An intervention for VTEC O157 in cattle? – The story so far…

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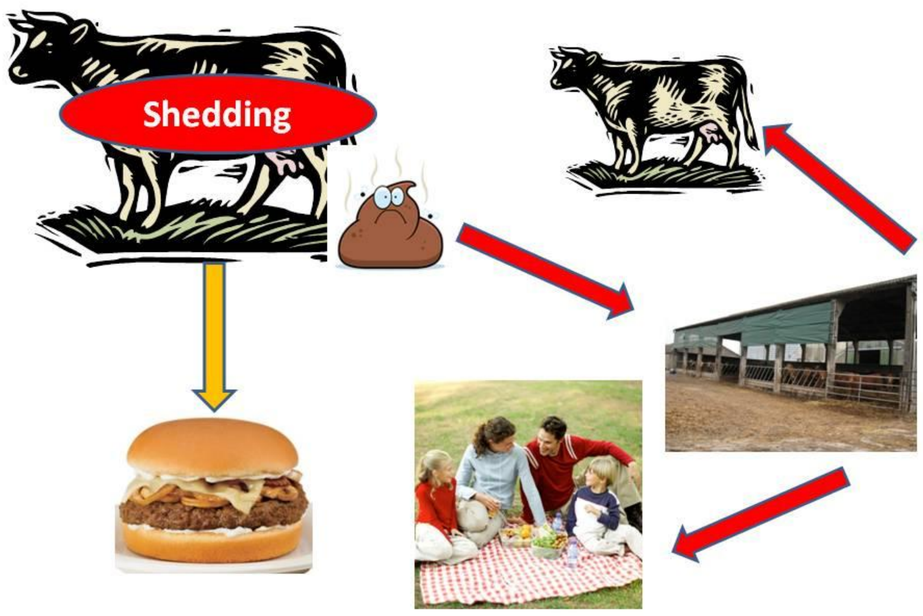
The problem

Verocytotoxigenic *E. coli* (VTEC) O157 – a bacterial zoonosis.

In humans it causes a range of clinical outcomes:

Asymptomatic carriage
Abdominal cramps
Diarrhoea
Haemolytic uraemic syndrome
Death

Cattle are one of the main reservoirs of the bacteria



Routes of transmission and potential sources for human infection

Experimentally - rectal lavage with a disinfectant solution (cholorhexidine) reduces shedding and environmental contamination.

Can it work in practice – in the field?

The approach

- Recruit - finishing beef cattle units with closed groups
- Determine - VTEC status by faecal pat sampling
- Intervene - if VTEC +ve
  - Treatment group – rectal lavage with a 2% chlorhexidine solution;
  - Control group – no rectal lavage
  - Individual rectal swabs before and after lavage and for season 11/12 at least four weeks later.
  - Faecal pat samples on day of intervention; at one week post-intervention; when 2nd rectal swab taken, and subsequently monthly until slaughter.

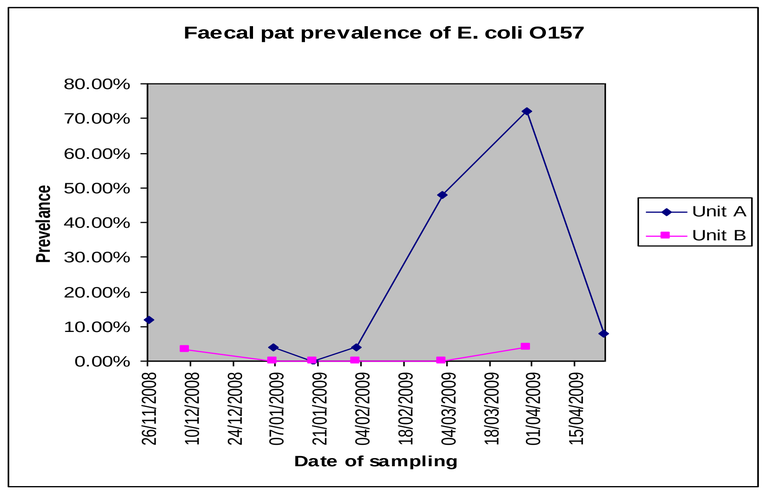
Intervention on one of the farms during 2009 season

Disinfectant solution and equipment used for the rectal lavage

Interim Results

Pilot season results:

- Two farms
- One season



Interim analyses after two complete seasons (09/10 & 10/11):

- Generalised Linear Mixed Model
- Pat sample data - the observed estimated mean probability of shedding is lower at the second monitoring, with this effect extending to the third monitoring time point (p=0.076)

So far:

- 12 farms
- 796 animals

- Pat sampling provides information about the levels of bacteria shed and persisting in the faeces.
- More data is required.

Next steps

- Complete current season of field work (11/12)
- Recruit for final season of field work (12/13) – minimum of 4 farms
- Statistical analysis

Potential applications

Apply at farm level
Farms with confirmed VTEC present and contact with vulnerable human populations
e.g. Petting farms

Apply at farm level
Farms with confirmed VTEC present prior to animals going to slaughter for human consumption.

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