IRISH CATTLE BREEDING FEDERATION

ICBF Cattle Breeding Consultation Meetings.

Killeshin Hotel, Portlaoise.
27th July 2011

NDP National Development Plan Transforming Ireland

Dairy traits & dairy breeding programs (10:00 – 11:15)

Agenda:

- Dairy breeding trends – Andrew
- Dairy linear type - Andrew
- Dairy Genomics – Andrew
- Dairy Female fertility – Andrew
- Novel Traits – Sinead

Dairy & Beef. Common agenda items (11:15-13:15)

- Calving – Noirin
- Developments in beef breeding, including GROW® review – Brian
- ICAR 2012 - Brian

Beef traits & beef breeding programs (14:00 – 16:30).

- Beef breeding trends – Andrew
- Beef maternal milk – Donagh
- Beef fertility – Donagh
- Beef genomics – Donagh
- €uro-Star Indexes – Andrew
- Derrypatrick – Update & future plans – Noirin
- AOB

IRISH CATTLE BREEDING FEDERATION

Dairy Breeding Trends.

Killeshin Hotel, Portlaoise.
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NDP National Development Plan Transforming Ireland

Trends in dairy heifers.

Year	Total	With Dairy Sire	%	AI Bred	%
2006/2007	234,360	157,061	67%	120,498	51%
2007/2008	241,309	167,045	69%	127,185	53%
2008/2009	281,852	194,753	69%	150,433	53%
2009/2010	291,963	203,640	70%	154,995	53%
2010/2011	328,345	232,783	71%	176,752	54%

- 94k increase (+8%/year).
- AI breed = 176k heifer calves = ~700k doses/year. 56k increase in dairy AI heifers.
- Dairy AI = 10% per annum increase.

Breed choice – calf registration data.

Year	Total	HF	%	JE	RED	OTH
2006/2007	234,360	220,801	94%	2,722	8,063	2,774
2007/2008	241,309	226,979	94%	3,305	8,044	2,981
2008/2009	281,852	264,545	94%	6,344	8,836	2,127
2009/2010	291,963	273,712	94%	7,901	8,542	1,808
2010/2011	328,345	306,519	93%	11,766	8,302	1,758

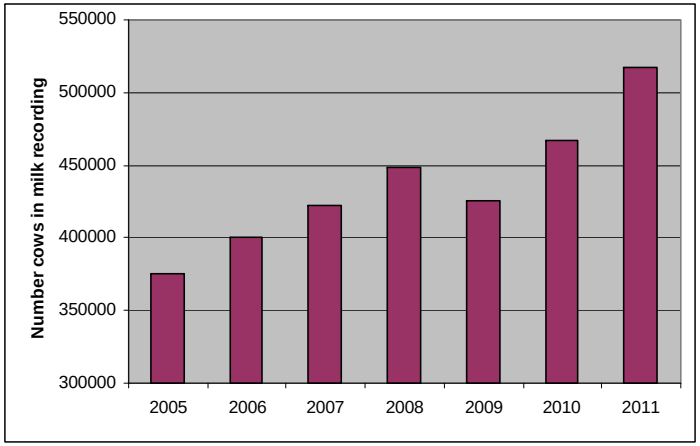
- HF is still dominant choice of sire.

Breed choice – Insemination data.

Breed	2010	2011	Change
HF	238,721	252,626	5.8%
JE	11,903	12,416	4.3%
Red	6,470	6,396	-1.1%
Beef	27,662	34,306	24.0%
Totals	286,766	307,755	7.3%

- Breed trend is consistent – latest insemination data.
- Further 10% increase in AI expected this year (insemination @ 7% and DIY AI @ 10-15%).

Trends in milk recording.



- Now 517k cows & 6.1k herds (50% of cows & 40% herds). 5% per annum growth (or 10% in last 2 years)
- 35% herds on EDIY.

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Dairy Linear Type.

Killeshin Hotel, Portlaoise.
27th July 2011

Transforming Ireland

Background

- Joint UK & Ireland evaluation.
- Undertaken by Edinburgh University.
- HUK are moving service to Canadian Dairy Networks (CDN).
  - Operational switch by early 2012.
- HUK are asking that we continue to be part of that service.
- At last industry meeting questions were raised re: aspects of linear type evaluations.

Ireland – Key Research Questions

- Appropriateness of GE model for compact spring calving herds.
  - Correction for age at first calving.
- Across breed evaluations.
  - G€N€ IR€LAND program has an increasing number of bulls from other dairy breeds.
- Others have/will arise…..
  - Composite traits, new traits……..

Where next?

- Need to get an "operational system" in place.
  - HUK/CDN or within ICBF?
- Need to answer key research questions.
  - Not confident that these questions will be answered as part of HUK/CDN relationship.
- Opportunity to develop a unique project for future benefit of Irish dairy farmers.
  - Data recording (IHFA), genetic evaluation (ICBF) & industry link (AI companies).
    - Research: ICBF, Teagasc & UCD + industry partners.
  - Must start soon…..LIFT 2011 – 29 G€N€ IR€LAND bulls & further 30 "other breed" bulls.

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Genomics.

Killeshin Hotel, Portlaoise.
27th July 2011

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Genomics Operational

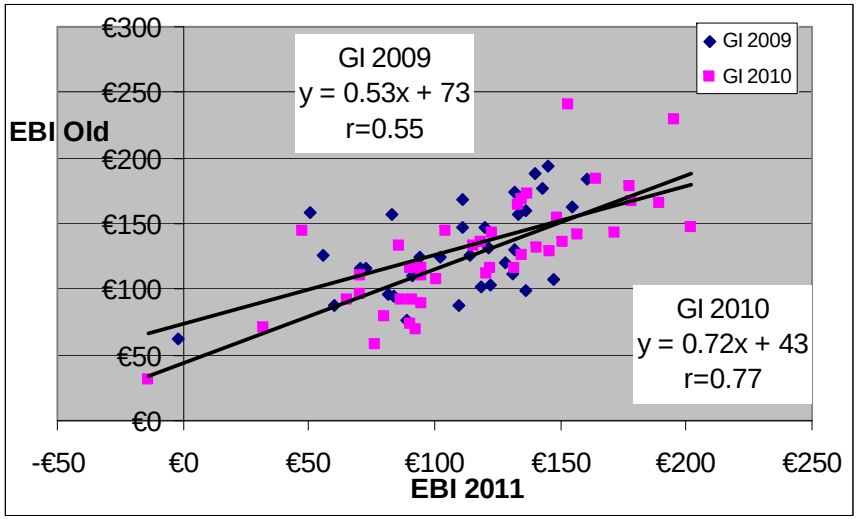
- 2138 animals genotyped since launch of genomics service (21st February).
  - Almost on 3k genotype (98%).
  - 2016 males & 122 females.
  - Across 3 main groupings;
    - AI companies – 1788
    - Herdbooks – 131
    - Farmers (direct) – 219.
  - System now operating satisfactorily.
  - Project re: G€N€ IR€LAND (& females) this Autumn.

