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NI Sheep Say: SOS STAMP OUT SCAB

cafre College of Agriculture, Food & Rural Enterprise

Planning for Performance

Parasite and winter-feeding strategies for beef and sheep farmers

Welcome – Mark Scott, Head of Beef and Sheep Branch, CAFRE

Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

rural Development Programme

'The European Agricultural Fund for Rural Development: Europe investing in rural areas'.

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Eric Morgan

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EIP - Targeted Selective Treatment for roundworms in sheep and cattle

Eric Morgan & Chris McFarland

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COMBAR
combatting anthelmintic resistance in ruminants

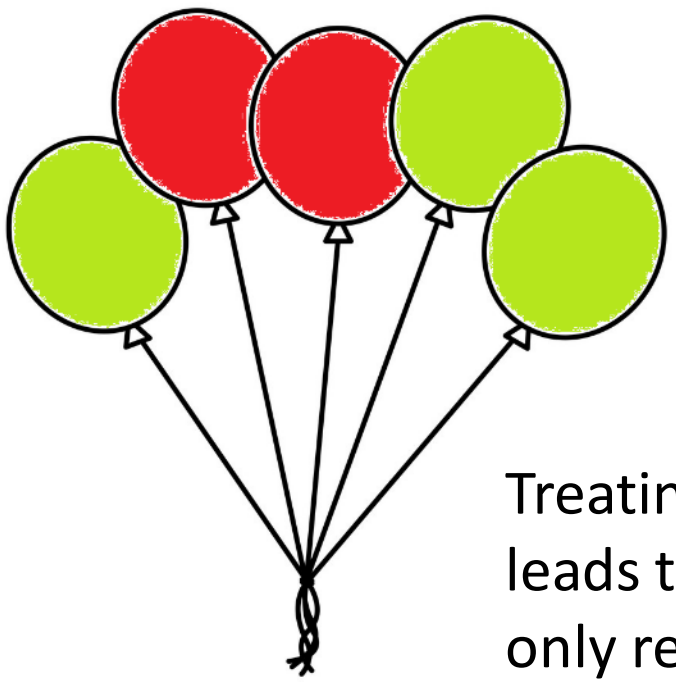
Worming – why change?

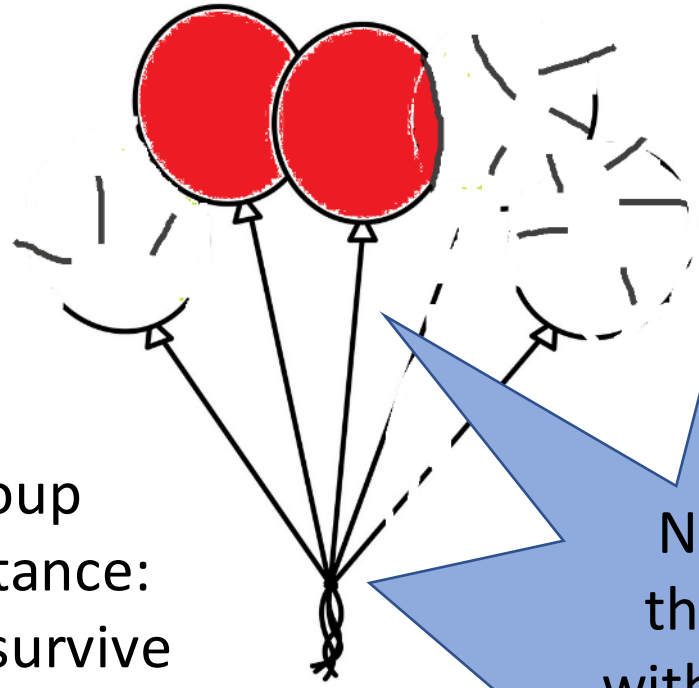
Frequent whole-group worming treatments can lead to:

1. Anthelmintic resistance → production loss
2. Lack of immunity → more worming needed
3. Ecotoxicity → environmental impacts
4. Chemical absorption → food residues

But stopping use of wormers altogether carries **huge risks**

How does wormer resistance develop?

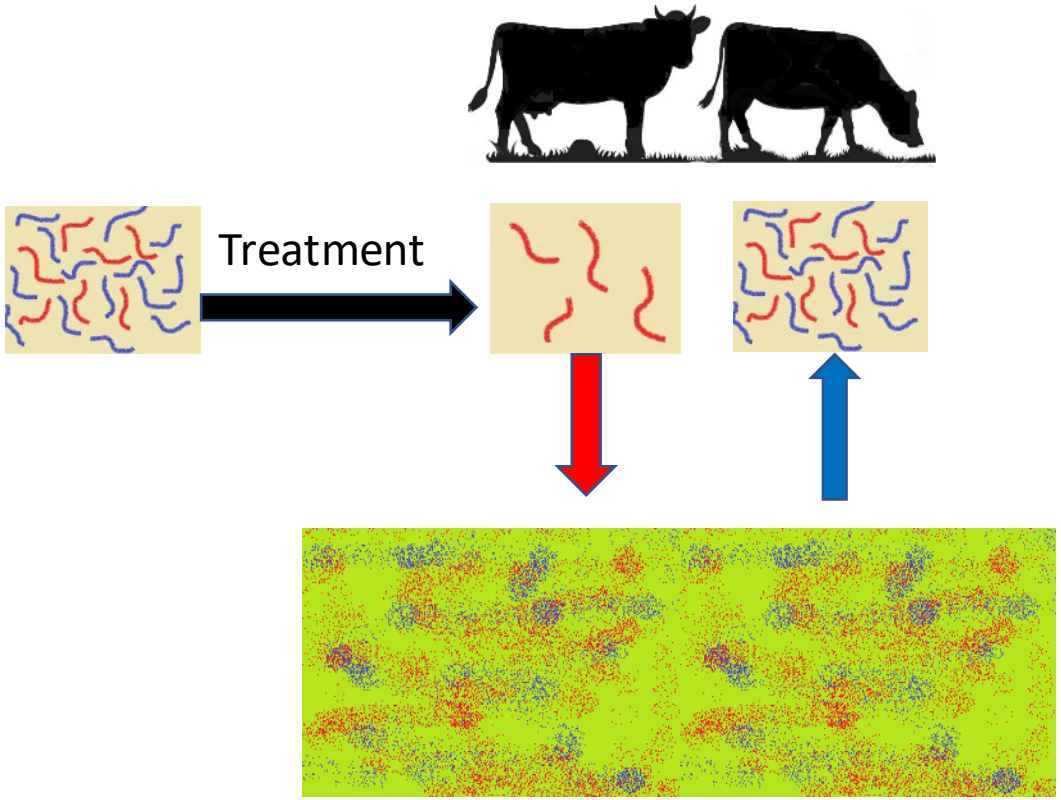




Treating the whole group leads to wormer resistance: only resistant worms survive

Need to mix these back in with susceptible worms = *refugia*

How can we re-mix susceptible worms?



