Research Challenge Beef Farm Walk

"On-farm research to underpin improvements in the carbon footprint of beef production"

at the farm of:

Ciaran Kearney

350 Lisnaragh Road, Plumbridge, Omagh

Friday 27th July, 2012

Researching the way forward

Research to underpin improved production efficiency

Today's farm walk is aimed at providing you with tools and information to help you make improvements with your beef enterprise

Topics for discussion include:

1. How to the reduce the age at first calving and the impact
2. Pain free performance monitoring
3. Grassland management in good and bad weather
4. The economics of suckler beef production

Farm overview

Patrick & Ciaran Kearney, Plumbridge, Omagh.

- Farm area: 346 acres (173 acres hill grazing)
- 50 cow suckler unit inc pedigree Simmental cows
- 130 ewes, 500 store lambs

Aims

- Minimising labour through use of EID systems
- Continuous monitoring of performance to enable informed management decisions
- Genetic improvement through bull selection
- Maximising production efficiency – calving at 2 years of age
- Improve silage quality

Feeding and breeding management of suckler herd replacements

Target weights for rearing replacements

Mature cow weight 650 kg

Age (months)	Weight (kg)	Growth rate (kg/d)
3	110	0.90
6	215	
9	280	
12	330	0.74
14	390	
18	480	
21	532	0.57
24	585	

Bulling weight 60% mature weight at 14 months

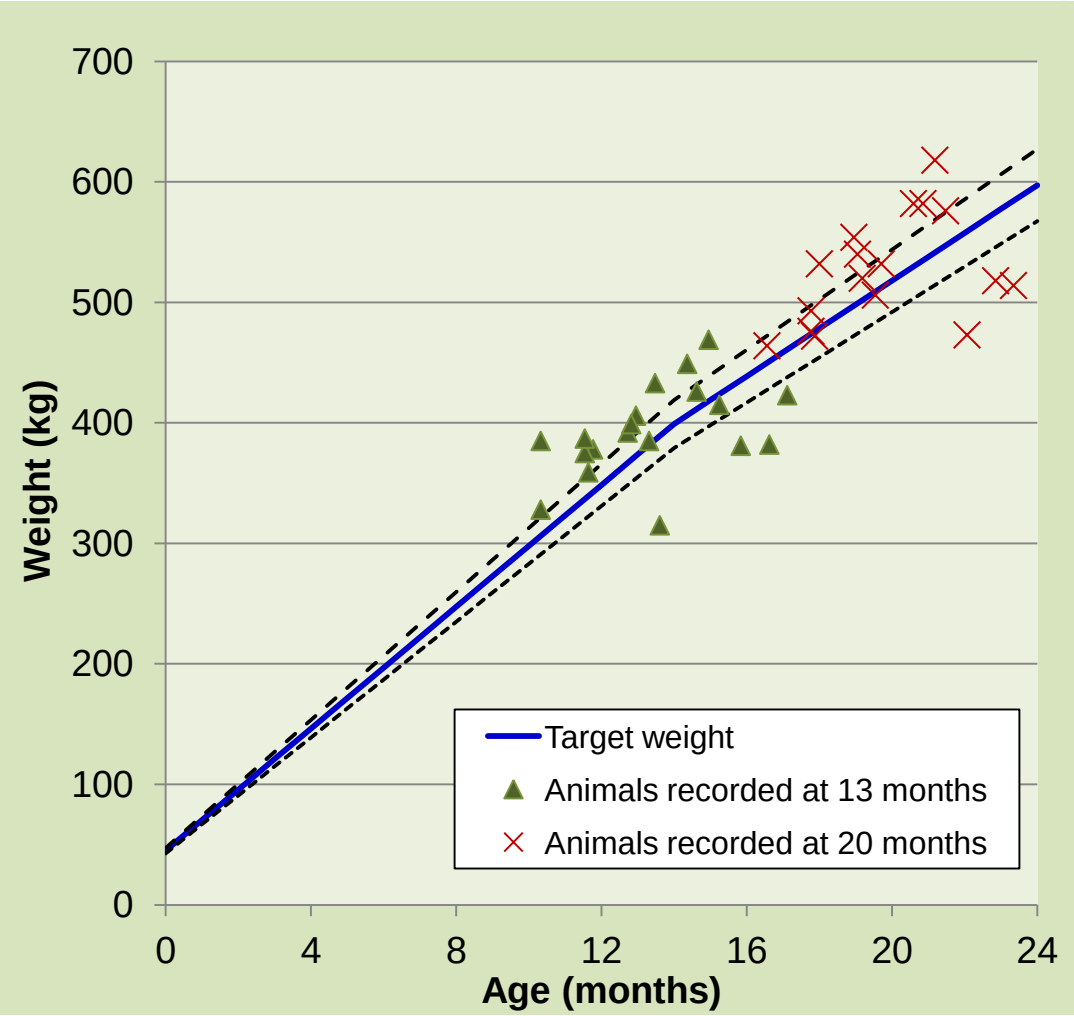
Calving weight 90% mature weight at 24 months

