Utilising multi-species swards to manage parasites and promote livestock health and welfare

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Research aim

To assess the effect of different grazing systems (multi-species swards versus perennial ryegrass with white clover) on faecal egg counts (FEC) of ewes from mating to mid-gestation.

Background

- Gastrointestinal nematodes (GIN) are an important cause of disease in grazing livestock.
- Anthelmintic resistance is currently on the rise in the UK as seen in **Figure 1**.
- Multi-species swards (MSS) contain herbs such as chicory and plantain which contain plant secondary metabolites (PSM).
- PSM have been shown to have anthelmintic properties, and/or improve the protein utilisation of the host animal (Grace et al., 2019).

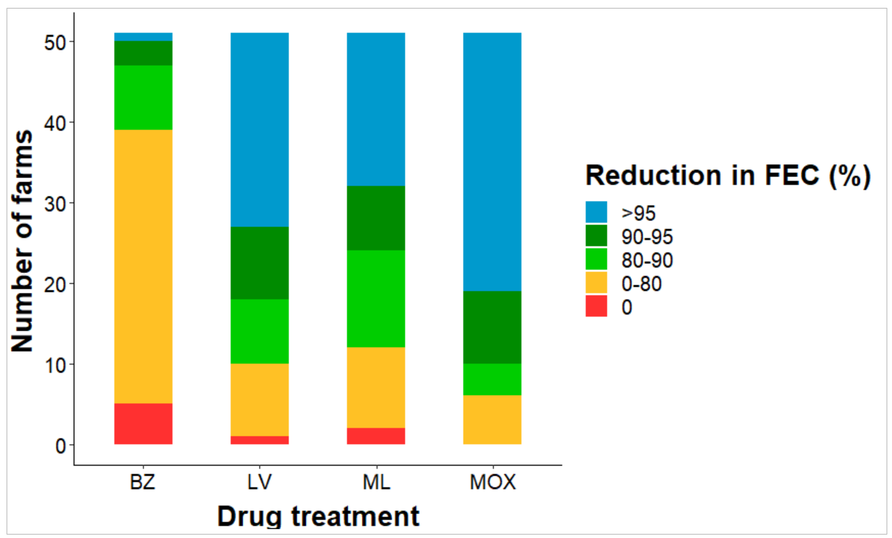
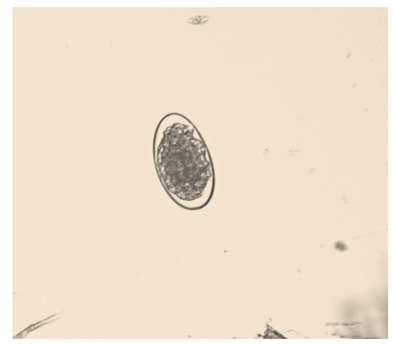


Fig. 1: Faecal egg count reduction following exposure to 4 different drug classes on Welsh sheep farms (n= 51).



Methods

- A grazing trial was carried out at recently reseeded grazing platforms at AFBI Loughgall (NI) from November to January with 2 groups of mule ewes grazing MSS (N= 39) or perennial ryegrass (PRG) and white clover (WC; N= 39).
- Individual sheep faecal samples were analysed for GIN faecal egg counts using the mini-FLOTAC method.
- Herbage samples for botanical composition analysis were taken using 4 pre-grazing quadrats (0.25 m^2, above 4 cm) using hand shears at random locations in each paddock before grazing.