1. Treatment removes susceptible worms but leaves resistant worms

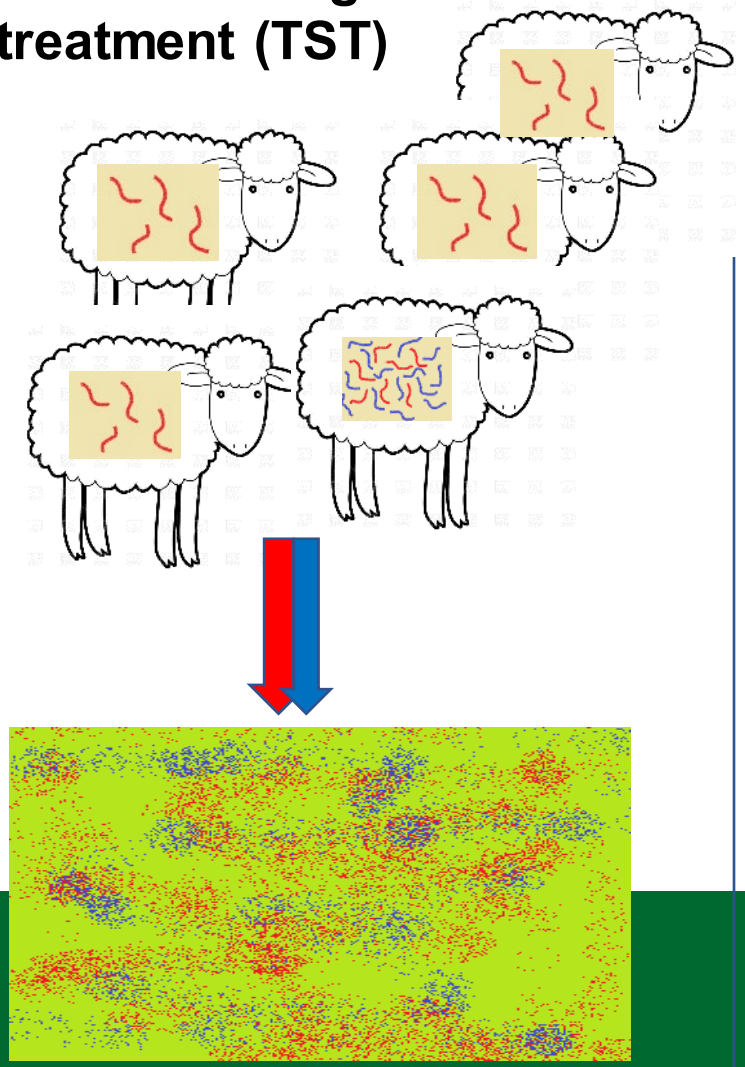
2. Resistant worms produce eggs and contaminate pastures

3. **<u>If</u>** those pastures have received eggs also from susceptible worms, animals will be infected with a mixture of larvae.

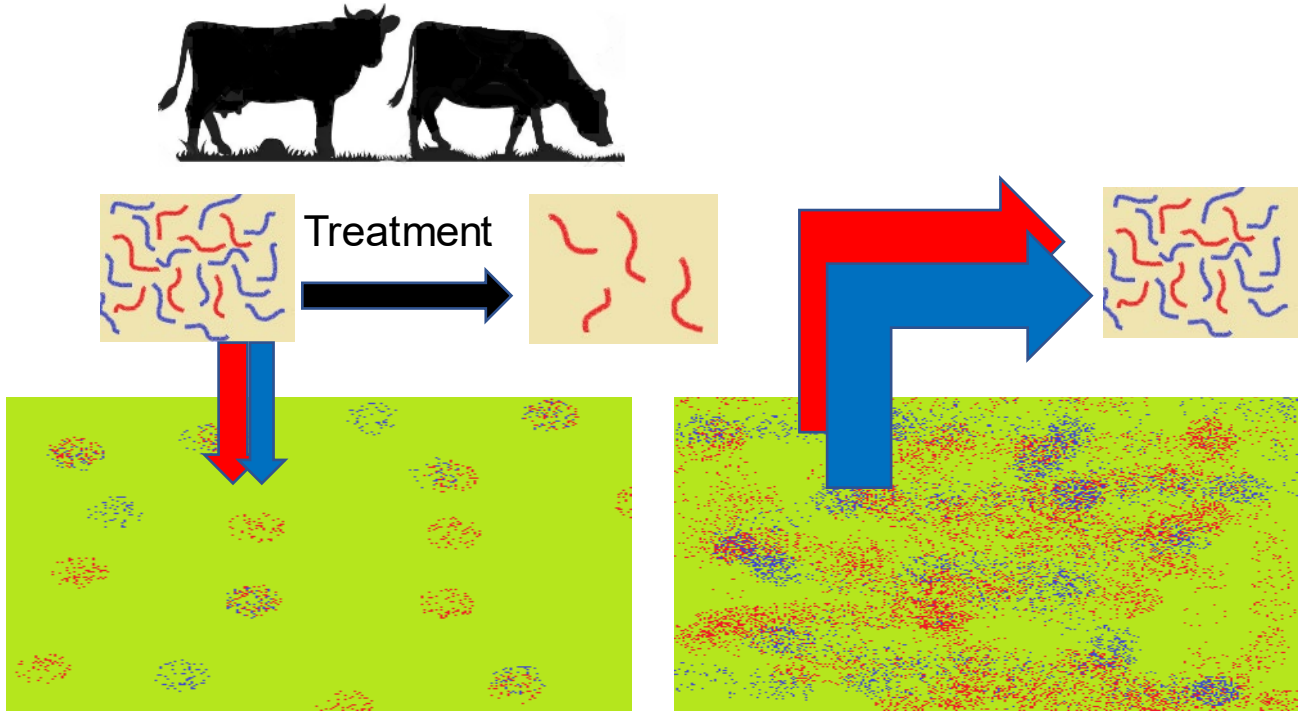
This re-mixing will maintain susceptibility.