Uptake in GS proofs.

	2010 Calves	2011 Calves
DP-IRL	37%	37%
GS	34%	38%
DP-INT	29%	25%
	100%	100%

- GS proofs – strong driver in AI uptake.
- 40% of total inseminations.

GS vs DP proofs - EBI



GS vs DP proofs - Traits

	2009 n=34	2010 n=42	ALL = n=76
Protein	0.58	0.85	0.79
CI Days	0.65	0.91	0.80
EBI	0.55	0.77	0.69
EBI rel GS	0.48	0.54	0.51
EBI rel DP	0.74	0.72	0.73
Dau/herds	67/49	66/42	66/45
EBI rg	0.93	1.00	1.00
EBI bias	-€22	-€11	-€16

- High correlation & acceptable bias.
- Improved results for 2010 data.

Genomics Research

- Latest research has raised an issue regarding the need to ensure that the genotyped animal is related to the training population.
- Otherwise, estimates can be “spurious”.
- Proposition.
  - Generate genomic values for animals with a traditional reliability coming from genotyped pedigree of >5%.
  - Apply principle for Milk, CI days & SU.
  - Once animal passes rule, then make official (for ICBF website). Animal must have all three for ICBF Active Bull List.
  - Propose to apply rule to all dairy breeds (HO & FR).
  - Same principle will apply for beef breeds.
  - Testing underway.

FR genomics – Roll-out

- When will Fr genomics EBI be available?
  - August 2011.
- On what chip do we assess the 2011 born claves?
  - 50k genotype only.
- How will the Fr genomics EBI’s be incorporated?
  - See previous.
- Will we know in advance as to whether an animal will pass “5% rule”?
  - Investigating options?

Linear Type – Roll-out

- Research work complete.
- Operational work scheduled for end September.

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Dairy Female Fertility

Killeshin Hotel, Portlaoise.
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Update.

- Research work now complete, including correction for heterogeneity of variance.
- Test proofs released next week. Feedback welcomed.
- Submitting data to Interbull test run (Sept 2011).
- Results presented at next industry meeting.
- Proposed implementation in December 2011, following industry consultation and feedback.

ROBUSTMILK

OptiMIR

On-going research into Novel Traits

Sinéad McParland

Teagasc

The Irish Agriculture and Food Development Authority

Overview of presentation

- The RobustMilk Project
  - Project background
  - Using MIR as a tool
  - Results to date
- Potential of the MIR to do a lot more
- The OptiMIR project
  - Getting this research out

RobustMilk http://www.robustmilk.eu

"Develop genetic and phenotypic tools to breed healthier cows that produce healthier milk"

- Pooled research data from 4 countries
- 4 approaches to the overall goal
  - How to identify healthy milk & cows - phenotype
  - The genetics of the traits – heritable
  - Genomic associations with the traits
  - Statistical tools to model traits – put into national evaluations

RobustMilk http://www.robustmilk.eu

"Develop genetic and phenotypic tools to breed healthier cows that produce healthier milk"

Irelands role?

·Develop phenotypes & methods to predict milk quality and animal robustness routinely

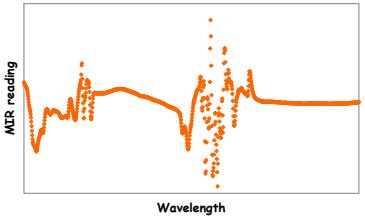
·Mid-Infrared Spectrometry

What is mid-infrared spectrometry?

Method of choice to determine fat, protein and lactose content of milk

Milk recording procedure

- Vial of milk taken from cow
- Analysed by MIR machine
- Light shone through sample
- Absorbance light through the milk at different wavelengths = Spectrum



Can we use the spectrum for more?

- Eg. Milk fatty acid content

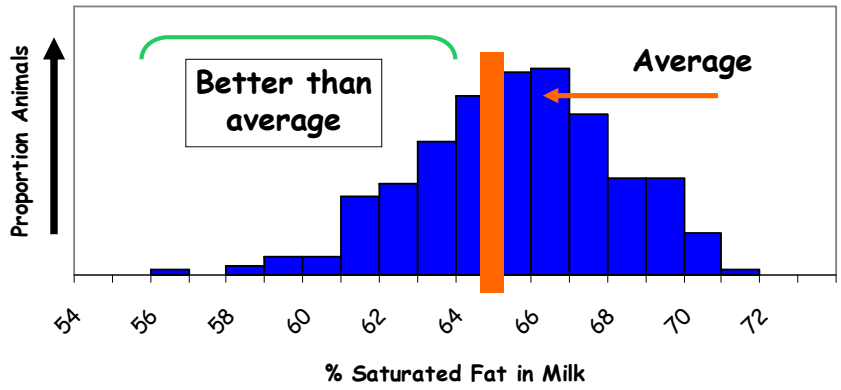
Why look at milk fatty acid content?

Saturated Fats
"bad fats"
Heart disease

Unsaturated Fats
"good fats"
Cholesterol reducing

- Would be preferable to have less saturates
- Irish cows more favourable milk FA profile
  - Grass fed, increased unsaturated fats
- Can we prove this and improve competitiveness??
- Can we breed for improved milk fat composition??

