

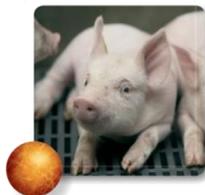
Manure management

Survival of *Coxiella burnetii* in manure

International Q fever symposium

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Biosecurity measures Q fever

- Animal movement restrictions
- Breeding ban
- Combat of vermin
- Rendering of placenta
- Visitors, especially YOPIs



Biosecurity measures

Excretion of *C. burnetii*

- non-infected goat: no excretion
- infected goat:
 - Non-pregnant
 - Pregnant



Biosecurity measures

Excretion of *C. burnetii*

- non-infected goat: no excretion
- infected goat:
 - Non-pregnant:
 - vaginal mucus?
 - faeces?
 - milk: possibly
 - Pregnant



Biosecurity measures

Excretion of *C. burnetii*

- non-infected goat: no excretion
- **infected goat:**
 - Non-pregnant:
 - vaginal mucus?
 - faeces?
 - milk: possibly
 - **Pregnant**
 - during abortion or normal delivery
 - milk: probably for a long time; no risk factor
 - vaginal mucus?
 - faeces?

Biosecurity measures

Excretion of *C. burnetii*

- non-infected goat: no excretion
- infected goat:
 - Non-pregnant:
 - vaginal mucus?
 - faeces?
 - milk: possibly
 - Pregnant
 - during abortion or normal delivery:
 - large numbers of *C. burnetii*: aerosol / dust
 - large numbers of *C. burnetii*: in the deep litter stable
 - milk: probably for a long time; no risk factor
 - vaginal mucus?
 - faeces?

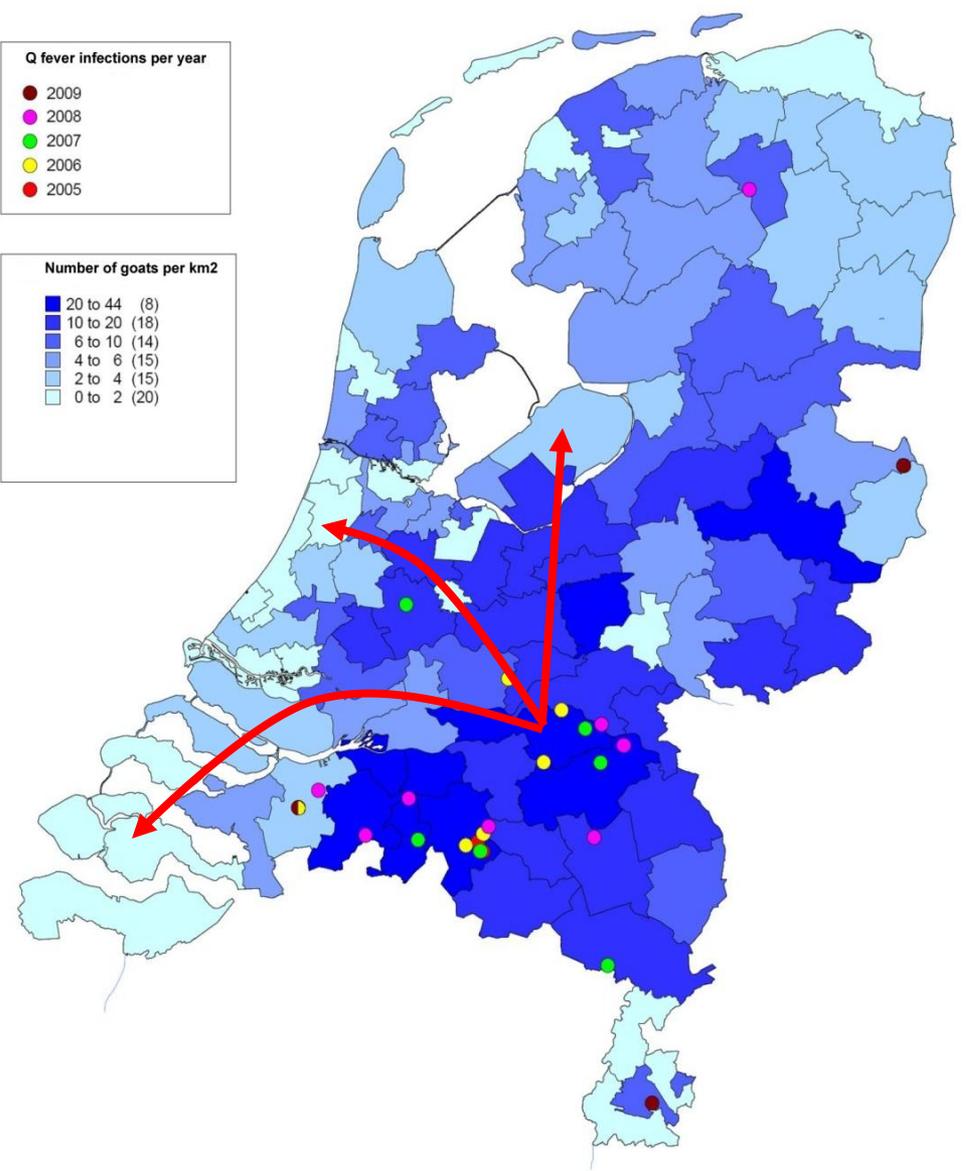




Biosecurity measures

Excretion of *C. burnetii*:

- => aerosol in and around farms important
- => question mark about manure



Does *C. burnetii* survive in manure? and if yes, is there any evidence for a link with human cases?