Two ways to generate *refugia*

1. Leave some individuals untreated: **Targeted Selective treatment (TST)**

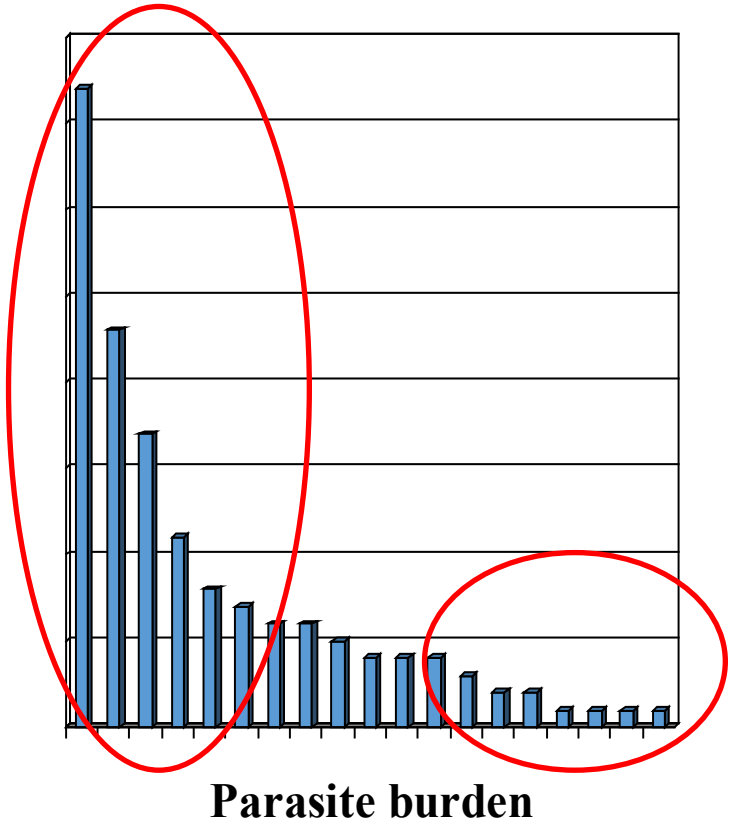


2. Delay treatment until after pasture *refugia* are established: **Targeted Treatment (TT)**



The trick is to do so without risking production loss

Targeted selective treatment (TST) the 80:20 rule

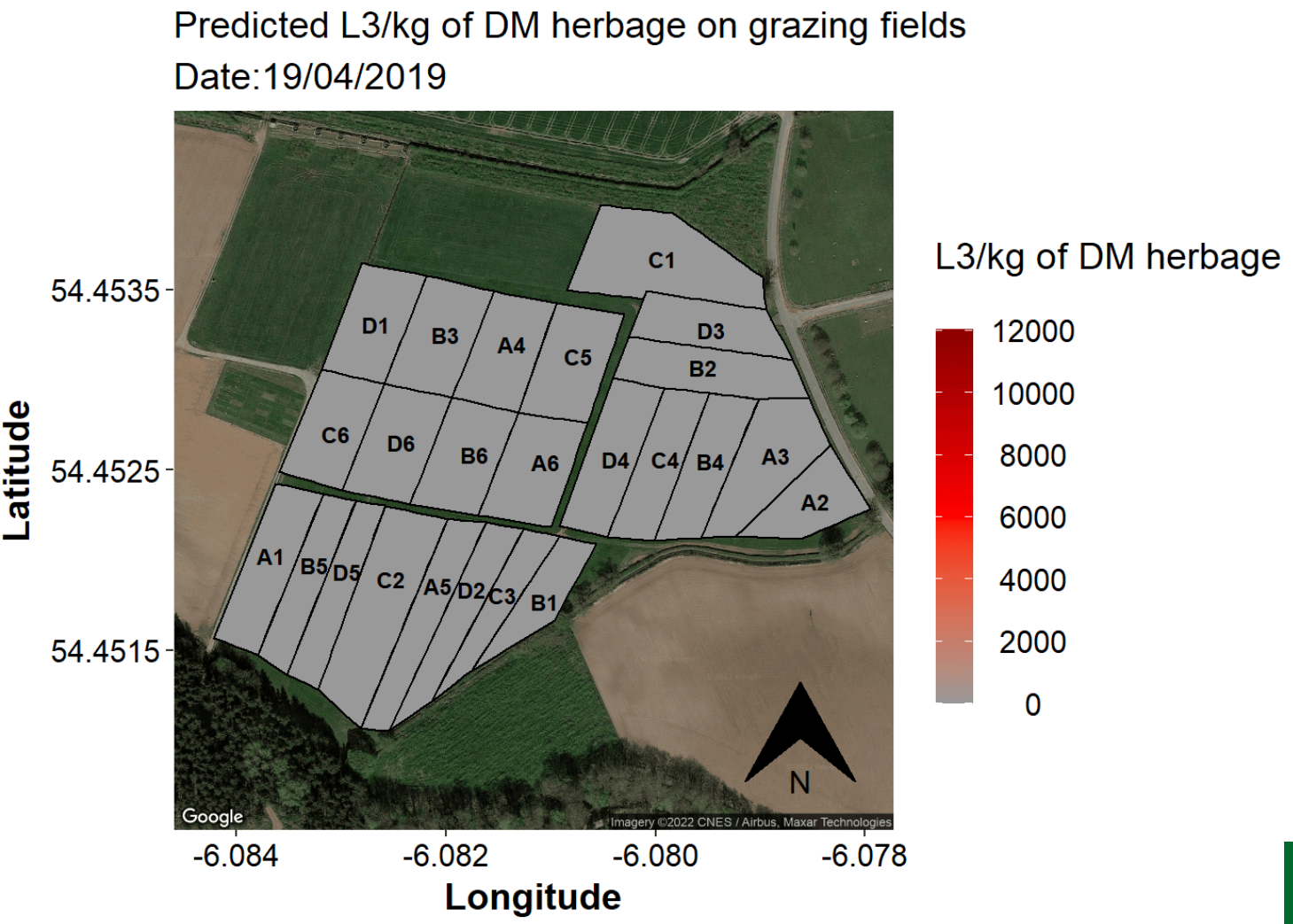


Treatment indicators?

- Worm egg count
- Dag score
- Weight gain
- ‘Farmer’s eye’

Note early season treatments are usually to protect pasture later…

Targeted treatment (TT) – e.g. delayed dosing



- Treating early keep pastures clean but end up with no *refugia*
- Delaying a short while gives refugia a chance to establish first
- But implies some risk to future grazing

EIP-TST: Investigate targeted, selective treatment for parasites in ruminant livestock

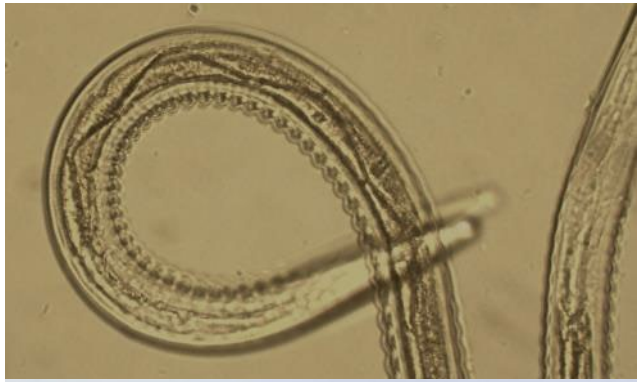
Project aim: determine the feasibility and practicality of implementing targeted selective treatment of helminths on Northern Ireland commercial farms.

Project summary:

- Bridge the gap between research and implementation, disseminating advice to encourage wider uptake across the sector.

- 7 farmers plus group members from Queen's University Belfast, AgriSearch, AFBI and Animal Health and Welfare NI

    - Determine suitable TST approaches for each participant farm
    - Implement TST approaches on each participant farm
    - Assess the impact of implementing a TST approach



Case study 1 – Farm 1 (Dairy)

- ‘Good’ and ‘risky’ practices identified
- Critical control points defined
- Options offered for changes
- Monitoring for risk reduction: Fecpak, plus lungworm at QUB

Option 1: TT – Treatment based on group pooled FEC

Benefits of strategy:

- Promote development of parasite refugia on pasture.
- Reduce total number of anthelmintic treatments.
- Promote development of GIN immunity.
- Reduced handling.

Suggested actions:

- Turn out without treatment.
- **Assess group pooled FEC every 2 weeks:**
  - FEC 0-100 eggs per gram (epg), don’t treat, re-sample 2 weeks later.
  - FEC 100-200 epg, don’t treat, but re-sample group again 5-7 days later.
  - FEC >200 epg, treat whole group (TT).

Possible risks:

- Increased GIN prevalence and increased pasture contamination levels.
- Those not treated will be exposed to lungworm.
- Some condition loss.
- Liver fluke infections.

Reducing risks:

- Consider contamination levels of pastures based on grazing history.
- More frequent FEC sampling or lower epg thresholds if pasture was heavily grazed last year.
- Weigh individuals every 4 weeks or sooner.
- Regular visual monitoring of whole group.
- QUB collect regular pooled faecal samples for lungworm and fluke testing.
- Treat whole group if lungworm larvae observed in faeces or coughing observed.

Option 2: TST – Treatment based on individual FEC

Benefits of strategy:

- Promote development of parasite refugia on pasture.
- Reduce total number of anthelmintic treatments.
- Promote development of GIN immunity.

Suggested actions:

- Turn out without treatment.
- **Assess individual FEC every 2 weeks:**
  - FEC <100 epg, don’t treat, re-sample 2 weeks later.
  - FEC 100-200 epg, don’t treat, but re-sample again 5-7 days later.
  - FEC >200 epg, apply treatment.

Possible risks:

- Increased GIN prevalence and increased pasture contamination levels.
- Those not treated will be exposed to lungworm.
- Some condition loss.
- Liver fluke infections.

Reducing risks:

- Consider contamination levels of pastures based on grazing history.
- More frequent FEC sampling or lower epg thresholds if pasture was heavily grazed last year.
- Weigh individuals every 4 weeks or sooner.
- Regular visual monitoring of whole group.
- QUB collect regular pooled faecal samples for lungworm and fluke testing.
- Treat whole group if lungworm larvae observed in faeces or coughing observed.

Option 3: TT + TST – Treatment based on group pooled FECs and DLWG

Benefits of strategy:

- Promote development of parasite refugia on pasture.
- Reduce total number of anthelmintic treatments.
- Promote development of GIN immunity.

