

The problem

Anthelmintic resistance is a growing concern but we have limited information, as definitive testing is nuanced and expensive.

Are we able to infer treatment effectiveness from the cattle and sheep faecal egg count results of a national Irish parasite control scheme?

What was the scheme?

Veterinary farm visit for parasite advice.

Two faecal egg counts taken per farm.

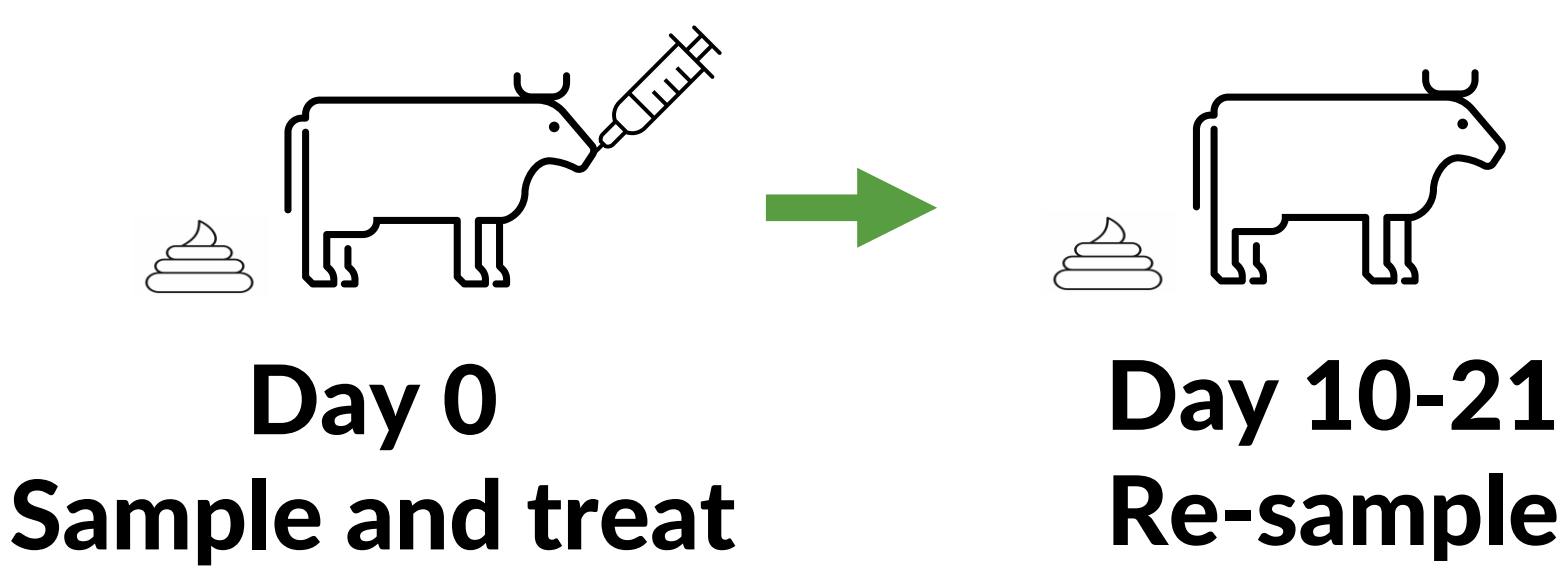
Recorded previous treatments.

Data captured through vet completed forms.

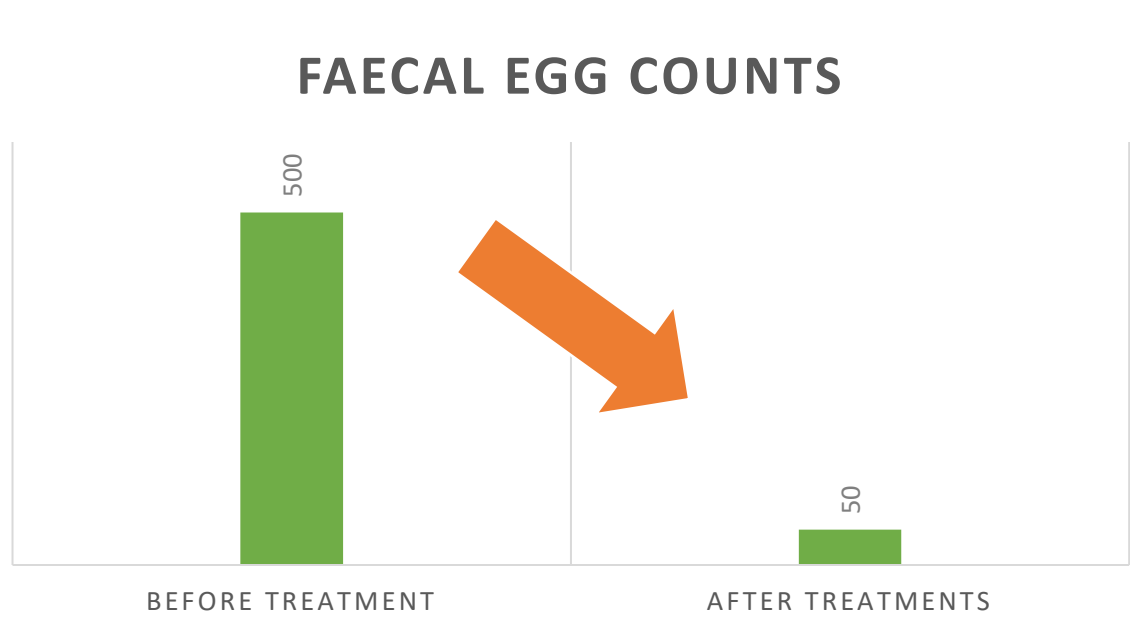
Scheme ran for 2022-2023 years.

Sampling protocol was not enforced but advised to use where feasible.

How do we measure treatment effectiveness?



The drop in egg count indicates effectiveness as a % reduction. 100% is ideal.



Were samples taken aligned with this protocol?

n=42,004 paired samples

Same species

Within 30 days of first sample

2nd sample 5-25 d after treatment

1st egg count >49epg

n=226 within criteria

Results

146 cattle farms

Egg count	Mean	Median	SD
Pre-treatment	491	250	636
Post-treatment	77	0	182

Mean reduction cattle: 74%

24% of herds <80% reduction in egg count

80 sheep farms

Egg count	Mean	Median	SD
Pre-treatment	1805	710	2523
Post-treatment	204	50	450

Mean reduction sheep: 65%

29% of flocks <80% reduction in egg count

Number of farms with <80% reduction by treatment class, implying treatment failure

Treatment	Cattle	Sheep
Benzimidazoles	20% (10/50)	42% (8/19)
Levamisoles	30% (3/10)	31% (5/16)
Avermectins	27% (22/83)	15% (4/27)
Moxidectin	0% (0/3)	33% (5/15)

Conclusions

Sheep results parallel previously undertaken robust studies.

Many factors influencing egg count results, interpretation more reliable at herd/flock level.

There are barriers to implementing anthelmintic testing protocols; they were rarely voluntarily completed.

Captured data is unreliable and error bound for this purpose.