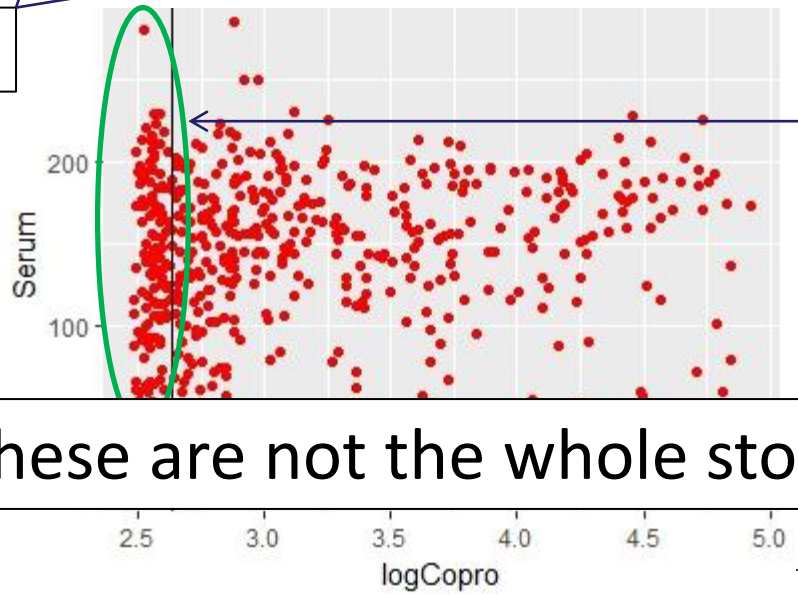
Results – Diagnostic methods





FEC: Low Se

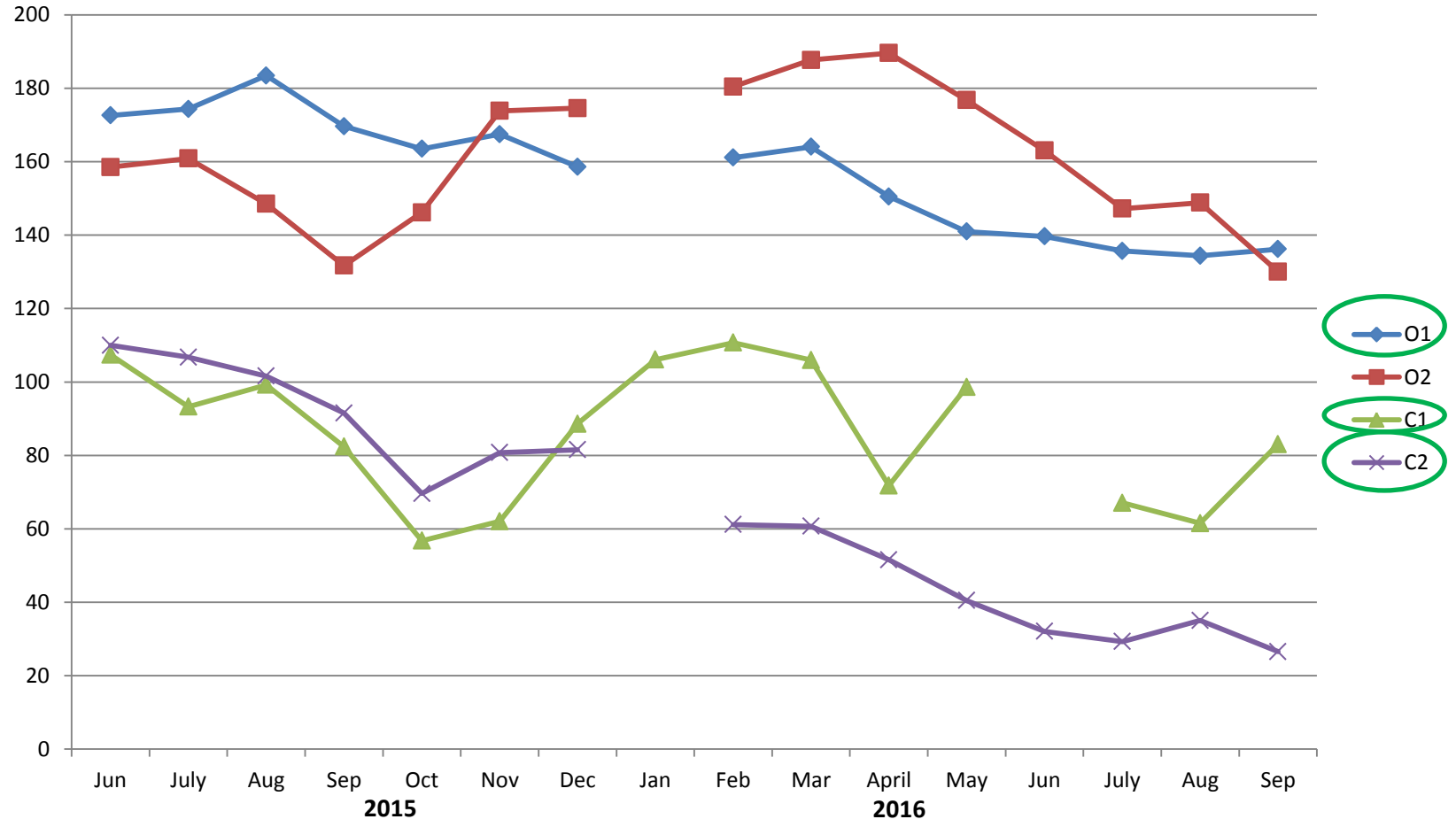
FEC: false positives, retained eggs in gall bladder



