



**BEEF FEED  
EFFICIENCY PROGRAMME**

**Kim Matthews & Natalie Cormack**



# This afternoon

## 1. Brief introduction (KM)

- What is feed efficiency & why select for it?
- Overview of programme

## 2. Where we have got to so far (NC)

## 3. The value of breeding for feed efficiency (DP)

## 4. Where we go from here (KM)



# Introduction

Kim Matthews



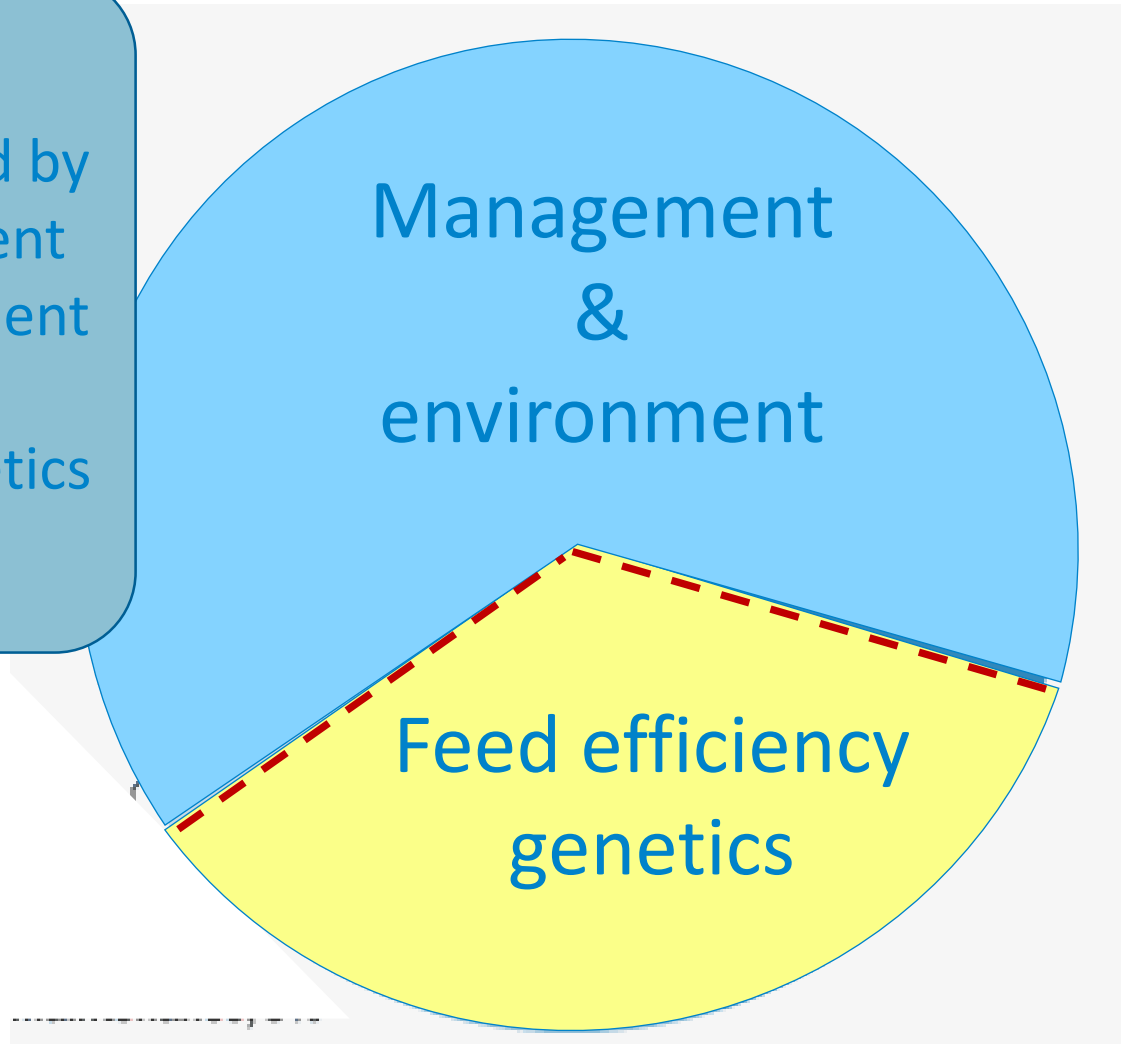
# What is feed efficiency?

