

Investigation of Endoparasite Levels and Anthelmintic Resistance in Grazing Sheep Flocks on Prince Edward Island

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INTRODUCTION

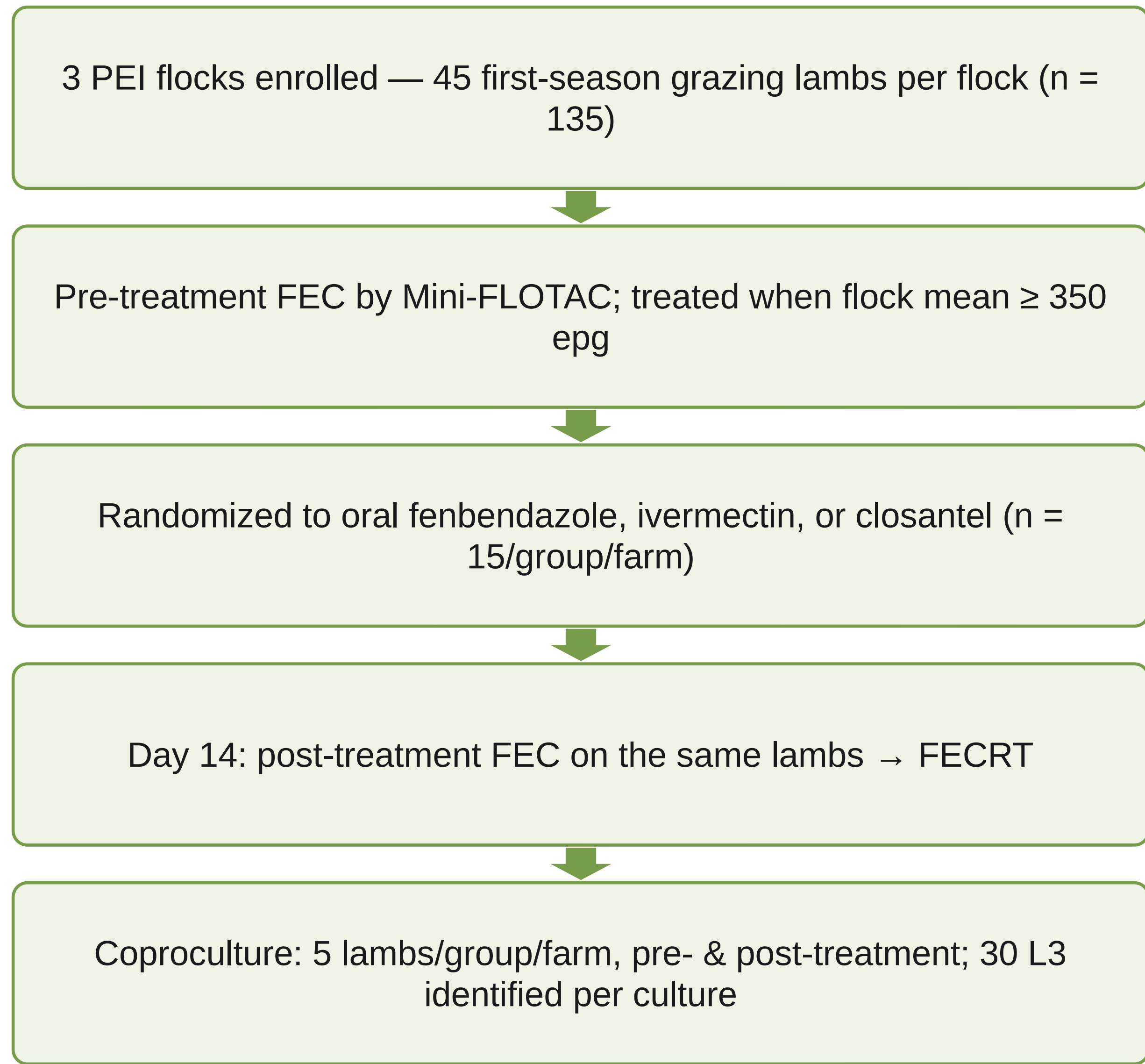
Internal parasites are one of the most important threats to grazing lambs, causing diarrhea, anemia, poor weight gain, and death, and reducing flock profitability. Anthelmintic treatment has been the mainstay of control for decades, but resistance is now documented across Canada and the United States (1–5) — in Ontario, resistance was demonstrated on over 95% of tested farms (1). Despite this, no formal investigation of anthelmintic resistance has ever been conducted in Atlantic Canada. Producers and veterinarians are currently making treatment decisions without local evidence. This study provides that baseline for PEI: the parasites present, the severity of infection, and which drugs still work.

OBJECTIVES

- Determine the efficacy of fenbendazole, ivermectin, and closantel by fecal egg count reduction test (FECRT)
- Determine the predominant GIN genera and endoparasite burden in grazing PEI lambs

MATERIALS & METHODS

Fecal egg counts (FEC) were performed by Mini-FLOTAC (7) within 24 h of collection. Resistance was defined as a FEC reduction <95% with a lower 95% confidence limit <90% (8); the FECRT followed WAAVP methodology (6).