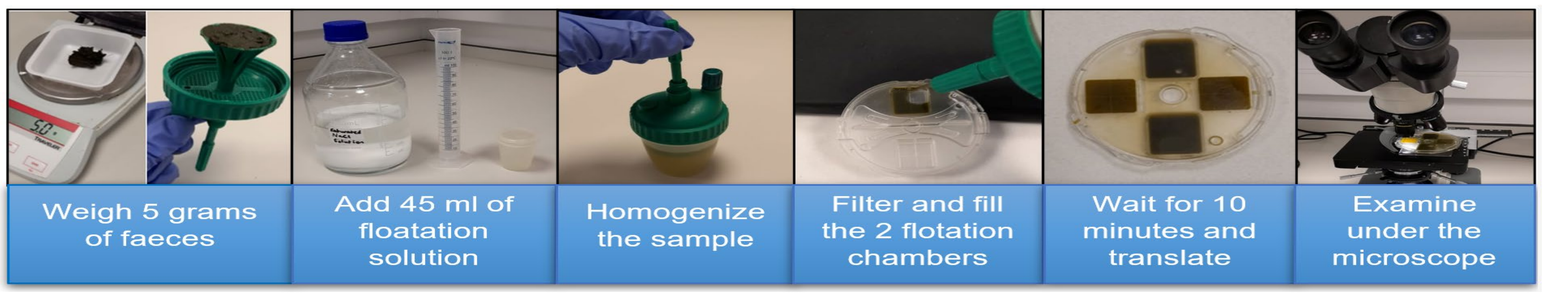


Fig. 2: The mini-FLOTAC method as described in Cringoli *et al.*, 2017

Results

Sward type	Species	Dry matter proportion (%)
MSS	Chicory	27.46 ± 2.17
	Ribwort plantain	17.13 ± 1.36
	PRG	45.20 ± 3.24
	White clover	1.06 ± 0.17
	Red clover	1.05 ± 0.14
	Other grass	4.24 ± 0.69
	Unsown	3.86 ± 0.82
PRG-WC	PRG	79.35 ± 5.10
	White clover	2.24 ± 0.30
	Other grass	4.26 ± 0.66
	Unsown	14.14 ± 2.66

Fig. 3: Botanical composition (in dry matter) of the MSS and PRG-WC paddocks at AFBI Loughgall. Values are mean ± SD.

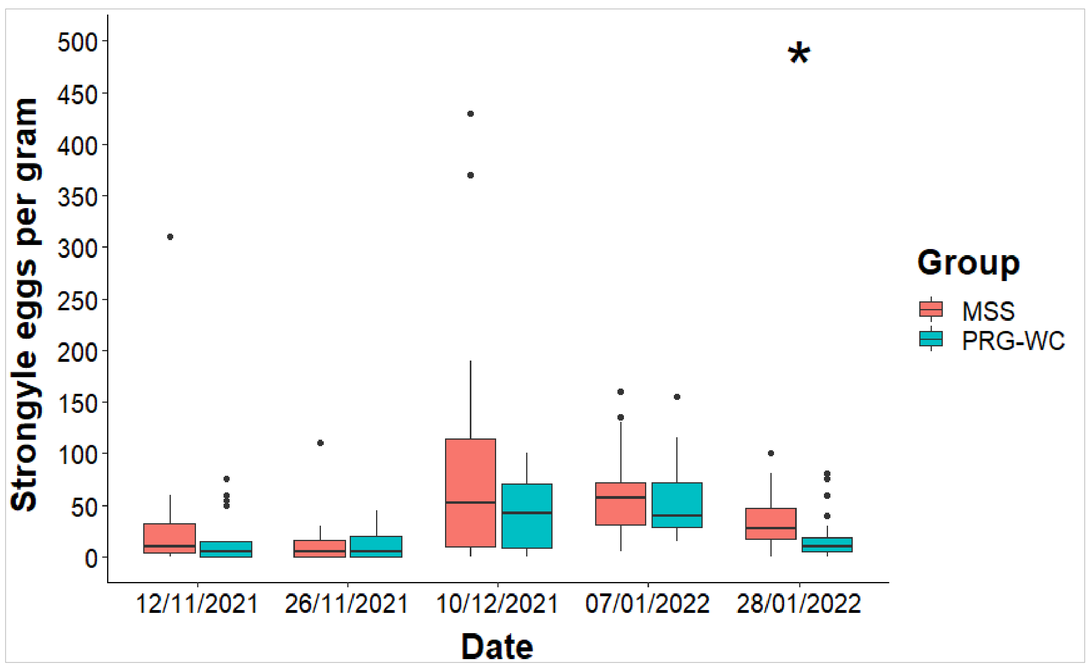
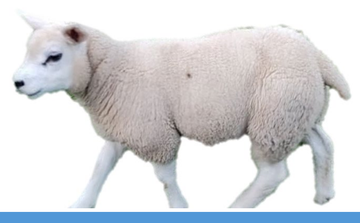


Fig. 4: Faecal egg counts of 2 groups of sheep: Sheep grazing MSS (N= 39) versus sheep grazing perennial ryegrass-white clover only swards (N = 39). Significance codes: < 0.001= * , < 0.01= ** , < 0.05= ***

Key message

- There is a need to combine strategies to slow the onset of anthelmintic resistance as MSS alone may not be practical or effective enough by itself.
  – it has been reported that a sward would need ≥ 70% of chicory dry matter in the diet to be effective at reducing FEC (Peña-Espinoza *et al.,* 2018).
- Grazing MSS could be more effectively used when combined with TST and planned grazing to reduce risks to animal health and help slow the development of anthelmintic resistance e.g. By letting animals with high FEC graze a field of MSS with ~70% of chicory dry matter.



References

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