Key is to monitor performance – online tool being developed to help with this

Calved Heifer Performance

Patrick & Ciaran Kearney, Plumbridge, Omagh.

SUMMARY	Spring 2010
Mature cow weight	665 kg
Target weight at 1st calving	600 kg
Target weight at breeding	400 kg
No. of animals	19
Age	13 months
Live weight	394 kg
DLWG achieved	0.85 kg/d
No. of animals	17
Age	20 months
Live weight	527 kg
DLWG achieved	0.80 kg/d



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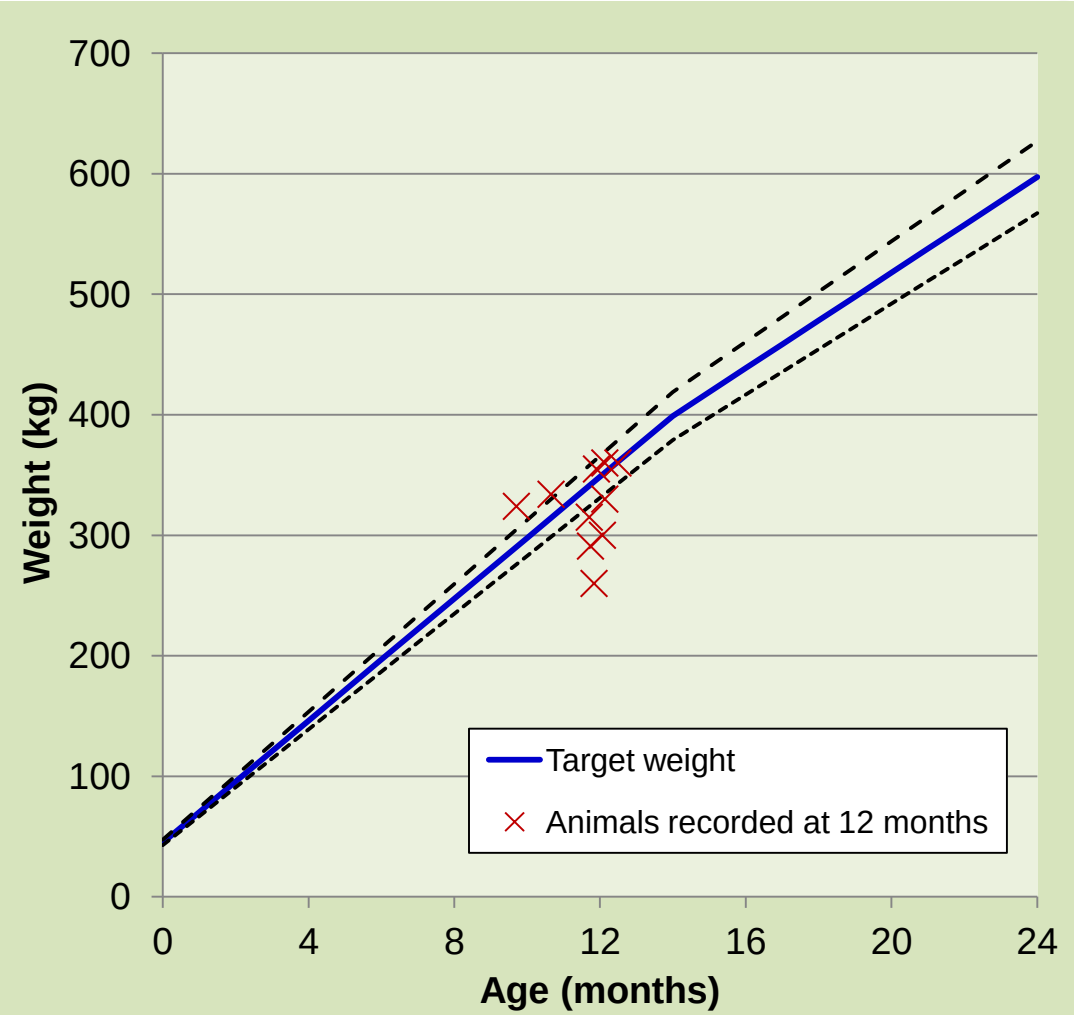
Maiden Heifer Performance

Patrick & Ciaran Kearney, Plumbridge, Omagh.