2/3 affected by  
management  
& environment

1/3 by genetics

Management  
&  
environment

Feed efficiency  
genetics



# Why feed efficiency?

During the growing and finishing phase a 1% improvement in feed efficiency has the same economic impact as a 3% increase in rate of gain.



Selection for feed efficiency is independent of

- growth
- mature weight

# ALBERTA



# Alberta & Australia results

- ↓ maintenance requirements of cow herd by 9-10%
- ↓ feed intake by 10 -12%
- → average daily gain or mature size
- ↑ FCR by 9 to 15 %
- ↑ calf-weight-per-cow feed intake by 15%
- ↓ methane emissions by 25 -30%
- ↓ manure N, P, K by 15 -17%



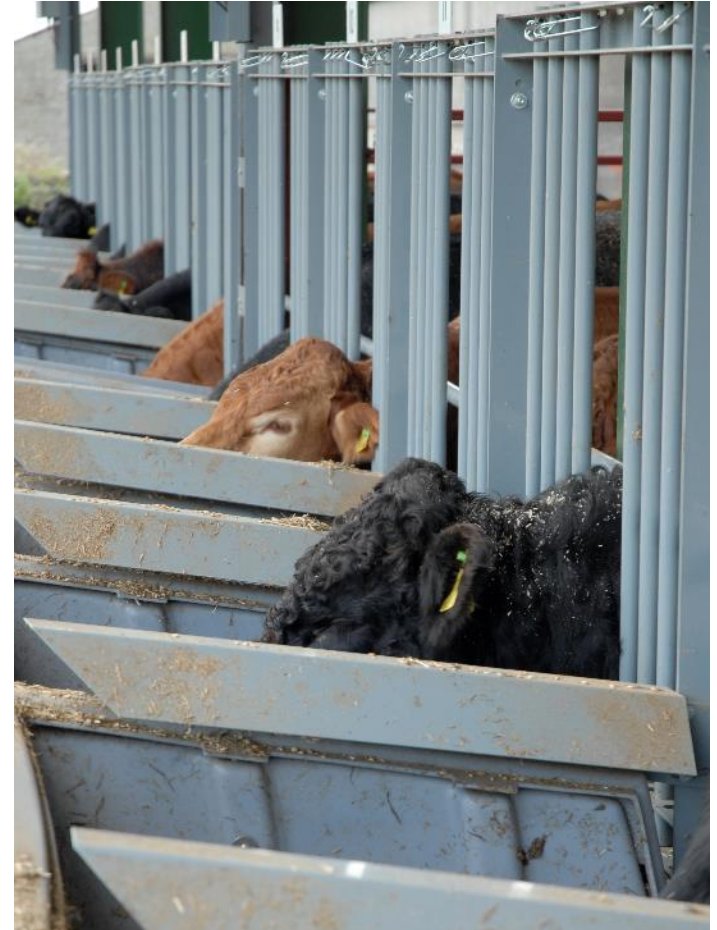


- 4 year project
- Funded by Defra and AHDB £1.75M
- Led by AHDB & SRUC
- Scottish unit funded by Scottish Government and ABP



# Vision → Legacy

- demonstrate the ability to measure and select for feed intake parameters in cattle on commercial farms
- establish a system for recording after the end of the project that can be extended across cattle breeds.



# Industry benefits

- Identify individual animals and sires with superior genetics for feed efficiency
- Enable breeders to actively select for feed efficiency
- Development of model(s) for longer term legacy for industry
- ↓ GHG emissions