Variation in Moorepark Curtins herd for % saturated fats in milk fat



Using Mid-Infrared Spectrometry to predict fat composition

Equations to predict fatty acids in the milk have been developed

- Spectrum generated by the MIR machine

Data from Ireland, Belgium and Scotland

- Several breeds
- Different production systems
- Across lactation

Milk fatty acid prediction equations

517 milk samples
Ireland, Scotland, Belgium

Calibration
267 milk samples

Validation
250 milk samples

Variance explained - external validation

Fatty acid	ROBUSTMILK	Dutch	Ireland
	n=250	n=190	n=144
C4:0-C12:0	0.83 to 0.90	0.84 to 0.92	0.82 to 0.93
C14:0	0.91	0.94	0.92
C16:0	0.86	0.93	0.90
Saturated	0.98	0.99	0.98
Mono-unsat	0.96	0.92	0.90
Poly-unsat	0.83	0.48	0.69
Short chain	0.91	0.96	0.93
Medium chain	0.91	0.96	0.96
Long chain	0.91	0.87	0.91

Identify the "healthy cow"

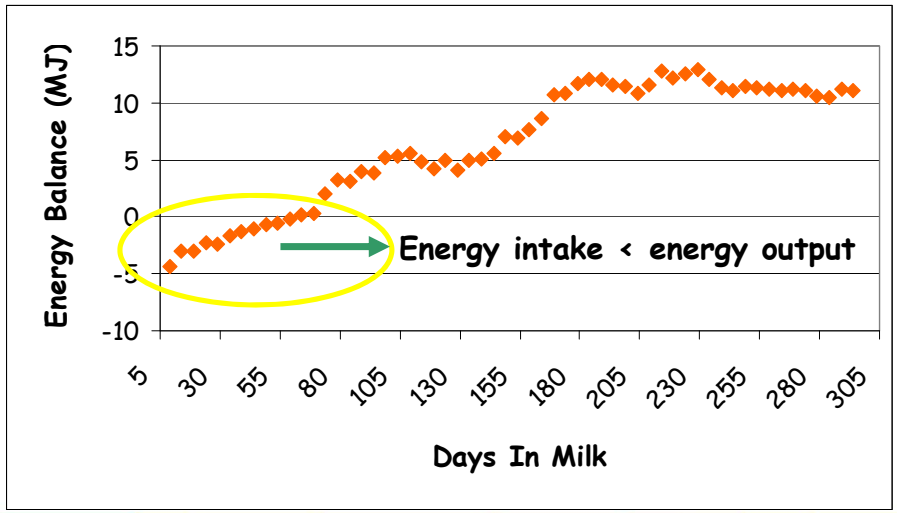
Energy balance (output-input) is a heritable indicator of health & fertility in dairy cows

Useful for multi-trait breeding programme

BUT

- Expensive to measure (correctly)
- Measurement not feasible on commercial herds
- Little data available

An average Energy Balance Curve



Using the MIR to predict EB

- Similar to equations for milk fatty acids
- Developed using data from a Scottish research herd (SAC) & Moorepark data (MPK)

- Accuracy of external validation (SAC) = 0.68
- Accuracy of external validation (MPK) = 0.66

- Work on-going to improve and validate equations

Other traits we can potentially predict using MIR

- Studies currently underway to evaluate the potential of MIR to predict:
- Milk Lactoferrin content
  - initial results look promising
- Minerals in milk?
- Residues?
- Bacteria?
- Heat stability?
- Production characteristics???

OptiMIR http://www.optimir.eu

- New Project bringing together milk recording organisations, researchers and advisors
  - Incl. Teagasc & Irish Cattle Breeding Federation
  - France, Belgium, Luxembourg, Germany & UK
- Pool national & research data bases
- Exploit MIR – what more can it tell us?
- Develop tools to be used on a nationwide basis throughout all participating countries
- Provide support to users of new tools

To Conclude

- MIR can be used as a tool to predict milk fatty acids, cow energy balance and potentially a lot more
- MIR spectrum data collected routinely on large numbers of milk-recorded cows

- More testing of associations with traits required
- New project OptiMIR will develop tools and advice for nationwide use

For more information. . .

http://www.robustmilk.eu

http://www.optimir.eu

Sinead.mcparland@teagasc.ie

Dairy & Beef. Common agenda items (11:15-13:15)

- Beef bulls for dairy cows – Noirin
- Developments in beef breeding, including GROW® review – Brian
- ICAR 2012 - Brian

IRISH CATTLE BREEDING FEDERATION

Identifying profitable beef bulls for dairy cows

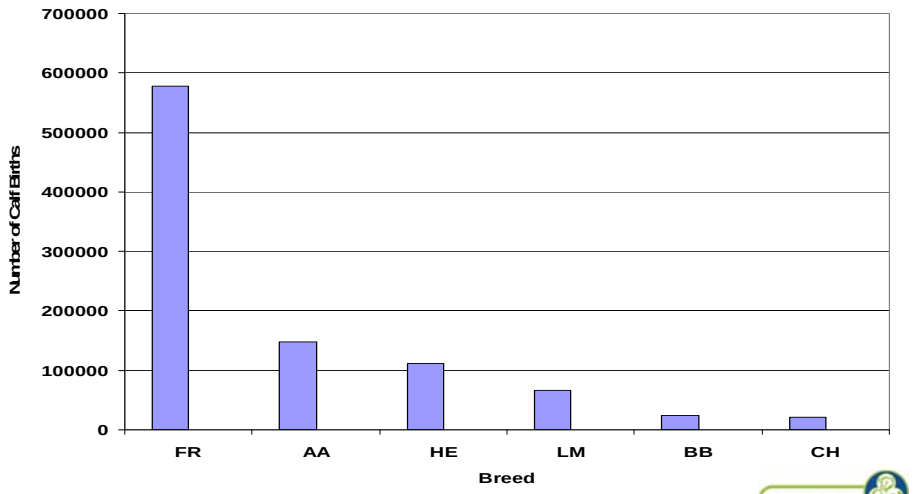
Nóirín Mc Hugh &
Donagh Berry

NDP National Development Plan Transforming Ireland

Background

- Currently 60% of dairy cows are bred to dairy bulls
- Increase in the dairy cow population of 4-5% per annum from 2011 → 1.65 million by 2020
- Substantial increase in beef cross calves from the dairy herd
- Sexed semen →reduction in the use of dairy bulls →increase proportion bred to beef bulls

Distribution of calf births to dairy cows



Motivation

- To identify beef bulls AI or stock bulls when mated to a dairy cow will deliver:
  - live, valuable progeny
  - with little impact on the cow herself