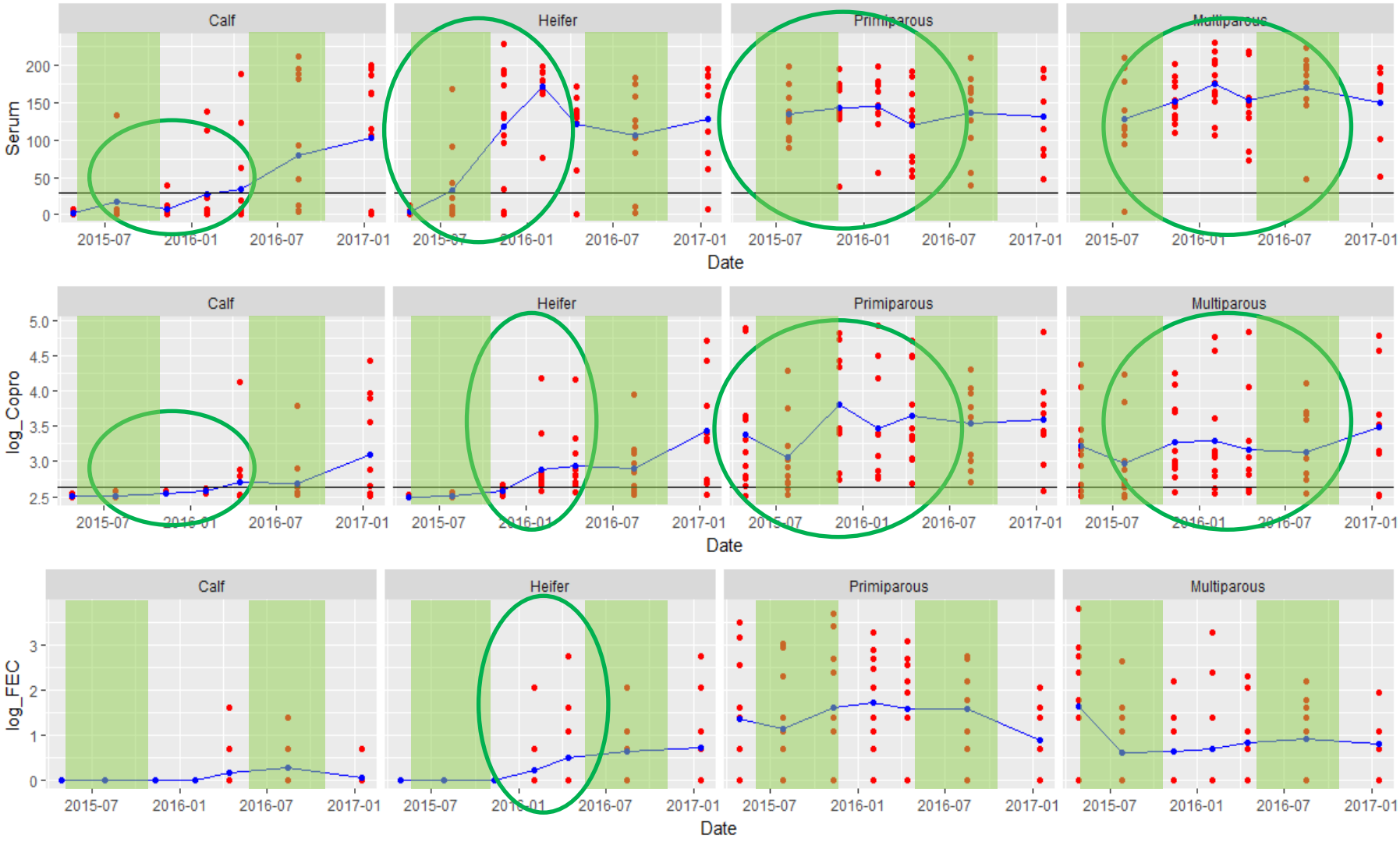
Antibodies lasting after worm expulsion

But these are not the whole story!!!

Monthly bulk tank milk



O1 Heifers at risk + re-infection as cows



C1 Heifers at risk + no re-infection as cows

C2 Control by grazing management and treatment (triclabendazole at housing for heifers)

Cows are stabled

Conclusions & Perspectives

Conclusions

- Diagnostic methods
    - Serology detects exposure early after infection (summer-autumn), but prolonged
    - Coproantigen become positive later (autumn-winter) and maybe useful for older animals
    - Lots of FEC negatives
- Infection dynamics vary A LOT between farms
- Consider age groups (grazing history is important to identify risk pasture)

Perspectives

- Control (e.g. avoiding wet areas, avoid co-grazing of dry cows and heifers, treatment of heifers +/- dry cows)

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PAP group

Thank you for listning
Questions and comments???