# Progress to date

Natalie Cormack

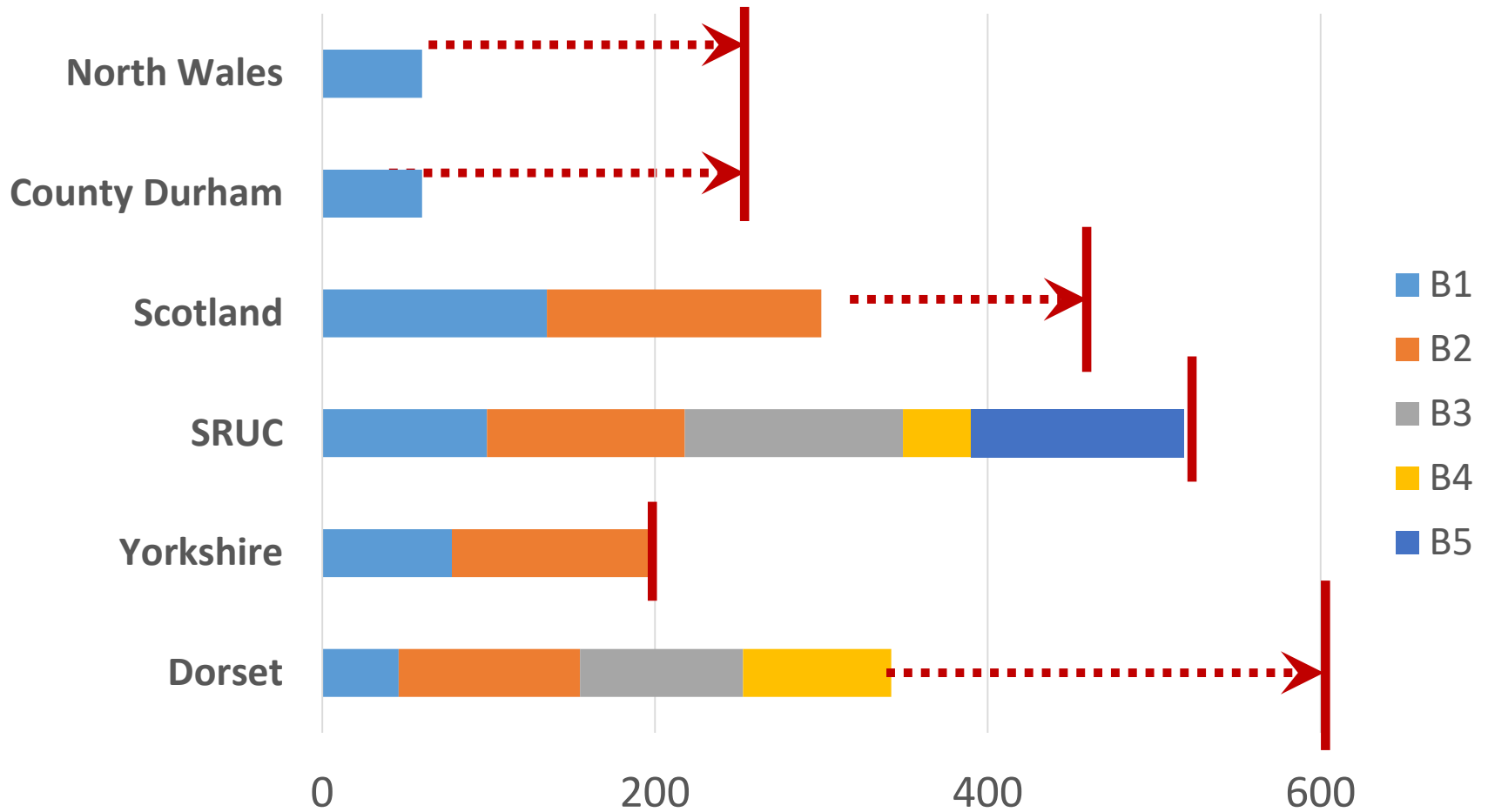


# Project overview

- Begin with Limousin breed
- 1800 records to collect (per breed)
- Initial 500 records collected at SRUC
- Remaining 1300 records to be collected on 3 commercial farms in England and 1 in Scotland
- Introduced second breed - Angus
- Completion 2019



# BFEP - Cattle Recorded



# Measuring feed efficiency

- GrowSafe feed intake recording equipment
- Known registered sire
- 7-12 months of age at trial start
- Measurement period 63 days
- Age range within batch 8-12 weeks
- Steers