Requirements for developing an index

1. Knowledge of the traits of interest
2. Genetic parameters for the traits:
   a. Heritability estimates
   b. Genetic variation
3. Economic values for each trait

1. Knowledge of traits of interest

a. Easy calving (direct effects)

1. Knowledge of traits of interest

a. Easy calving (direct effects)

b. Short gestation

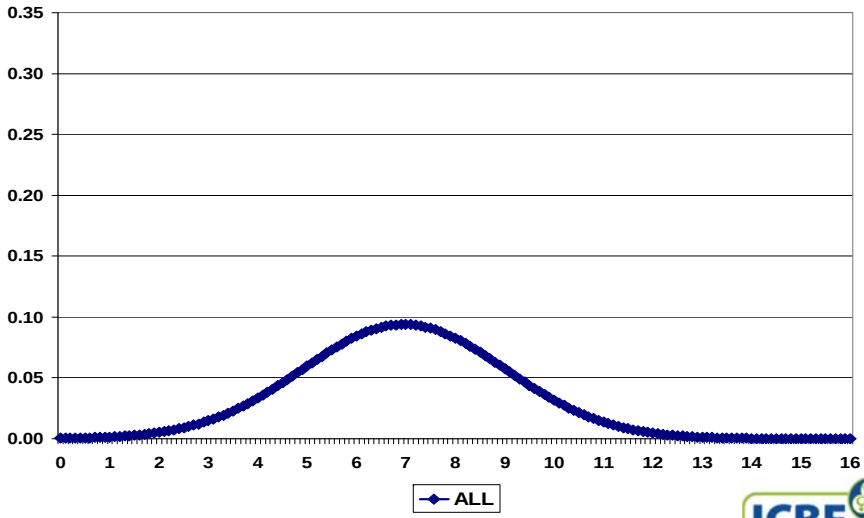
1. Knowledge of traits of interest

a. Easy calving (direct effects)
b. Short gestation
c. Live calf

1. Knowledge of traits of interest

a. Easy calving (direct effects)
b. Short gestation
c. Live calf
d. Good calf price (<6 wks of age)
e. Maternal replacement value?

2. Genetic Variation - Calving Difficulty



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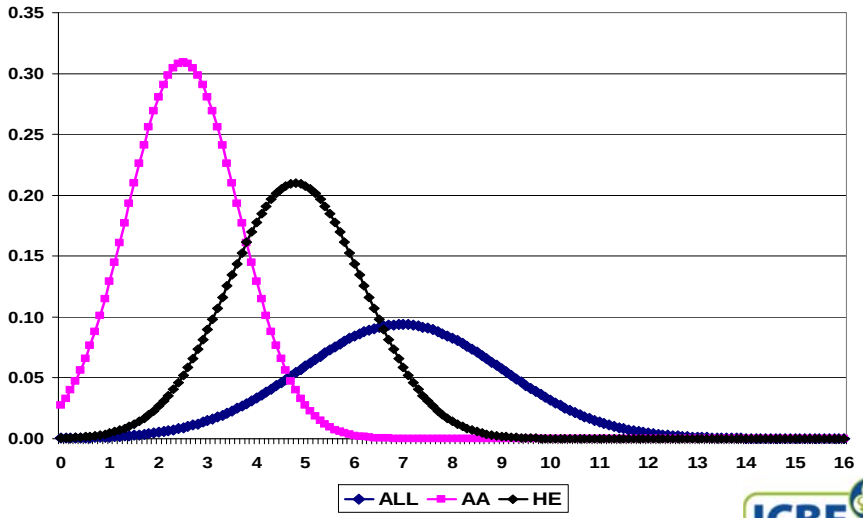

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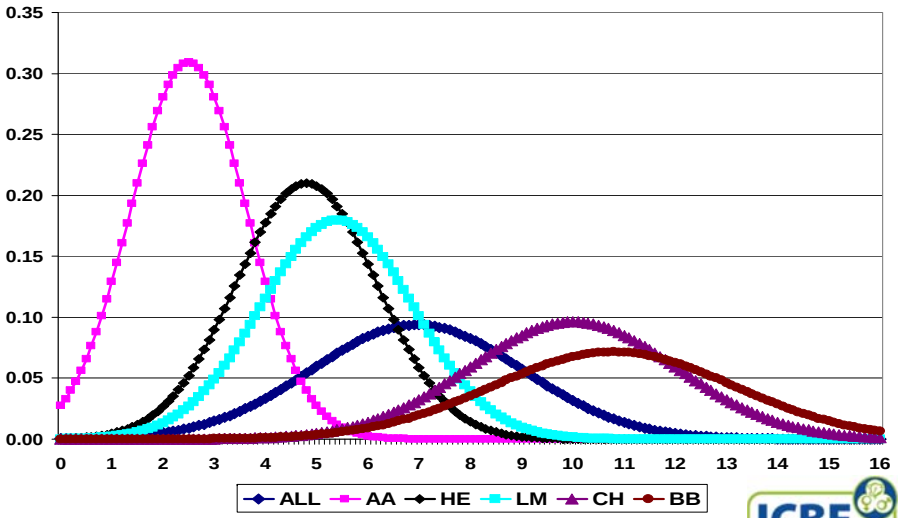
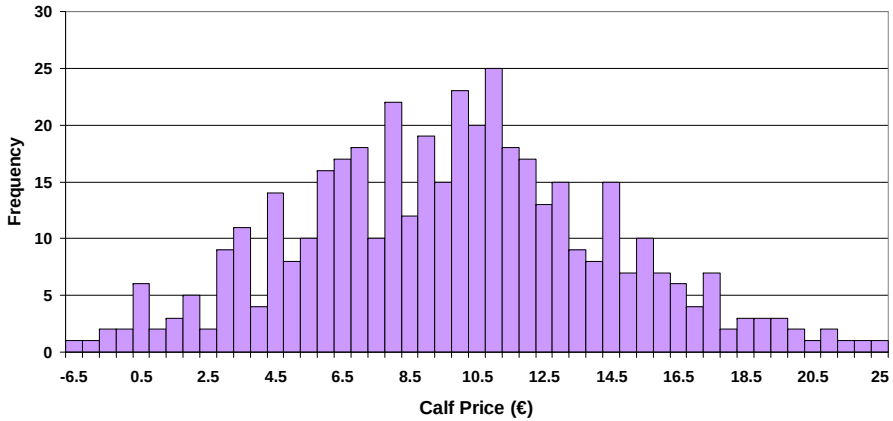