SUMMARY	Spring 2011
Mature cow weight	665 kg
Target weight at 1st calving	600 kg
Target weight at breeding	400 kg
No. of animals	10
Age	12 months
Live weight	323 kg
DLWG achieved	0.78 kg/d
DLWG required to bulling	0.96 kg/d



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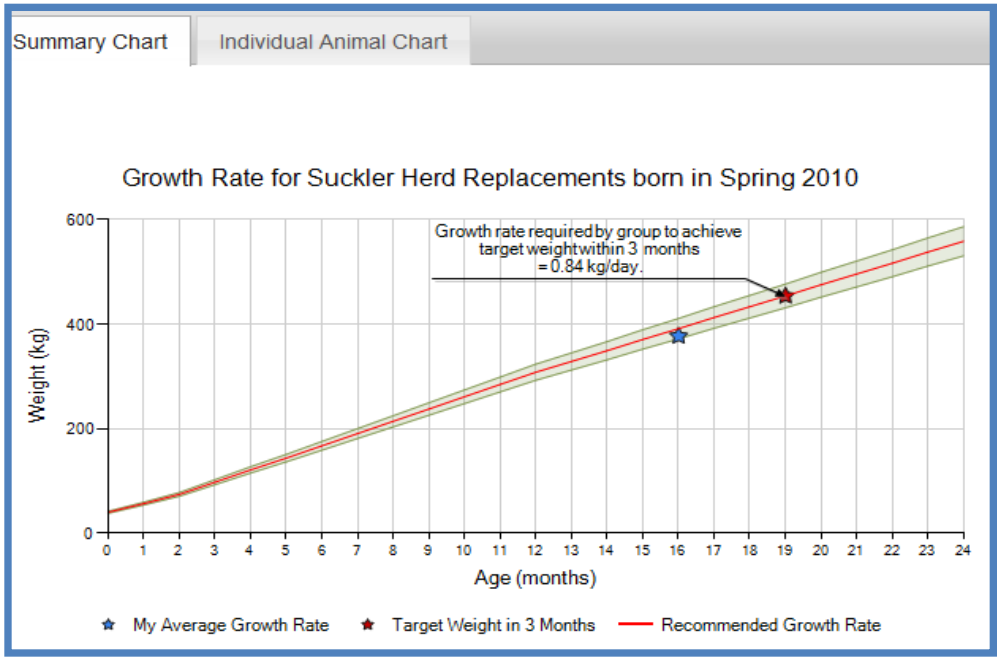
Online growth monitoring

- Online tool to aid growth monitoring
- Animal list and ages supplied by APHIS
- Weights automatically plotted against target



Animal Type: Suckler Herd Replacements

Age at first calving: 24 months

Mature Cow Weight: 620 kg

Calving Weight: 558 kg

Animal Tag No	Sex	Breed	Date of Birth	Age (months)	Weight (kg)
UK 9 390002 8274 4	F	Aberdeen-Angus	10/02/2011	17.2	400
UK 9 390002 8282 5	F	Charolais	15/02/2011	17.0	440
UK 9 390002 8284 7	F	Charolais	20/02/2011	16.9	405
UK 9 390002 8286 2	F	Aberdeen-Angus	28/02/2011	16.6	395
UK 9 390002 8290 6	F	Aberdeen-Angus	09/03/2011	16.3	350
UK 9 390002 8291 7	F	Stabiliser	11/03/2011	16.2	300
UK 9 390002 8292 1	F	Charolais	12/03/2011	16.2	410
UK 9 390002 8294 3	F	Aberdeen-Angus	14/03/2011	16.1	390
UK 9 390002 8295 4	F	Aberdeen-Angus	19/03/2011	16.0	305
UK 9 390002 8296 5	F	Charolais	20/03/2011	15.9	350
UK 9 390002 8297 6	F	Charolais	22/03/2011	15.9	350
UK 9 390002 8300 2	F	Stabiliser	23/03/2011	15.8	430
UK 9 390002 8707 3	F	Charolais	10/04/2011	15.2	395
UK 9 390002 8708 4	F	Charolais	12/04/2011	15.2	410
UK 9 390002 8711 7	F	Stabiliser	22/04/2011	14.9	400
UK 9 390002 8710 6	F	Stabiliser	26/04/2011	14.7	300