Suggested actions:

- Turnout without treatment.
- **Assess group pooled FEC every 2 weeks:**
  - FEC 0-100 epg, don’t treat, re-sample 2 weeks later.
  - FEC >200 epg, treat whole group (**TT**).
  - FEC 100-200 epg, apply **TST** on basis of individual DLWG i.e. treat those not meeting desired target weight.

Possible risks:

- Increased GIN prevalence and increased pasture contamination levels.
- Those not treated will be exposed to lungworm.
- Some condition loss.
- Liver fluke infections.

Reducing risks:

- Consider contamination levels of pastures based on grazing history.
- More frequent FEC sampling or lower epg thresholds if pasture was heavily grazed last year.
- Weigh individuals every 4 weeks or sooner.
- Regular visual monitoring of whole group.
- QUB collect regular pooled faecal samples for lungworm and fluke testing.
- Treat whole group if lungworm larvae observed in faeces or coughing observed.

Case study 1 – Farm 1 (Dairy)

Year 1: 2021

- Tracked 2 batches of cattle under rotational grazing
- New weighing system integrated
- Gastrointestinal nematode **faecal egg counts low throughout season**
    - 13 FECPAK submissions
- First grazing season (FGS) calves dosed twice in 2021 guided by FECPAK and liveweight
- Anthelmintic treatments **reduced and delayed**
    - *Previous treatment regime:* five weeks post turnout, 4-5 week interval thereafter
    - No fallback in weight gain with reduced treatments

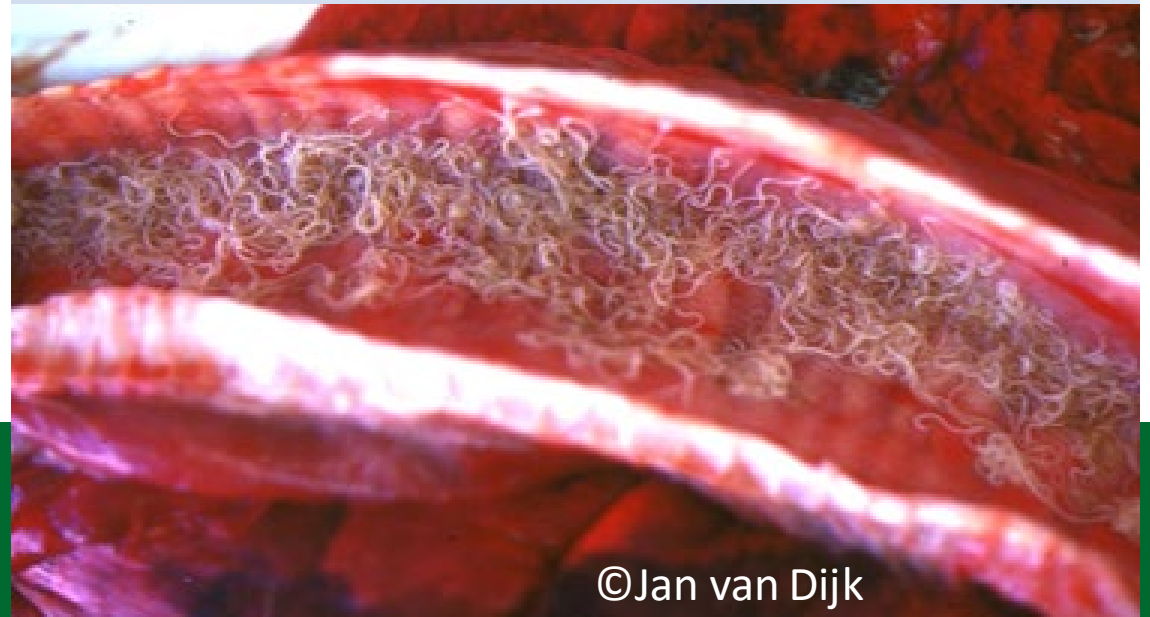
Year 2: 2022

- FECPAK submission of FGS calves on 11/05/2022 showed an egg count of **360 EPG**
    - Grazing same youngstock fields as 2021
    - Decision to treat with ivermectin to reduce pasture contamination
- 18 FECPAK submissions to date
- Weighing every 2-3 weeks
- FGS calves **dosed three times** in 2022 guided by FECPAK and liveweight (**now dosing to weight**)
- Egg counts of second grazing season heifers has remained at 0 - 20 EPG (4 FECPAK timepoints), no dose needed until pre-calving

Case study 2 – Farm 5 (Beef)

Year 1: 2021

- Tracked 3 batches of cattle
- 20 FECPAK submissions (Apr - Sep 2021)
    - Used to track **individuals (FEC based TT/TST)**
- Dung samples sent to QUB for lungworm analysis
- Anthelmintic treatments reduced and delayed – but applied when coughing heard in batches



Year 2: 2022

- Tracking 3 batches of cattle
- 12 FECPAK submissions to date
- More regular weighing schedule introduced
- FGS calves treated with albendazole/fenbendazole in early August due to lungworm concerns
- SGS batch 1
    - Individual showed egg count of 320 EPG in mid August combined with group wide **coughing**. Fenbendazole oral drench applied.
- SGS batch 2
    - Individual showed egg count of 200 EPG in early September, **coughing** group wide. Levamisole treatment.

Case study 3 – Farm 6 (Sheep)

Year 1: 2021

- Tracked 1 batch of lambs in detail
- **TST applied on 2 separate occasions based on FECPAK + dag score or DLWG**
- 19 FECPAK submissions
- FECs high throughout season
- Zolvix 'break dose' applied mid August
- Anthelmintic treatments maintained at 4 per season

Latest treatment left 29% of lambs untreated, saving worming costs

Year 2: 2022

- 10 FECPAK submissions to date
- **No treatment given to ewes** at lambing this year
- Anthelmintic treatments provided on a targeted basis using liveweight
  - Treatment applied to lambs growing <200 g / day
- Hosted BDG meeting in July focusing on TST. Video webinar on TT/TST provided by Dr Christopher McFarland for the event
- Challenging year from a grass growth perspective, extra feed required. Growth rates of lambs slower than average – but dry conditions also meant less treatment needed
- Zolvix once again implemented as a 'break dose'

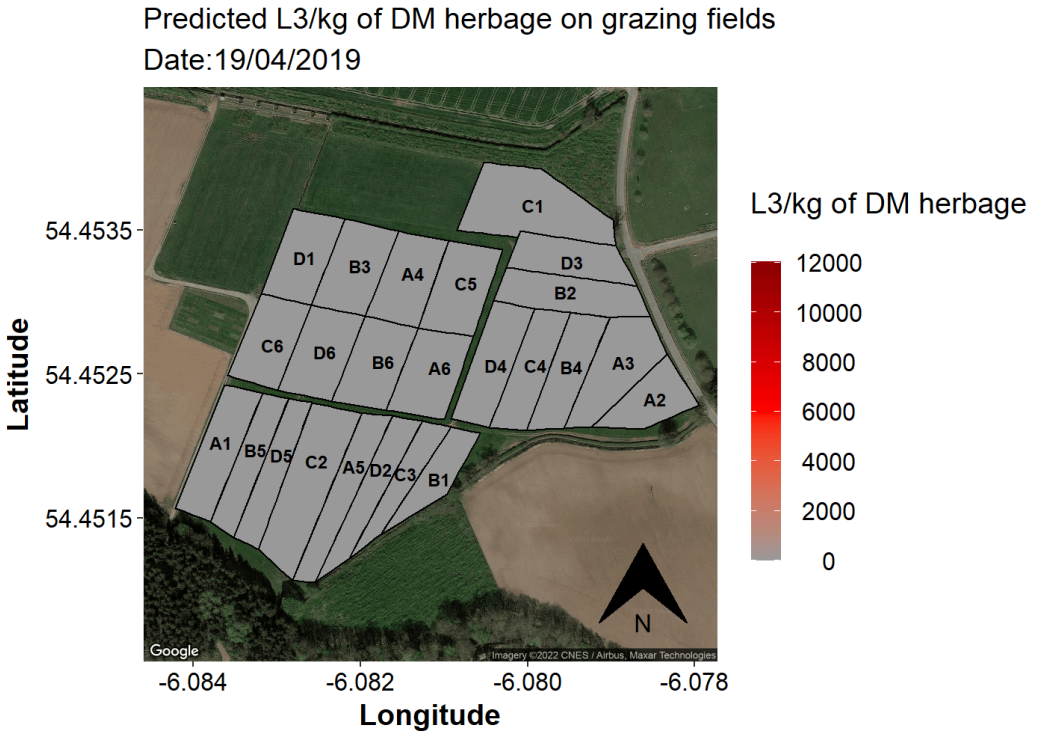
TST-EIP interim conclusions

- Worm treatments can be targeted effectively on farms
- No one ‘protocol’ fits all farms or works equally well every year
- Monitoring is crucial to reduce risks but takes some effort
- First steps can be small and without production cost

Next steps?