3. Economic importance - PTAs for Calf Price



3. Economic values

a. Calving difficulty

- Currently - €3.52 per % increase in the proportion of difficulty calvings per cow calving
- Accounts for costs associated with:
  - Labour and vet
  - Dead cow
  - barren cow

3. Economic values

b. Gestation length

- Currently - €7.49 per day per cow calving

3. Economic values

c. Calf mortality

- Currently -€2.58 per 1% increase in mortality
- Accounts for stillborns and calves dying before 28 days of age:
  - Loss of 3 week of calf
  - Disposal costs
  - Labour

3. Economic values

d. Calf price

- Research completed
- Implied by mart records

Requirements for developing an index

- Knowledge of the traits of interest ✔

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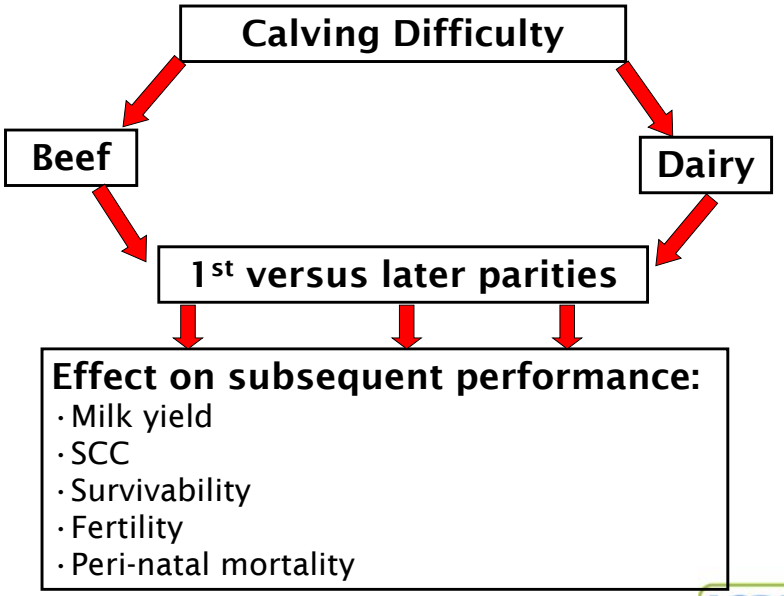
- Genetic parameters for the traits: ✔
  - Heritability estimates
  - Genetic variation

Requirements for developing an index

- Knowledge of the traits of interest ✔
- Genetic parameters for the traits: ✔
  - Heritability estimates
  - Genetic variation
- Economic value of each trait . . .



Outcome

- An (heritable) index to select beef bulls for use on dairy cows

IRISH CATTLE BREEDING FEDERATION

Beef Breeding Review Progress Report

Brian Wickham & Andrew Cromie

27th July 2011

Transforming Ireland

- **Background**
- **Data collection:**
  - **Weight Recording**
  - **Farmer scoring**
  - **Information Quality Index**
- **Genetic evaluations & Indexes**
- **G€N€ IR€LAND®**
  - **Bull Breeders**
  - **Bulls for AI**
  - **Progeny test / research / Tully**
- **HerdPlus®**
- **Genomics**
- **BAG - Beef Cattle Breeding Roadmap**
- **Tully – future role**
- **GROW® - linear scoring**

Background

- GROW® review => Beef Breeding Review
- Report to Breeding Consultation Meeting April 2011
  - A new emphasis on ensuring accurate data by working with those herd owners who want to follow best practice
  - Several connected elements
- Progress since then ….

Data Collection - Progress

- Weight recording
  - Range of options expanded (birth + three/year, paper/electronic/web) & implemented
  - Better Beef Farms
  - HerdPlus® 3,500 beef herds, data starting to flow
- Farmer scoring
  - maternal ability and docility in SCWS
  - 100,000 records, highly heritable, low cost
- Information quality index - initial research

HerdPlus Profit through Science

ICBF HerdPlus Weight Recording Form

Please complete the details below for each animal weighed:

Weighing Date ____/____/2011

Homebred males

Tag Number	Age (Mths)	Breed	Weight (Kgs)
IE111003190**213**	22	CH/SI	
IE111003120**215**	16	CH/SI	
IE111003130**216**	16	CH/BA	
IE111003180**220**	15	CH/SI	
IE111003190**221**	15	CH/LM	
IE111003140**225**	13	CH/SI	

Tag Number	Age (Mths)	Breed	Weight (Kgs)

Data	Angus	CH	HE	LM	SI
Count of Herds	21	172	95	228	51
Average number cows	29.6	26.7	26.5	25.9	29.6
Average pedigree registrations	22.2	18.1	19.6	17.6	19.6
1. Timeliness					
Average days to 1st ped registration	15.9	17.4	16.1	17.2	16.8
- Best 10% herds	5.3	7.1	7.6	6.7	6.8
- Worst 10% herds	34.2	42.3	29.9	39	32.8
2. Completeness					
i. % errors in herdbook registration	24.2%	20.2%	4.1%	11.1%	10.4%
- Best 10% herds	0	0	0	0	0
- Worst 10% herds	72%	84%	25%	48%	55%
ii. Data for Suckler Cow Welfare Scheme	77.6%	84.6%	81.9%	75.7%	88.5%
- Best 10% herds	100%	100%	100%	100%	100%
- Worst 10% herds	2%	4%	0%	1%	6%
iii Registrations with subsequent linear score	24.9%	39.2%	11.2%	42.2%	40.0%
- Best 10% herds	100%	100%	100%	100%	100%
- Worst 10% herds	0%	0%	0%	0%	0%
3. Normaility of data					
% animals 2 SD above breed mean for Weaning weight	11.2%	5.4%	1.8%	4.0%	11.4%
- Best 10% herds	0%	0%	0%	0%	0%
- Worst 10% herds	72%	27%	12%	23%	59%