Key performance indicators

Bovine Information System (BovIS)

	RCF farms (11/12)[1]	NI average[2]
Age at first calving (months)	24	31
Calving interval (d)	368	400
Calves per cow per year	0.95	0.83
Females not calved (%)	4.0	10.7
% of heifers calved 22-26 months of age	72	18
% of herd calving within 90 days	75	68

[1]Based on four out of the six RCF farms as two had yet to complete the calving season when reports created
[2]Based on approximately 250 Northern Ireland suckler herds

Tools now available:

- To benchmark physical and financial performance (CAFRE benchmarking and BovIS)
- Help producers easily monitor performance (BovIS growth monitoring tool)

Calving Performance

Farm	No. calved	Calves born dead/dead within 24 hrs	Calf birth weight (kg)	No. of veterinary assisted calvings
A	33	1	36	2
B	11	0	32	0
C	31	3	37	0
D	16	1 (twin)	42	1
E	10	1	36	0
F	36	4	38	3
Hillsborough	21	1	36	0

On average 4% of heifers required veterinary assistance at calving

Calving at 2 versus 3 years of age

CAFRE EXPERIENCE

	2 year calving [1]	Mature cows
Weight at weaning (kg) [2]	576	666
Calf gain (kg/d)	1.01	1.10
200d weight (kg)	245	264
Weaning efficiency [3]	42.5	40.3
Percentage back in calf (%)	93	94

[1] Easy calving sire used

[2] 2yo and 3yo heifers attain similar mature weights

[3] Calf weight at 200 days per 100kg cow weight

- CAFRE has been successfully calving heifers at 2 years of age since 2007
  2year old heifers are consistently the most efficient age group in the herd

Reducing the age at 1st calving

Performance of RCF producers

RCF project Farm	*Age at calving (2011/12)*
A	23
B	27 (purchased heifers)
C	25
D	26 (24)
E	27 (25)
F	23
Hillsborough	25

RCF herd age at first calving has decreased by 3.3 months since starting the project

Greenhouse gas emissions

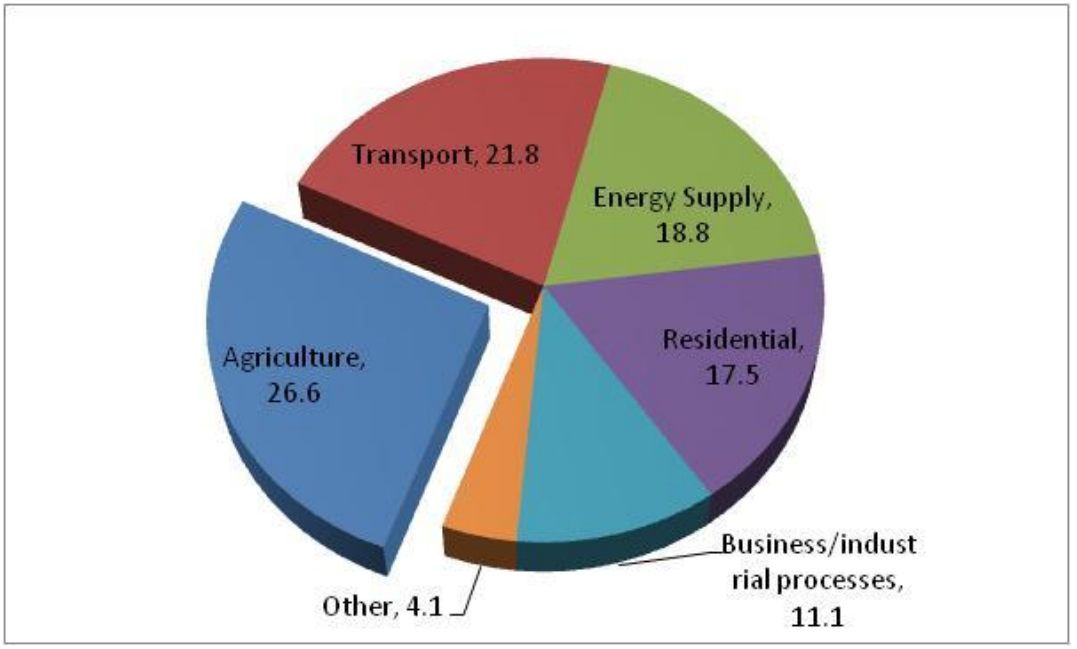
Improved efficiency of production is key!