- Collate treatment, parasite and performance data across EIP farms
- What are the likely savings on wormer use and benefits for resistance development?
- Can practical challenges be surmounted on all farms?
- Where will the advice come from?
- Would spatial refugia be easier to implement on some farms?

Pasture contamination and *refugia* mapping



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Paul Crawford

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NI Sheep Scab Programme

Background

- What is sheep scab?
- Sheep Scab Control Group
- DAERA's position
- Limited research
- BBSRC funding

Background

- What is sheep scab?
- Highly infectious
- Debilitating
- No spontaneous recovery
- Economic cost
- Notifiable disease

Background

- Sheep Scab Control Group
- Industry-wide support
- Considered the problem in N. Ireland
- Looked at barriers to better control
- Looked at solutions being developed elsewhere
- Identified a need for research and pilot control projects

Background

- Limited research
  - Wales, Scotland and England well ahead of us on scab control
  - 2021 Survey: 44 farmers described their experiences of sheep scab in their flock

Background

- BBSRC funding
  - Scab group partnered with Moredun Research Institute, AFBI and AHWNI
  - Awarded £220000
  - Project got up and running 2nd August 2022

Moredun Research Institute

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Animal Health & Welfare NI
www.animalhealthni.com

What can we offer?

- Knowledge transfer and education
  - Farmer meetings
  - Prescriber meetings

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- Knowledge transfer and education
  - Farmer meetings
  - Prescriber meetings

Accurate diagnosis

Effective treatment - NOT showering!

Keeping it out

- Knowledge


TAKE THE PLUNGE!
...NOT A SHOWER
Op must get down to the skin to kill sheep scab mites
This can only be done by plunge dipping sheep for one minute
OP dip is only authorised for use as a plunge dip
It must not be used through showers or jetters
More information go to www.scops.org.uk

What can we offer?

- Diagnosis and treatment
  - Your own vet on the farm to blood or skin test the sheep – paid for by the programme
  - Develop a treatment plan if scab confirmed
  - Help with treatment costs included

Why should you participate?

- Your scab problem won’t just go away
- Free diagnosis
- Heavily subsidised treatment
- Veterinary advice
- Minimal DAERA intervention

Why should you participate?

- We are also running a survey to find out more about sheep scab in Northern Ireland.
- Give us the information we need to help rid N Ireland of sheep scab while we can.

NI Sheep Say:

SOS

STAMP OUT SCAB

Questions:

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Planning for Performance

Winter-feeding strategies for beef and sheep farmers

Dominic Mason/Gareth Beacom

CAFRE Beef & Sheep Advisers

Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

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The challenges

- High input prices
  - Concentrate
  - Fertiliser

	2021	2022	% change
Beef blend	£270	£360	+33%
Beef Price (U3 steer)	£4.02	£4.37	+ 9%
Lamb Price	£4.90	£5.00	+ 2%

- Low D-value/ low dry matter silage

Finishing or growing animals in a cost effective manner

Cost of storing cattle this winter

Assumptions

Weight of calf 1st Oct	300kg
• Average quality silage (12% CP) -	£35/tonne
• Poor Quality silage (10% CP) -	£30/tonne
▪ Concentrate cost -	£360/tonne

Cost of storing cattle this winter

	Cost/day	Cost for 6 months	Potential weight in April
Silage only diet			
25kg poor quality silage (10%CP)	£0.75	£135	300kg
21kg average quality silage (12%CP)	£0.74	£132	345kg

Silage only diet will also risk affecting the animal's lifetime performance

	Cost/day	Cost for 6 months	Potential weight in April
Target weight gain of 0.6kg/day			
15kg poor quality silage + 3kg conc	£1.53	£275	408kg
15kg average quality silage + 2kg conc	£1.25	£224	408kg

Adding concentrate to the diet will also save on silage

Sell or Keep?

	Cost/day	Cost for 6 months	Potential weight in April
Target weight gain of 0.6kg/day			
15kg poor quality silage + 3kg conc	£1.53	£275	408kg
15kg average quality silage + 2kg conc	£1.25	£224	408kg

Value of calf 1st October	**300kg**	**£2.80/kg**	**£840**
Break even price 1st April	**408kg**	**£2.61/kg**	**£1064**

Other points to consider

- Approx. 520 gallons of slurry produced per calf
- Cost will depend on silage quality and concentrate levels

Options for Finishing cattle this winter

550kg Beef finishing animal
Target growth: 1.2kg average DLWG

Silage Quality	Silage Fed (kg)	Concentrate (kg)	Daily Feed Cost (£/day)
Good	22	4.5	£2.39
Average	20	5.5	£2.68
Poor	15	7	£3.05

Assumptions: Silage £35/tonne, concentrate £360/tonne

Producing high quality silage will lower concentrate requirement, lower feed cost and increase gross margin

Finishing Budget

- Have plan in place
- Weigh Regularly
- Test Silage

Finishing Budget

Input						
Purchase	550	Kg @	2.35	£/kg	£1,293	
Days on farm	100					
Silage	25	Kg @	35	£/tonne	£88	
Meal	6.5	Kg @	360	£/tonne	£234	
Straw	0.0	Kg @	95	£/tonne	-	
Vet					£10	
Misc					£ 10	
Total Variable Costs					£342	
Total Cost					£1,635	
Output	Growth (Kg/Day)		1.20	Kg/d	670	Kg Live
	K.O		57%		382	Kg carcase
	Price		4.37	£/kg	£1,669	
Margin					**£34.34**	

Finishing lambs this autumn/winter

Beware of fleshing levels on lambs

Massive variations in KO% of lambs

Grade	LWT	KO	DWT	p/kg	Total price
R3	47kg	43%	20.2kg	£5.00	£101.05
R1	47kg	39%	18.3kg	£4.60	£84.32

Factors affecting the kill out of lambs

- **Diet**
- **Fat cover**
- **Breed**
- **Sex**
- **Extremities on lambs, i.e. tails, horns, wool etc**

Options for finishing lambs this autumn/winter

Assumptions

Conc price - £380/tonne

Lamb grazing – 10p/day

	DLWG	Days to gain 6 kg	Grazing cost	Conc cost	Total cost
42kg lamb	100g/day	60 days	£6.00	£0.00	£6.00
Grass + 0.5kg meal/day (20p/day)					
42kg lamb	225g/day	27 days	£2.70	£5.13	£7.83

Cost of feeding 0.5kg of meal @ £380/tonne = £1.33/week

Intensive finishing for lambs?