Genetic Evaluations & Indexes - Progress

- Queries – foreign evaluations, caesarean sections, good animal in poor herd vs average animal in good herd, optimal time to weigh calves for most accurate milk evaluations, understanding of reliability, …
- Fertility evaluations – more data, inseminations, more lactations, …
- Calving evaluations – more data, first & later calvings, better model, …
- Milk evaluations – more data, age of weighing, farmer opinion data, …
- Carcass image data – genetic parameters, genetic correlation with other traits …
- €uro-Star indexes – review of overall indexes, selection criteria for Derry Patrick herd, …

G€N€ IR€LAND®

- Bull Breeder service
  - focus on supply of bulls for: dairy, suckler, AI
  - focus on herds that follow best practice (information quality index, weight recording, selection of sires, rearing of bulls, …)
- Bulls for AI
  - bulls that have greatest potential contribute to genetic gain in the breed
  - bulls that are commercially valuable to AI
  - not enough bulls being progeny tested
- Progeny test / research / Tully

HerdPlus®

- Slaughter report using predicted weights
- Beef HerdPlus® Journal 2011
  - distributed to 3,500 herds
  - all major industry players – AI, Herd Book, Teagasc, IFJ, DAFF
  - 250 international
  - available at industry events
  - total of 5,000 copies in 2011
  - annual from here on.

HerdPlus
Profit through Science

LoCall 1850 600 900

Slaughter Report
Bought In STEERS Summary
(Slaughter Period; 01-Jan-2010 to 31-Dec-2010)

ICBF.com

Herd Owner:
Herd Designator:
Print Date: 24th Jun 2011
Page: 1 of (32)

Table 1. Summary Data - Based on all Bought In Steers slaughtered in the period

Animal Details								Factory performance			KPI	
No. Of Animals	Carcass Index (€)	Bought Age (Months)	Slaughter Age (Months)	Purchase Price (€)	Wgt When Purchased (KG)	Days On Farm	Predicted Live Wgt At Slaughter (KG)	Cold Weight (KG)	Cents Per KG Cold Weight	Price/Hd (€)	Daily Gain On Your Farm (KG)	Value Per Day On Your Farm (€)
415	€ 12	20	25	599	434	165	576	310	€ 2.90	€ 901	0.95	€ 2.33
No. Animals in Calculations	289	415	415	288	288	288	288	415	415	415	288	288

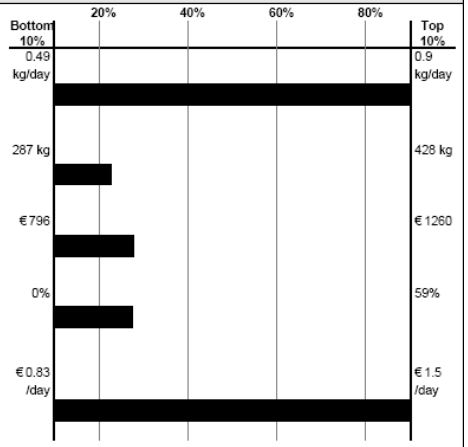
Explanatory Notes; ICBF Live weight predictor uses the carcass wgt, grade, conformation as well as age, sex and breed of the animal. Predictions are done for animals who have been on your farm > 30 days within following ranges; Females < 30 months, Steers < 36 months, Bulls < 24 months.

Table 2. Quality Payment System Grid (Bought In Steers)

	E	U+	U=	U-	R+	R=	R-	O+	O=	O-	P
1		1						1	1		1
2-			1	1	2		1				1
2=				2	6	7	3	4	2		
2+				1	6	7	9	7	9	1	1
3-			2	4	10	14	15	14	13		
3=			1	7	8	21	34	36	23	5	
3+			1	3	7	13	20	30	13	4	
4- (L)					2	5	8	13	1		
4=						1	4	5			
4+ (H)								1	1		

Table 3. Your Key Performance Indicators (KPI's) vs National Statistics (Bought In Steers)

	Your Herd	Nat Avg	Bottom 10%	Top 10%
1. Predicted Avg Daily Gain (kg/day) The predicted average weight gain from purchase weight to predicted live slaughter weight. Based on 288 animals with mart weights/prices	0.95 kg/day	0.68 kg/day	0.49 kg/day	0.9 kg/day
2. Carcass weight (kg) The average cold carcass weight for these 415 slaughtered animals in the period	310 kg	357 kg	287 kg	428 kg
3. Average Price per Head (€) The average factory price received for these 415 slaughtered animals in the period	€ 901 (€ 2.90/kg)	€ 1020 (€ 2.85/kg)	€ 796	€ 1260
4. Carcass Quality (% of carcasses achieving high price grades, E2+, E3, E4, U2+, U3, U4, R2+, R3, R4-, R4=, see shaded area)	13%	23%	0%	59%
5. Value/day on your farm (€ /day) Average Sale Price minus Purchase Price divided by number of days on your farm. Based on 288 animals with mart weights/prices	€ 2.33 /day	€ 1.12 /day	€ 0.83 /day	€ 1.5 /day



HerdPlus
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Slaughter Report
Bought in STEERS Summary tables
(Slaughter Period; 01-Jan-2010 to 31-Dec-2010)

Herd Owner:
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Print Date: 24th Jun 2011
Page: 2 of (32)

Table 4. Summary by € uro-star Ratings (Bought in Steers)

Animal Details								Facto	
€ uro-star Rating	No. Of Animals	Avg € uro-Star Carcass Index (€)	Avg Age (Months)	Avg Purchase Price (€)	Avg Wgt When Purchased (KG)	Days On Farm	Avg Predicted Live Wgt At Slaughter (KG)	Avg Cold Wgt (KG)	Gra
5 Star *****	42	€ 95	23	€ 659	383	294	649	368	R
4 Star ****	27	€ 51	22	€ 709	412	207	607	327	R
3 Star ***	23	€ 40	23	€ 687	442	215	611	337	R
2 Star **	50	€ 18	24	€ 619	409	232	595	324	R
1 Star *	147	€ -26	26	€ 564	442	124	557	294	O
Without Carcass index	126		25	€ 584	449	123	553	295	O

Explanatory Notes; ICBF Live weight predictor uses the carcass wgt, grade, conformation as well as age, sex and breed of the animal. Predictions are only do
months, Bulls < 24 months. Averages are displayed if there are 3 or more animals within a star rating category. Furthermore mart related data is displayed if 3 or