# Ration

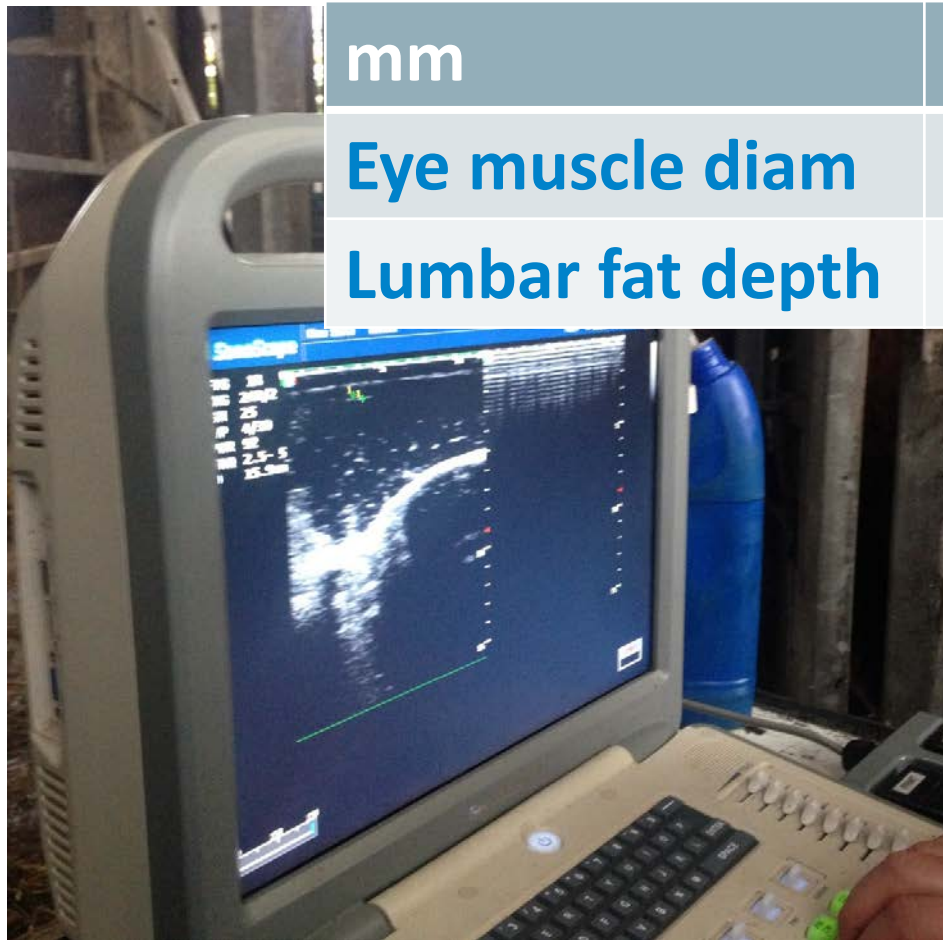
TMR spec (40% DM) - Targets	
Forage in DM	50% - 70%
ME (MJ/kg DM)	11.5-12.2
Crude protein (% in DM)	15%

Feed	FW Inclusion % Ingliston	DM Inclusion % Ingliston
Grass silage	58.25	50
Barley	7.11	24
Bean Silage	34.38	25
Minerals	0.26	1