Typical FCR 8kg of meal for 1kg liveweight gain

Meal

8kg @ £380/tonne = £3.04

Lamb

1kg liveweight @ 48%KO = 0.48kg carcass

0.48kg carcass @ £5 = £2.40

Cost 8:1 = £3.04

Return = £2.40

Break even price @ FCR of 8:1 = £6.33/kg

Options for finishing lambs this autumn/winter

Assumptions

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Lamb grazing – 10p/day

	DLWG	Days to gain 6 kg	Grazing cost	Conc cost	Total cost
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Grass + 0.5kg meal/day (20p/day)					
42kg lamb	225g/day	27 days	£2.70	£5.13	£7.83

Cost of feeding 0.5kg of meal @ £380/tonne = £1.33/week

Summary

- Concentrate supplementation still needed must be cost effective
  - Over feeding may not be economically viable
  - Under feeding may affect animal lifetime performance
- Have a performance target in place for youngstock
  - As well as finishing budget
- Monitor animal performance regularly
  - Maintain animal health plan

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Long-term implications of changing the nutrition of cattle on lifetime performance

Dr Francis Lively

Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

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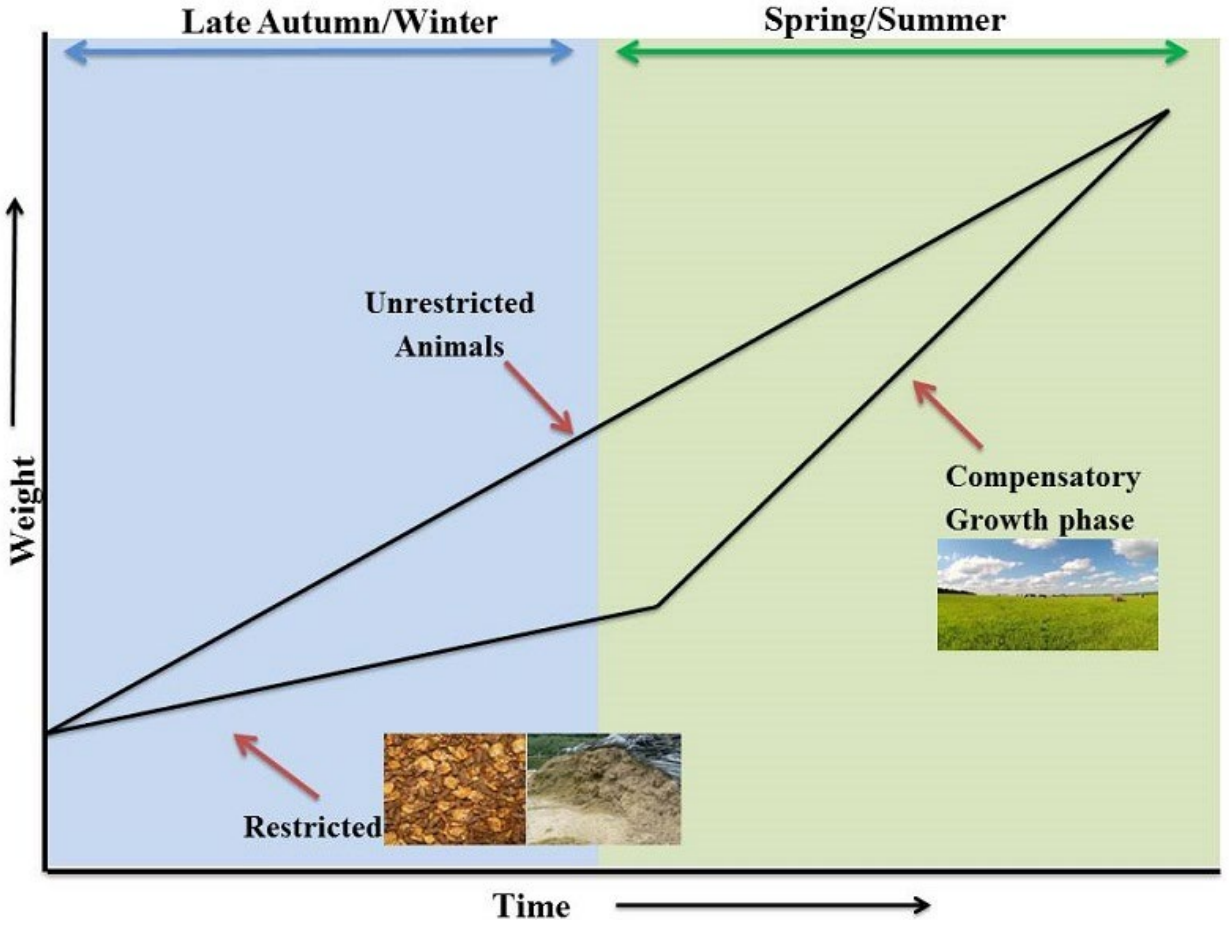
Compensatory growth

- Compensatory growth is a process where if growth is less than normal due to under-nutrition, then later when good nutrition is available the live weight gain is greater than would otherwise be expected



Teagasc, 2020

Study 1: Implications of reducing performance during the first winter growth period (100 day finishing period)

Winter 1 concentrate feed level	**0**		**1.5**		**3.8**
Silage dry matter intake (kg)	4.64		4.44		3.76
Live weight gain (kg/day)	0.3		0.7		1.04
Turnout live weight (kg)	313	+42	355	+36	391
Housing live weight (kg)	477	+16	493	+16	509
Final live weight (kg)	576	+18	594	+11	605

- Reducing LWG from 0.7 to 0.3 kg/day had long term performance reductions

Study 2: Implications of reducing performance during the first winter growth period (140 day finishing period)

	First winter growth phase concentrate input (kg/day)			
	0.5		2.0	
Second winter finishing phase concentrate input (kg/day)	4		4	
First winter live weight gain(kg/day)	0.33		0.68	
Second winter live weight gain (kg/day)	0.82		0.86	
Lifetime live weight gain (kg/day)	0.70		0.74	
Carcass weight (kg)	343		354	

- Reducing first winter LWG to 0.3 kg/day had a long-term impact on performance – subsequent nutrition was not high enough to allow for full compensation

Study 2: Implications of reducing performance during the first winter growth period (140 day finishing period)

	First winter growth phase concentrate input (kg/day)			
		0.5		2.0
Second winter finishing phase concentrate input (kg/day)		**Ad libitum**		**Ad libitum**
First winter live weight gain(kg/day)		0.27		0.66
Second winter live weight gain (kg/day)		1.25		1.13
Lifetime live weight gain (kg/day)		0.81		0.82
Carcass weight (kg)		377		377

- Reducing first winter LWG to 0.3 kg/day had no long-term impact on performance as a high plane of nutrition offered during the finishing period

Study 2: Implications of reducing performance during the first winter growth period (140 day finishing period)

	First winter growth phase concentrate input (kg/day)			
	0.5	0.5	2.0	2.0
Second winter finishing phase concentrate input (kg/day)	**4**	**Ad libitum**	**4**	**Ad libitum**
First winter live weight gain(kg/day)	0.33	0.27	0.68	0.66
Second winter live weight gain (kg/day)	0.82	1.25	0.86	1.13
Lifetime live weight gain (kg/day)	0.70	0.81	0.74	0.82
Carcass weight (kg)	343	377	354	377

- If reducing performance during one period of life it is essential to offer a high plane of nutrition in subsequent growth phases

Maximise days at grass – store cattle

- Spring grass is highly nutritious and, evidence demonstrates improved performance from livestock

	Early turn out	Late turn out	Difference
Date turned out	5 April	22 April	+17 days
Housing live weight (kg)	538	515	+23 kg
Slaughter live weight (kg)	674	666	+8 kg
Carcass weight (kg)	373	368	+5 kg

- Autumn grass is as high a quality feedstuff as many silages

	Early housed	Late housed	Difference
Housing date	29 Oct	23 Jan	+ 86 days
29 Oct weight (kg) (weaning)	228	228	
23 Jan weight(kg)	294	300	-6 kg
28 Feb weight (kg) (turnout)	339	339	

- Spring and autumn grass is highly nutritious and can reduce both silage & concentrate inputs and slurry production – provided ground conditions suitable

Feeding cattle at grass

- Cattle were offered 0 or 2.5 kg concentrate from 1 August until housing
- Know your costs!!!