Slaughter Report
Bought in STEERS Summary tables
(Slaughter Period; 01-Jan-2010 to 31-Dec-2010)

ICBF.com

Herd Owner:
Herd Designator:
Print Date: 24th Jun 2011
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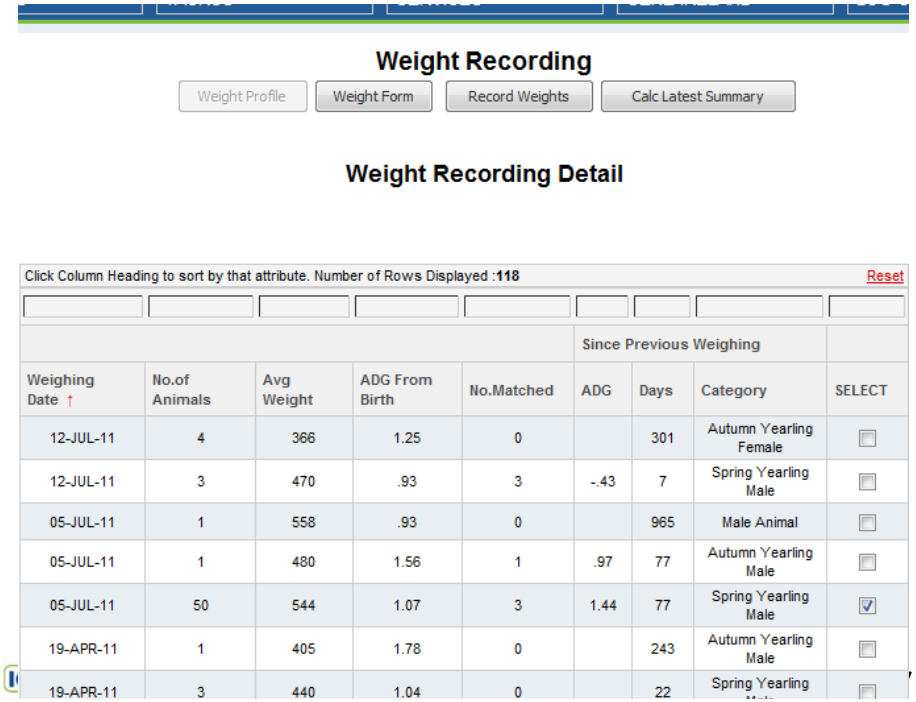
rs)

ls					Factory performance					KPI	
	Avg Purchase Price (€)	Avg Wgt When Purchased (KG)	Days On Farm	Avg Predicted Live Wgt At Slaughter (KG)	Avg Cold Wgt (KG)	Grade	Fat	Price Cents Per KG	Overall Price (€)	Predicted Avg Daily Gain On Your Farm (KG)	Value Per Day On Your Farm (€)
	€ 659	383	294	649	368	R=	3=	€ 2.96	€ 1,087	0.97	€ 1.85
	€ 709	412	207	607	327	R=	3=	€ 2.87	€ 945	0.96	€ 1.49
	€ 687	442	215	611	337	R=	3=	€ 2.92	€ 986	0.85	€ 1.77
	€ 619	409	232	595	324	R=	3+	€ 2.92	€ 947	0.89	€ 1.99
	€ 564	442	124	557	294	O+	3+	€ 2.90	€ 858	0.99	€ 2.68
	€ 584	449	123	553	295	O+	3=	€ 2.87	€ 846	0.92	€ 2.43

rade, conformation as well as age, sex and breed of the animal. Predictions are only done for animals within following ranges; Females < 30 months, Steers < 36
animals within a star rating category. Furthermore mart related data is displayed if 3 or more animals have mart data within a particular star rating category.



Genomics

- Donagh to cover

BAG – Beef Breeding Roadmap

- Participation as member of beef activation group (BAG).
- 40% increase in beef output by 2020.
- Important role of Discussion Groups.
- Report includes Beef Breeding Roadmap:
  - Service to bull breeders, bulls for AI, progeny test / research herds, new role for Tully, …
  - Weight recording
  - Genomics
  - Semen sexing technology

Tully – Future Role

- Move to progeny test for feed intake & growth.
- Slaughter data and female fertility traits.
- Renewed role in demonstration / education.
- Cost / benefit study of future options commissioned.

GROW®

- Continue as-is for the time being.
- Research commissioned;
  - genetic evaluation for bull functionality
  - gain in accuracy for growth & muscle trait evaluations.
- Most future weight recording by DIY or service providers separate from linear scoring.
- Min cont. group size issue being addressed through information quality index.

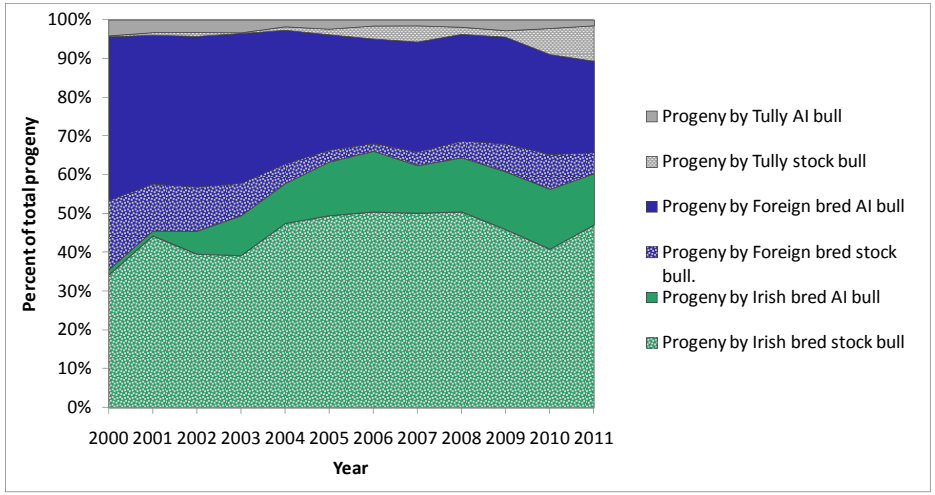
Cost:benefit analysis of beef genetic improvement options.

Killeshin Hotel, Portlaoise.
27th July 2011

Background.