RESULTS

Table 1. Mean FEC (epg) before and 14 days after treatment and FECRT, all farms combined. n = paired lambs; 5/135 lost to follow-up (1 died, 3 with no Day-14 sample, 1 not found).

Treatment	n	Pre FEC (epg)	Post FEC (epg)	FECR % (95% CI)
Fenbendazole	45	584	367	37.2 (32.7–43.7)
Ivermectin	41	642	352	45.1 (41.6–49.9)
Closantel	44	761	349	54.1 (50.9–57.1)

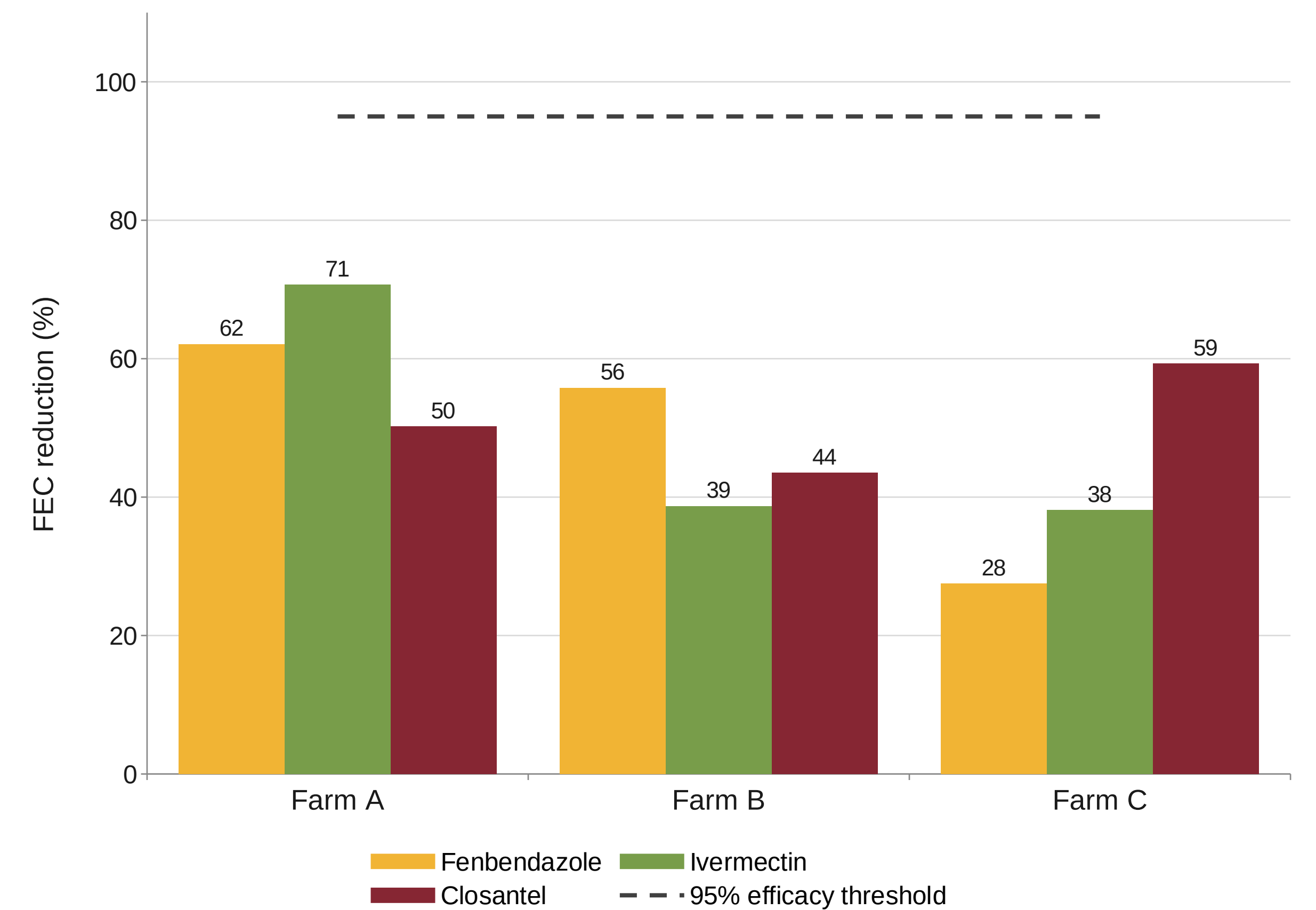


Figure 1. Mean percentage reduction in FEC 14 days after treatment (FECRT), by anthelmintic and farm. Dashed line = 95% WAAVP efficacy threshold (8). All nine farm–drug combinations fell below the threshold, indicating resistance to all three anthelmintics on every farm.