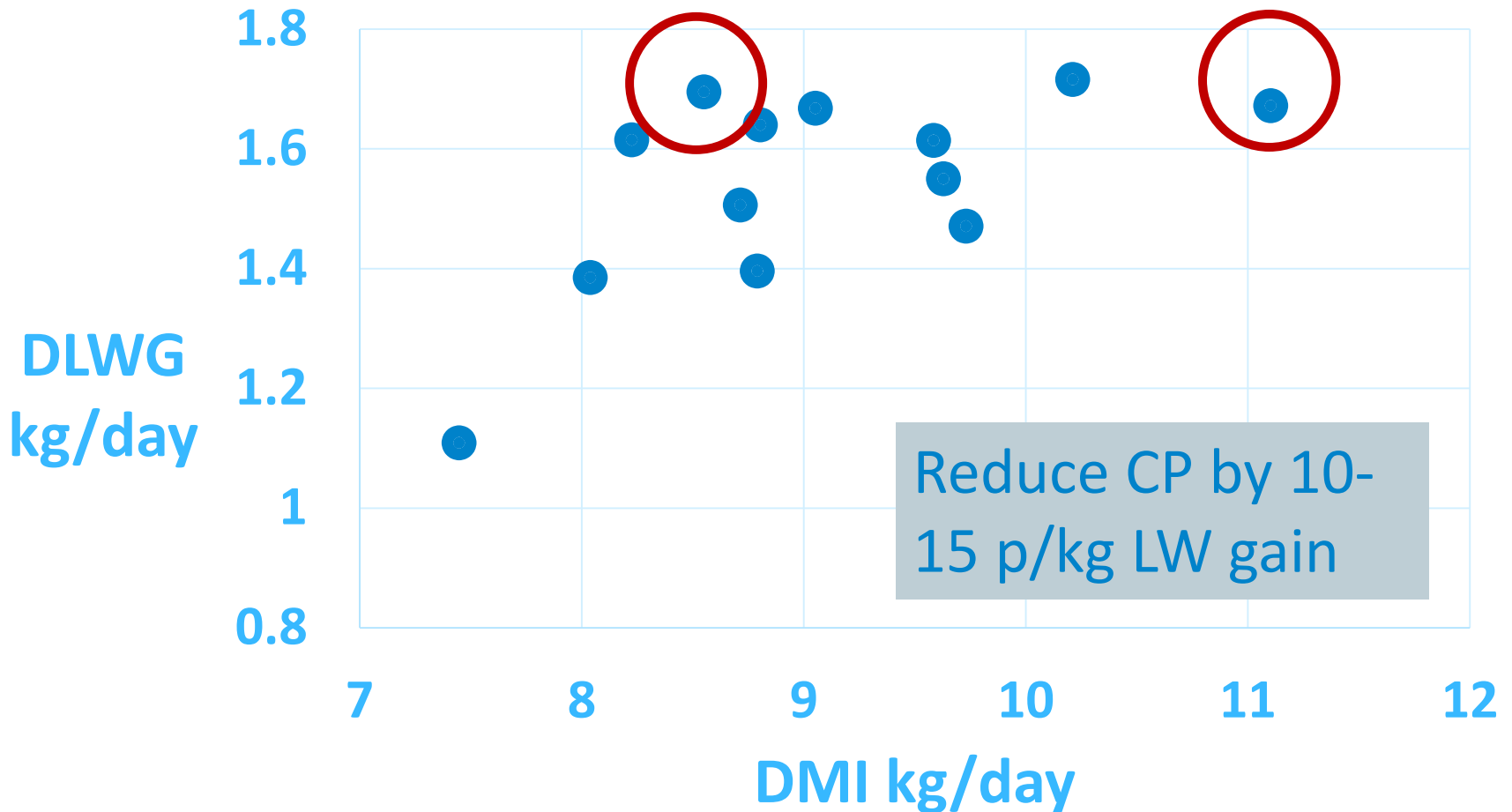


# Ultra-sound

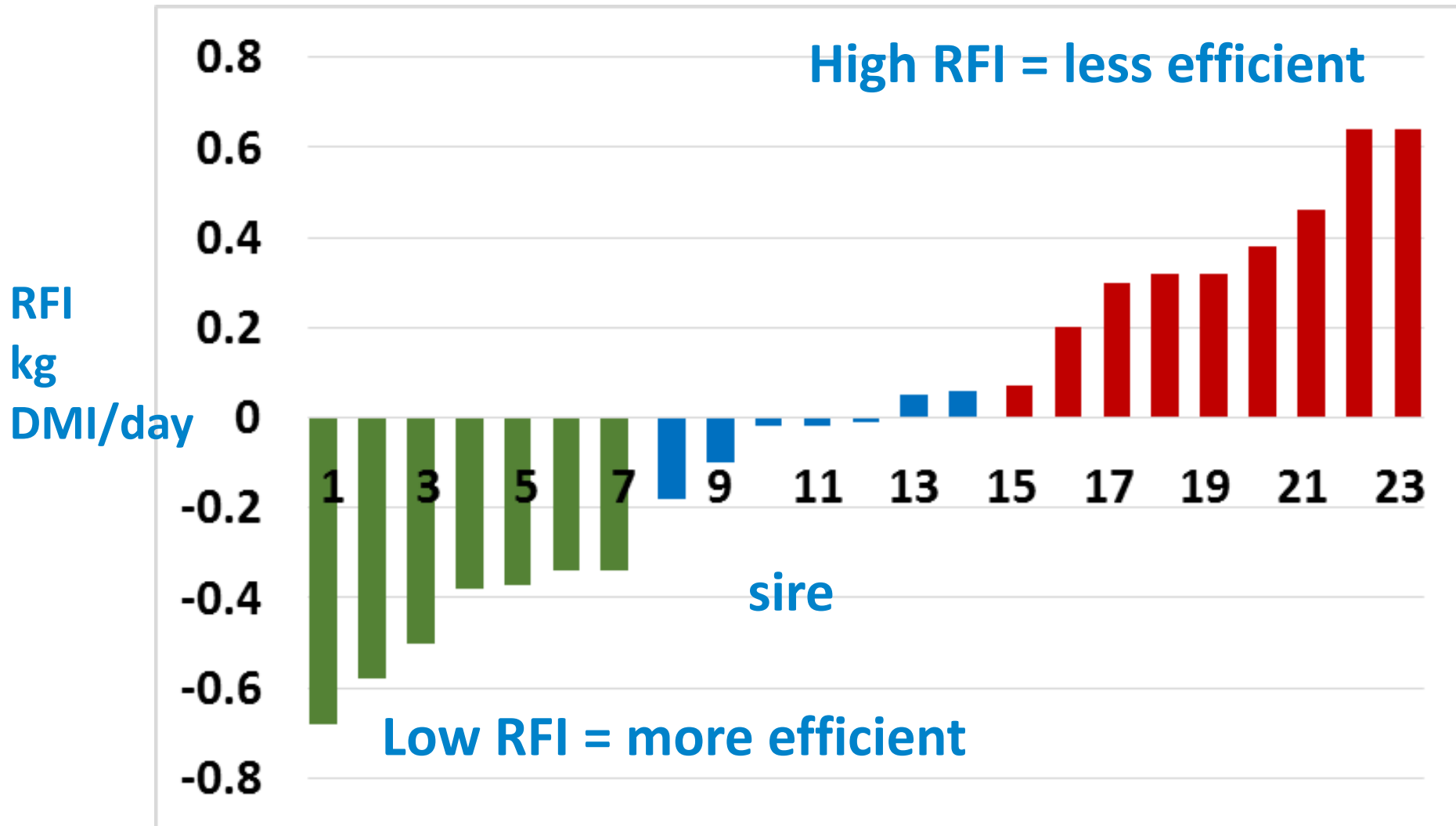
mm	Start	End
Eye muscle diam	59	68 (46-80)
Lumbar fat depth	1.1	2.4 (0-6)

An ultrasound machine monitor displaying a scan. The screen shows a dark background with a bright, curved line representing the scan. The machine is a light-colored, portable unit with a keyboard and control panel.