Study 2: Short finishing period

	0	2.5	Difference
Live weight (kg)			
Housing	494	532	+38
Slaughter weight	591	615	+24
Carcass weight (kg)	322	334	+12

Study 3: Long finishing period

	0	2.5	Difference
Live weight (kg)			
Housing	517	536	+19
Slaughter weight	671	669	-2
Carcass weight (kg)	369	372	+3

- Feeding cattle at grass increases live weight gain during that period but no benefit if housing for a finishing > 100 days

Stocking rate

- High vs low stocking rate
- Rotation grazing system

Short finishing period

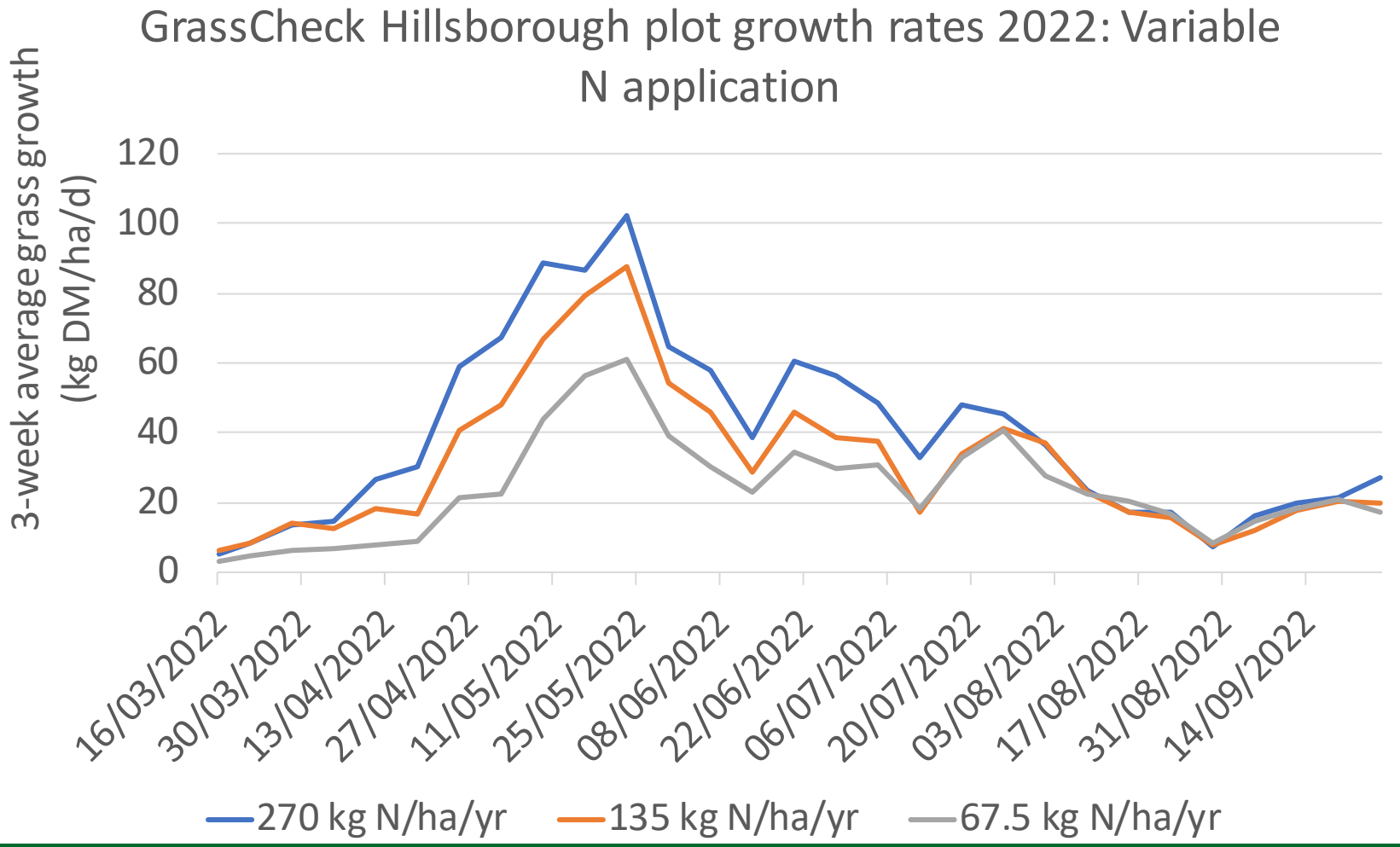
	High	Low	Difference
Turnout live weight (kg)	364	364	
Housing live weight (kg)	497	529	-32
Slaughter live weight (kg)	591	614	-23
Carcass weight (kg)	321	335	-14

Long finishing period

	High	Low	Difference
Turnout live weight (kg)	360	360	
Housing live weight (kg)	508	545	-37
Slaughter live weight (kg)	662	667	-5
Carcass weight (kg)	365	376	-11

- Increasing the stocking rate reduces grass availability and reduces performance which does not fully recover during the finishing phase