Does *C. burnetii* survive in manure?







▲▲ Martens

PCV 1100

PCV 1100

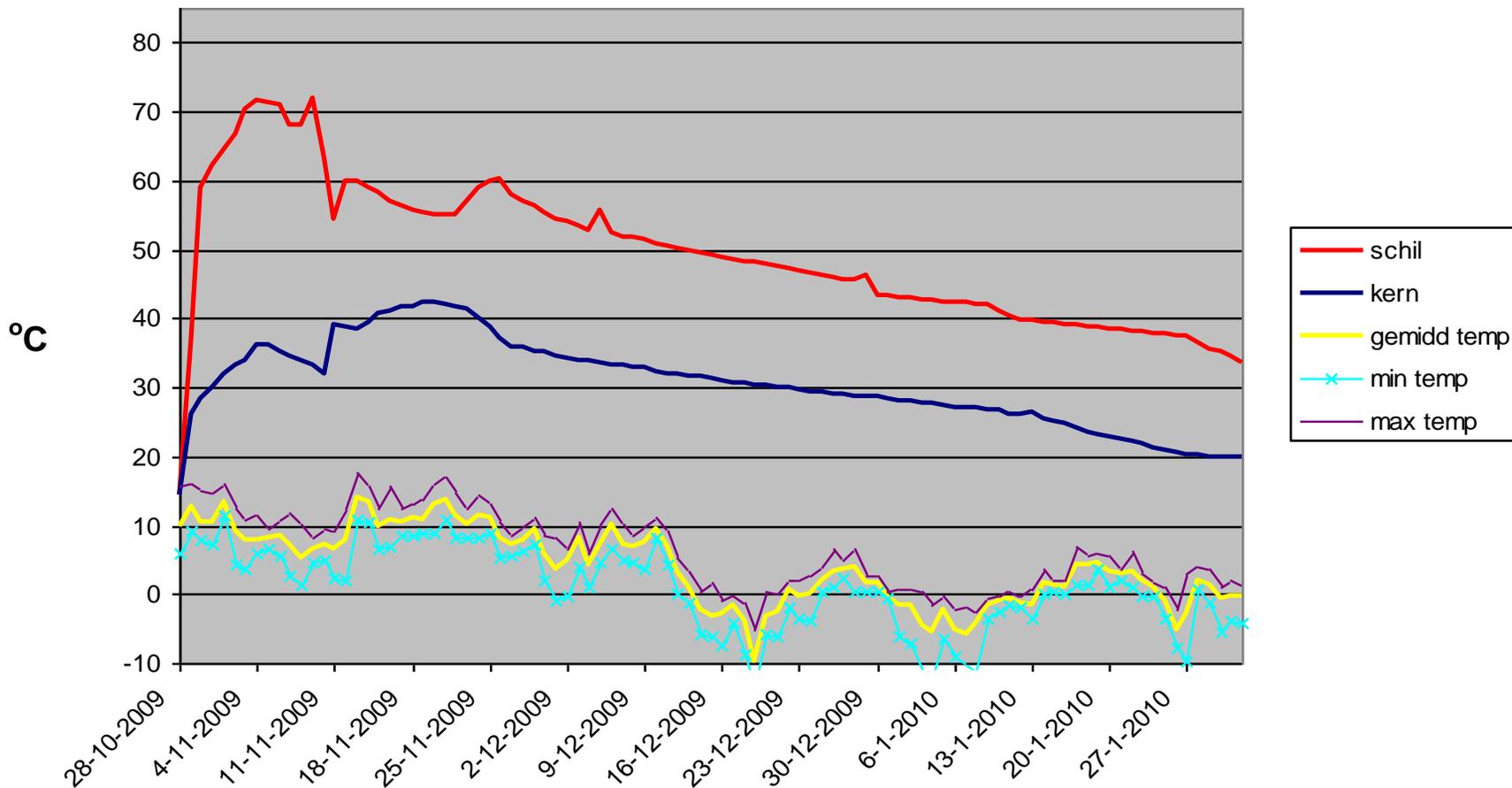
PCV 1100

PCV 1100

PCV 1100



Temperatuur mest bedrijf V



Inactivation time according to:

Enright et al., 1957. Am. J. Public Health 1957;47:695-700; Cerf O, Codron R, 2006. Epidemiol. Infect. 134: 946-951

days	outer layer	core	outer layer inactivation time (days)
1	14,3	14,3	1469789913
2	36,7	26,1	13410,96
3	59,1	28,2	0,12
4	62,1	30,1	0,03
5	64,5	31,9	0,01
6	66,8	33,4	0
7	70,3	33,8	0
8	71,6	36,3	0
9	71,3	36,1	0
10	70,8	35,4	0
11	68	34,7	0



Survival of *C. burnetii* in manure

- Low temperature (<math><20^{\circ}\text{C}</math>) of manure in stable
- During composting rise in temperature; oxygen is important
- Within a few days: the outer layer does not contain viable *C. burnetii* any more
- PCR found positive in all manure samples
- No *C. burnetii* culture positive samples of manure found



Biosecurity measures Q fever

- Animal movement restrictions: important
- Breeding ban: sometimes important
- Combat of vermin: important
- Rendering of placenta: important
- Visitors, especially YOPIs: important
- Composting of manure is important and not only for *C. burnetii*
- Wearing respiratory protection during work?