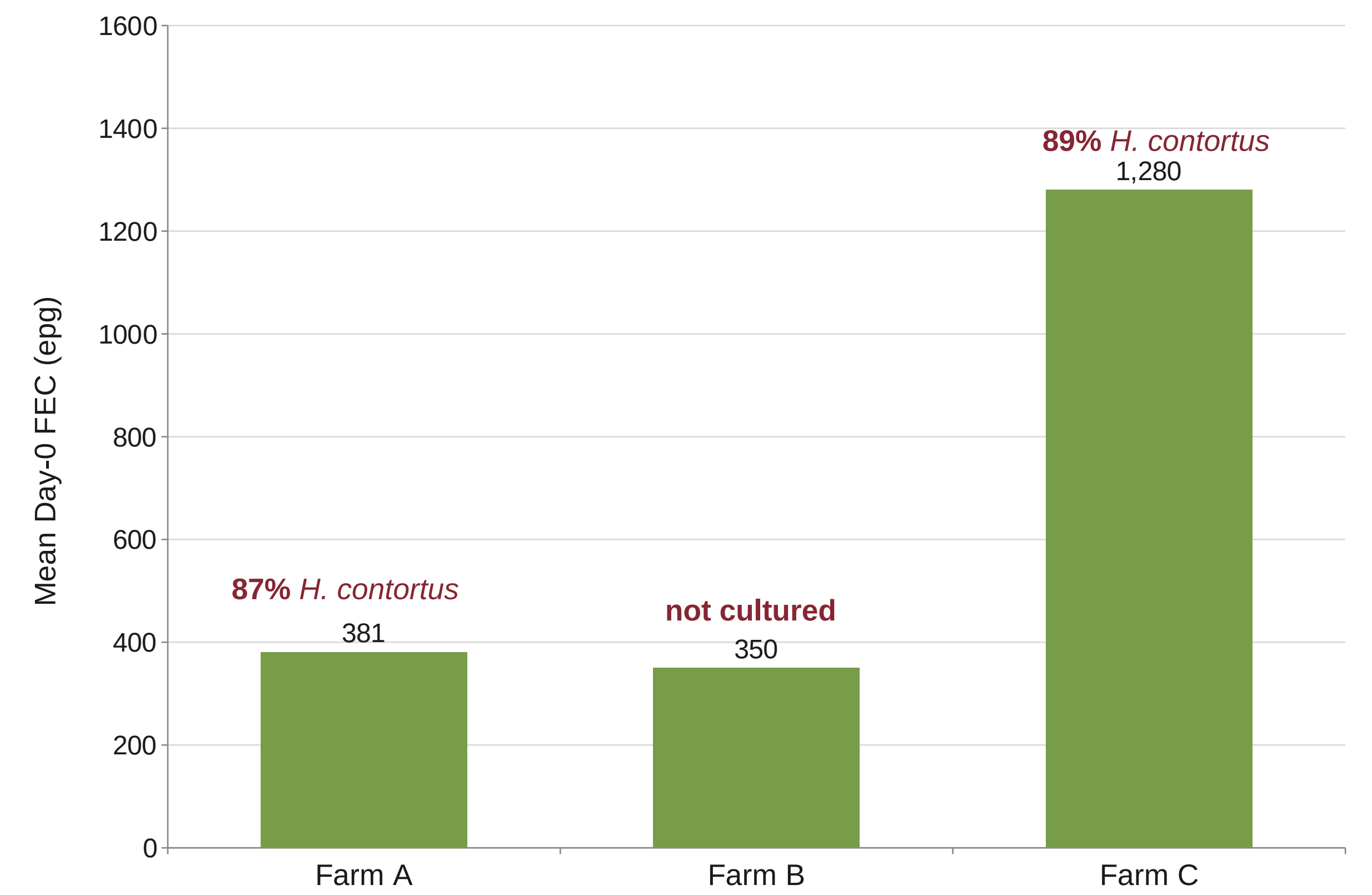


Figure 2. Mean Day-0 FEC per farm (45 lambs/farm; individual range 40–1,950 epg). Farm C carried a 3–4× heavier burden than Farms A and B. Coprocultures identified *Haemonchus contortus* as the predominant species; the percentage of L3 identified per farm is shown above each bar. Farm B could not be cultured.

CONCLUSIONS

- Resistance to all three anthelmintics was detected on all 3 farms (FECR 28–71%, all <95% with lower 95% CI <90%) — the first documentation of anthelmintic resistance in Atlantic Canadian sheep flocks
- No product retained acceptable efficacy; parasite control on these farms cannot rely on fenbendazole, ivermectin, or closantel alone
- Parasite burden varied widely between farms (mean Day-0 FEC 350–1,280 epg), supporting farm-specific monitoring rather than calendar-based whole-flock treatment
- *Haemonchus contortus* predominated in coprocultures (87% of L3 on Farm A, 89% on Farm C; Farm B not cultured), consistent with other Canadian regions (1,2)
- Findings support refugia-based targeted selective treatment, FECRT-guided drug selection, and evaluation of other drug classes with veterinary guidance; results will be shared with producers via the PEI Sheep Breeders' Association



Photo: Donnie Rosie / Unsplash

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ACKNOWLEDGEMENTS

We thank the participating producers and the PEI Sheep Breeders' Association. Funded by the PEI Department of Agriculture and Land and the Sustainable Canadian Agricultural Partnership, with student stipend support from the UPEI AVC Summer Research and Leadership Program.