What are the greenhouse gases associated with agriculture?

Carbon dioxide – fertiliser, lime, herbicides, pesticides, fuel, electricity, animal feed etc

Nitrous oxide – fertiliser application, manure management, crop residues etc

Methane – enteric fermentation in rumen, manure management



What are we doing about it?

- DEFRA and the devolved administration have funded a large project involving AFBI and research organisations across the UK to improve the accuracy of the national GHG inventory
- DARD and AgriSearch have commissioned AFBI to investigate GHG reduction strategies and develop a tool to enable producers to calculate emissions from their own farm
- Greenhouse Gas Reduction Strategy and Action Plan

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Greenhouse gas emissions

Improved efficiency of production is key!

Reducing the age at first calving

- Less animals on the farm
- Less inputs required such as feed and land
- Increased carcass output per ha
- Improved cow longevity and fertility

Effect of age at first calving on the number of replacement heifers on the farm (100 cow herd)

Age group	Age at calving (months)	
	24	36
0-12	20	20
12-24	20	20
24-36	0	20

Other methods to reduce GHG emissions:

- Reducing the age at slaughter
- Balanced diet formulation
- The use of improved beef genetics
- Minimising animal mortality and morbidity
- Improved fertility
- Efficient use of fertiliser nitrogen, clover, legumes

Reducing the age at first calving could reduce GHG emissions by 10-15%

Improved production efficiency is key!

Heifer nutrition

Making the most of grass/grass silage

0 – 12 months

- Weaned at 8 months of age 300 kg (approx)
- Good grass silage plus 1-2 kg meal/d
- Early turnout to pasture

12 – 20 months

- Good grassland management – rotational grazing
- Bulled at 60-65% mature weight and CS 3
- Careful monitoring of weight/CS

20 – 24 months

- Housed on good silage alone with min/vit
- Careful monitoring of weight/CS

Analysis	RCF farmers
Dry matter (%)	27.8
ME (MJ/kg DM)	10.6
D Value	66
Protein (%)	11.7

Requirements until point of calving	RCF farmers
Total silage fed	5.5 t
Total meal fed	373 kg

Achieving heifer target growth rates

Importance of high quality grass silage

Silage quality	D –value (% DM)	330 kg continental heifer		515 kg in-calve continental heifer	
		Growth rate from silage alone (kg/d)	Conc required to achieve 0.74 kg/day	Growth rate from silage alone (kg/d)	Conc required to achieve 0.5 kg/day
High	77	0.95	0	1.0	0*
Low	60	0.04	4.5	0.01	3.5
Average	**67**	**0.44**	**2.0**	**0.45**	**0.50**

* Need to restrict intake

- High quality grass silage will reduce concentrate requirement

Beef output from the suckler herd

Industry Analysis – BovIS and LMC data

	Number slaughtered in 2011	Percentage from birth to finish farms	Age at slaughter (months)	Carcass weight (kg)	Conformation grade	Fat class
Bulls	19306	42	17	372	R+	3-
Steers	70744	18	26	369	R=	3=
Heifers	66402	25	25	317	R=	3+

- Important source of high quality beef – 39% in spec compared to 15% of dairy origin cattle
- Suckler beef production important role in managing and shaping the countryside

Suckler beef production

Patrick & Ciaran Kearney, Plumbridge, Omagh

Animal type	No. killed	Carcass weight (kg)	Age at slaughter (months)	Grade	Fat class
Bulls	40	371	14	U=	2=
Steers	4	388	28	R+	4-
Heifers	34	317	22	R+	3+

Animal type	Target daily carcass gain (kg/d)	Daily carcass gain achieved (kg/d)
Bulls	0.73	0.87
Steers	0.49	0.46
Heifers	0.47	0.46

- Key objective on the Kearney farm is to produce prime quality carcasses in the most efficient manner
  - ✓ Growth targets and monitoring performance

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