**Serological diversity of *Dichelobacter nodosus***

Naomi Prosser¹, Dr Kevin Purdy¹, Dr Liz Genever², Prof Laura Green¹

¹University of Warwick, ²AHDB Beef & Lamb

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**Dichelobacter nodosus causes footrot**

- Two clinical presentations: interdigital dermatitis (ID) and severe footrot (SFR) (Figure 1)
- Most prevalent cause of lameness in sheep in England:
  - affects over 90% of flocks
  - geometric mean prevalence of lesions 3.1% and 4.5% per flock for SFR and ID respectively.

![Figure 1. Interdigital dermatitis (left) and severe footrot (right)](image)

**Serogroups and vaccination**

- Ten serogroups (A–I and M) of *D. nodosus*
- The commercial footrot vaccine (*Footvax™*) contains nine (A–I)
- Not all serogroups are present in each flock
- Vaccination gives partial protection for 4–6 months and reduces the period prevalence of lameness by 20% (Winter et al. 2015)
- Mono/bi-valent *D. nodosus* vaccines induce a higher and longer lasting immune response – but only protects against homologous serogroups.

**Study objectives**

Carry out a survey of *D. nodosus* serogroups in sheep flocks in England, identifying:

- Serogroup diversity and distribution by flock, region and management
- Impact of vaccination on serogroup diversity
- Whether a vaccine with fewer serogroups could be more effective at controlling footrot in England.

**Sample collection**

In total, 164 farmers provided:

- Responses to a questionnaire, detailing lameness and management practices in their flock in 2015
- Up to 8 interdigital skin swabs from the feet of sheep with the disease state recorded (1,288 swabs in total).

**Prevalence of footrot**

- Approximately 94% of farmers reported footrot present in their flock in 2015 (ID: >93%, SFR: >91%)
- Approximately 36% (60) of farmers reported that they vaccinated their sheep against footrot in 2015.

**Future work**

**Laboratory**

- After extracting DNA from the swabs, *D. nodosus* load in each sample detected with qPCR
- Samples positive for *D. nodosus* will be tested with single serogroup PCR against A–I. (There is no primer specific for M).

**Statistical analysis**

- A quasipoisson over dispersed model (R) is investigating the effect of management on lameness prevalence
- Other models will:
  - investigate relationships between *D. nodosus* serogroups and ID and SFR
  - predict the efficacy of vaccines targeting different serogroups on footrot in England.

**References**

Winter et al., 2015 Prev Vet Med, 122, 121-128