# Relationship between DM intake and growth rate by sire



# Residual feed intake by sire – B1&2



# Commercial significance

**Finishing cattle -**

**£19/head lower feed cost to gain 100kg LW**

**£0.19 lower feed cost per kg LW gain**

**Breeding herd -**

**Feed saving £100 per cow/calf unit per year**

**(SRUC/Stabilisers)**

# The value of feed efficiency

Duncan Pullar



# The future!

Kim Matthews

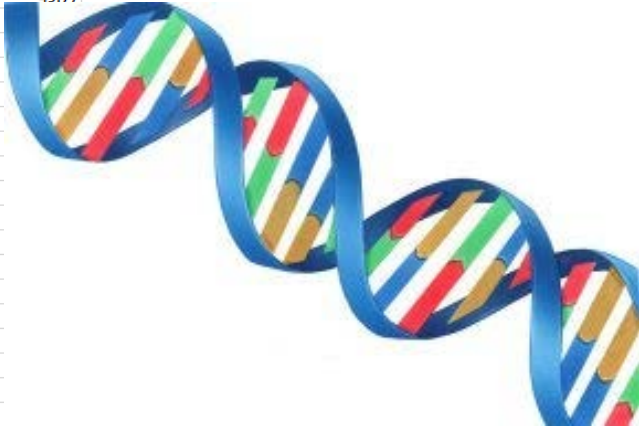


# Our Assets

$h^2$   
 $r^2$



50	0.7	49.3	48.3	49	0.7	48.3
50.5	0.7	49.8	48.8	49.49	0.7	48.79
51	0.7	50.3	49.3	49.98	0.7	49.28
51.5	0.7	50.8	49.8	50.47	0.7	49.77
52	0.7	51.3	50.3	50.96	0.7	
52.5	0.7	51.8	50.8	51.45	0.7	
53	0.7	52.3	51.3	51.94	0.7	
53.5	0.7	52.8	51.7	52.43	0.7	
54	0.7	53.3	52.2	52.92	0.7	
54.5	0.7	53.8	52.7	53.41	0.7	
55	0.7	54.3	53.2	53.9	0.7	
55.5	0.7	54.8	53.7	54.39	0.7	
56	0.7	55.3	54.2	54.88	0.7	
56.5	1.1	55.4	54.3	55.37	0.7	
57	1.1	55.9	54.8	55.86	0.7	
57.5	1.1	56.4	55.3	56.35	0.7	
58	1.1	56.9	55.8	56.84	1.1	
58.5	1.1	57.4	56.3	57.33	1.1	
59	1.1	57.9	56.7	57.82	1.1	
59.5	1.1	58.4	57.2	58.31	1.1	
60	1.1	58.9	57.7	58.8	1.1	



# Future principles

- Retain focus (breeding for feed efficiency)
- Fair use of the assets
- Maximum possible benefit to the British beef industry
- Revenue generated re-invested





# Next steps – from a technical perspective

- Establish EBVs for Limousin
- Generate genetic parameters for Angus
- Open recording to all
  - Genomic key?
  - Apply genetic parameters to other breeds?

- BUT.....



# Governance and ownership options

- AHDB?
- Establish independent company?
- AHDB/SRUC joint venture?
- Pass the assets to another independent body? (eg CIEL)

# Who leads measurement programmes

- Breed society?
- Individual Breeders?
- Supply chain?
- Other options?

# COST OF DATA COLLECTION

Approximate cost per head for measurement place = £500

Sire group (av 10 animals) = £5000

N.B. does not include data analysis



# Beef Carcase Traits

## Project Update



# What have we got?

A carcass trait analysis for beef and dairy breeds linking BCMS data, abattoir data and pedigree data

These traits are being routinely evaluated:

- Carcass weight
- Carcass conformation
- Carcass fat class
- Days to slaughter

# What is next?

- Reviewing presentation
  - Looking at basing EBVs to native, dairy and continental bases
  - Developing an economic index to pull traits together
- Enhancing feedback from EGENES
  - Reporting UK ministry tag
- Investigating systems for data transfer to Breed Societies



# Who has supplied data so far?

	Data included in the super pedigree
<b>Aberdeen Angus</b>	
<b>Beef Shorthorn</b>	Yes
<b>British Blonde</b>	
<b>British Blues</b>	Yes
<b>Charolais</b>	Yes
<b>Hereford</b>	Yes
<b>Limousin</b>	Yes
<b>Red Ruby Devon</b>	
<b>Simmental</b>	
<b>South Devon</b>	
<b>Stabilisers</b>	Yes
<b>Minor Signet Breeds</b>	Yes

# How can I supply data?



Two documents are available:

- Material Transfer Agreement with SRUC
- File specification, which has been shared with Breedplan

# Plan for roll out

- New beef post within AHDB to aid dissemination
- Initial results available shortly to breeds supplying pedigree
- On-going discussion with ABRI on linking datasets
- On-going discussion with Limousin & Stabiliser
- Go-live date for Holstein planned for British Cattle Breeder's Club – ideally other beef breeds too

# How can move forward?