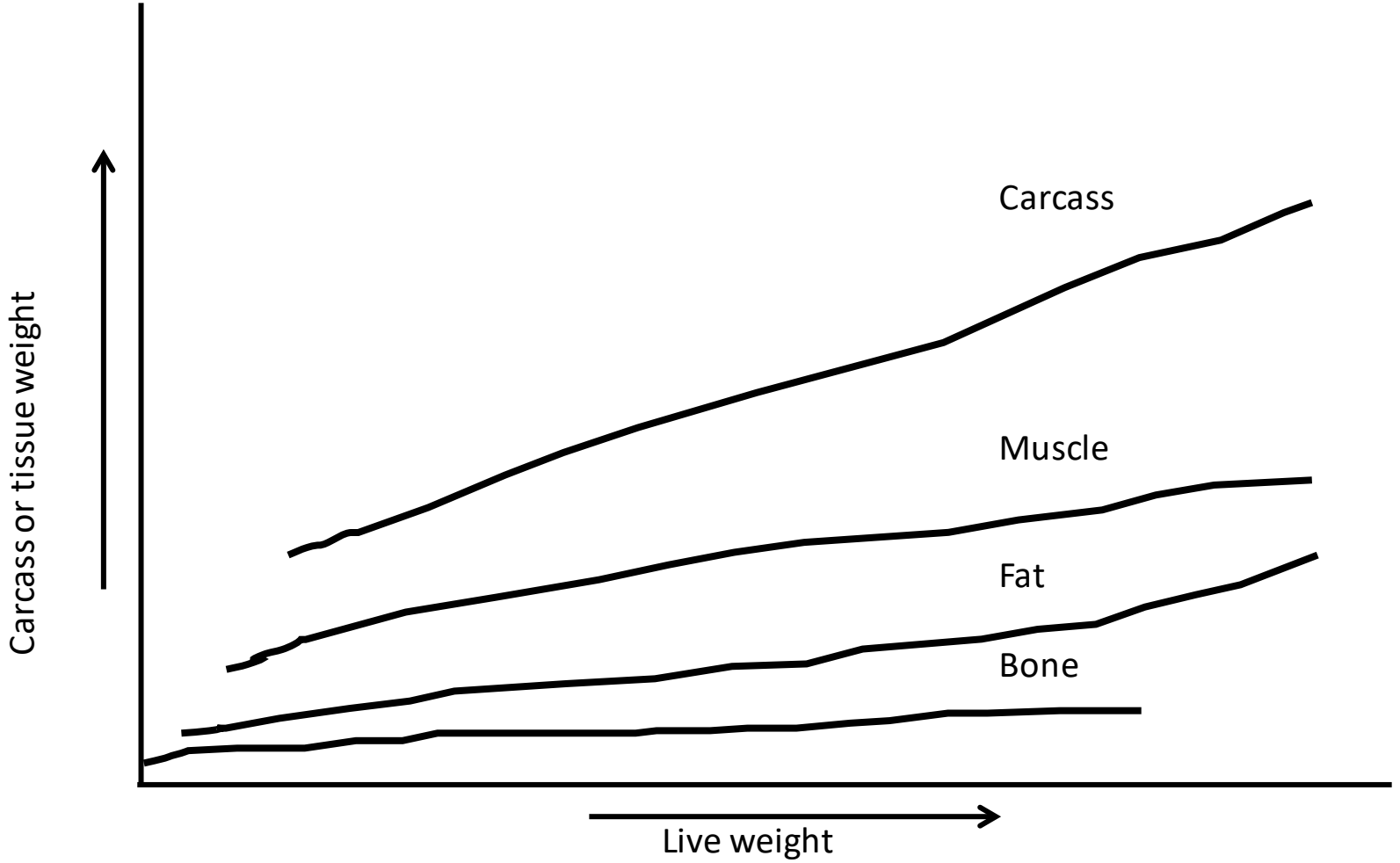
Impact of reducing nitrogen application



- Reducing nitrogen levels will reduce grass production
- Reducing grass availability will reduce potential live weight gain per hectare
- If planning to reduce nitrogen levels plan to reduce stocking rate
- Applications at peak growth will maximize return in investment

- If changing fertiliser management consider impact on the carrying capacity on the farm

When to slaughter cattle?



MEASURE
MONITOR
MANAGE

- Monitor animal performance, production cost and slaughter when suitable fat cover

When to slaughter? Breed type dependent

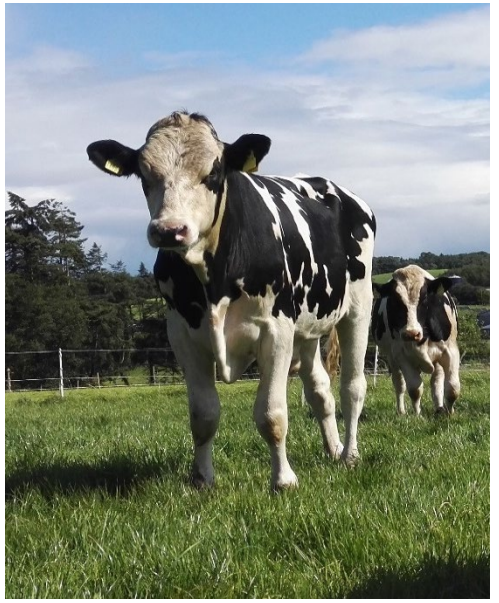
Continental genetics (late maturing)

- Larger heavier animals
- Heavily muscled
- High growth potential
- Leaner

Native genetics (early maturing)

- Smaller lighter animals
- Lower growth potential
- Fatter

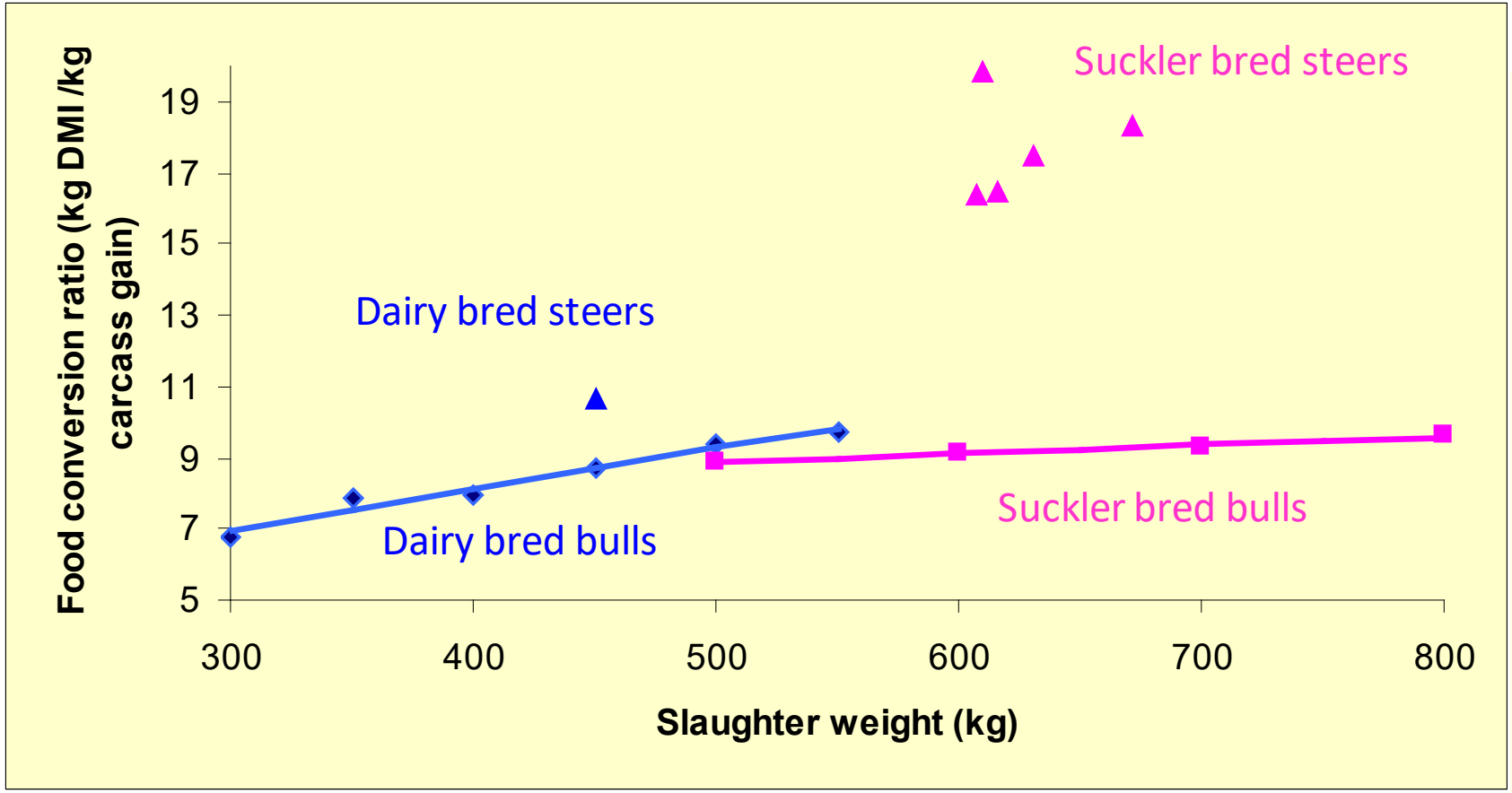
Dairy genetics



- Larger digestive tract
- High bone content
- High growth potential

Significant within breed variation

The effect of slaughter weight, breed type and gender on feed conversion ration



- As cattle increase in live weight feed conversion efficiency declines
- Dairy bred cattle are less efficient converters of feed to carcass gain than suckler bred cattle
- Bulls are more efficient converters of feed to carcass gain than steers

- Monitor animal performance, production cost and slaughter when suitable fat cover

Take homes

- Compensatory growth can be used to reduce concentrate levels during one period of **early** life without impacting on lifetime performance **provided** a high plane of nutrition follows
- Autumn and spring grass can be utilized to reduce reliance on concentrates & silage for young cattle/weanlings
- Feeding concentrate at grass will boost performance but at a cost, only consider if having a short finishing period
- Reducing nitrogen application will reduce grass production & impact on stocking rate
- Monitor performance of finishing cattle relative to production cost