- How can ICBF best spend its "investment" in beef breeding?
  - Tully performance test station.
  - On-farm linear scoring.
  - On-farm weight recording.
  - G€N€ IR€LAND progeny testing.
  - Working with elite bull breeding herds.
- Answer via cost:benefit analysis of various program options.

Origins of bulls used in pedigree beef herds.



(i) Selection Index Model.

- List of key traits (calving, terminal & maternal).
- Heritability & genetic/phenotypic variances.
- Economic weights for key traits.
- Genetic correlations between key traits.
- Estimates taken from recent Irish publications (Pabiou & Crowley).

(ii) Types of selection candidates.

1. Ped Bull - young pedigree bull candidate being chosen for sale or mating in the pedigree herd
2. Tully Bull - young Tully bull candidate being chosen for purchase by a commercial herd, use in a pedigree herd, or to enter AI progeny test
3. GI Bull - Gene Ireland bull with progeny but no maternal daughters yet recorded
4. GI Tully Bull - Gene Ireland bull with progeny run through Tully for feed intake recording but no maternal daughters yet recorded
5. Graduate Bull - Graduating Gene Ireland bull including daughter information but no feed intake on progeny
6. Graduate Tully Bull - Graduating Gene Ireland bull including daughter information and with feed intake on progeny

(iii) Predicted genetic responses & cost:benefits

- €-profit response in key traits.
- For 6 different selection candidates.
- Assumes; (i) top 40% selected on basis of SBV index, or (ii) top 5% selected on basis of SBV index.
- Compounded over 20 years (to 2030).
- Includes cost of data collection & progeny testing.
- Appropriate discount rate applied (7%)

Examples of key questions?

- How much extra genetic gain do we get from progeny testing?
  - Pedigree stock bulls to breed pedigree stock bulls versus AI bulls to breed pedigree stock bulls.
  - AI bulls to breed commercial progeny.
- How much extra genetic gain do we get from linear scoring & weight recording young pedigree males.

Examples of key questions?

- How much extra genetic gain do we get from having feed intake on pedigree bull, vs. commercial progeny from pedigree bull.
- How much extra genetic gain do we get from working closely with bull breeder herds?
- Others…….

High level outcomes.

- Annual rates of genetic gain of €12/calf/year are achievable (currently <€5)
  - Worth €140 million to industry by 2020.
- Collecting feed intake on commercial progeny (as opposed to pedigree males) will result in a ~10% increase in selection response.
- Collecting weight records & linear score data on pedigree animals will result in a ~10% increase in selection response.
- Costs of data collection for both?

Issues arising?

- Role of maternal traits. Should their weightings be increased in analysis?
- Specialised sire and dam lines. For example, 1st crosses from dairy herd.
  - Sexed semen & stock bulls for dairy herds.
- Can Irish bred bulls displace foreign bulls as “sires of sons”?
- What impact genomics?
- Do we need progeny test structure to get best value from genomics?

Where next?

- Work well underway.
- Technical meeting with herdbooks – 18th August.
- Industry consultation meeting – 7th September.
- Material prepared and made available in advance of meetings.

Monday 28th May 2012

8:00	Registration & Industrial Exhibition	Dairy Industry Day with theme of Information for Profitable Dairy Farming	Interbull Technical	Interbeef WG Meeting & Workshop	Meetings of Sub-Committees (SC), Working Groups (WG) & Task Forces (TF)	Accompanying persons tours.
9						
10						
11						
12						
13						
14			Interbull Steering Committee Meeting		Meetings of Sub-Committees, Working Groups & Task Forces	
15						
16						
17						
18			Interbull Business Meeting			
19						
20	Casual Buffet for ICAR Board, Interbull Steering Committee, SC, WG & TF members meeting during day, participants in Interbull Business meeting.					
21						
22						

Tuesday 29th May 2012

8:00	Registration & Industrial Exhibition	Beef & Sheep Industry Day with theme of Information for Profitable Beef & Sheep Farming	Interbull Open Meeting	Meetings of Sub-Committees, Working Groups & Task Forces	Accompanying persons tours.
9					
10					
11					
12					
13					
14				Meetings of Sub-Committees, Working Groups & Task Forces	
15					
16					
17					
18			Interbull Business Meeting		
19					
20	Welcome Social Evening - Irish Style!				
21					
22					

Wednesday 30th May 2012

8:00				
9	Registration & Industrial Exhibition	Plenary with theme of How Can Animal Recording Improve the Profitabililty of Animal Farming?		Accompanying persons tours.
10				
11		ICAR General Assembly		
12				
13				
14		Joint Interbull, Interbeef, ICAR: Identifying the Most Profitable Animals for Breeding - Dairy, Beef, Sheep.	On-Farm and On-Animal Devices for Identification and Recording.	
15				
16				
17				
18				
19				
20	Evening Free to Enjoy Cork & Environs.		Interbull Technical Committee Meeting	
21				
22				

Thursday 31st May 2012

8:00				
9	Industrial Exhibition	Plenary with theme of Practical Implications of Genomic Technologies for Animal Agriculture.		
10				
11		Information Systems for Providing Farmers (and Breeders) with Information Needed to Increase Profitability.	Developments in Off-Farm Recording & analysis - for Milk, Meat, ...	Interbull Steering Committee Meeting
12				
13	Technical tours - dairy, beef and sheep farms - how are Irish Farmers increasing the profitability and sustainabiity of their farms?			
14				
15				
16				
17				
18				
19				
20	Gala Dinner & Concert.			
21				
22				

Friday 1st June 2012

8:00			
9	Industrial Exhibition	Plenary with theme of The Future Organisation of Animal Recording & Genetic Evaluations - keeping the balance between Commercial, Industry Good and Public Good.	Special Issues for Sheep, Goats and other Species.
10			
11		Presentations by TF, SC, & WG	
12		General Assembly	
13			
14	ICAR Board meeting with Chairpersons of TF, SC, and WG.		
15	ICAR Board Meeting.		
16			
17			
18			
19			
20			
21			
22			

Participation

- Attending
  - Industry Days
  - Interbull
  - ICAR
  - Technical Tours
- Presenting
- Sponsorship

Beef traits & beef breeding programs (14:00 – 16:30).

- Beef breeding trends – Andrew
- Beef maternal milk – Donagh
- Beef fertility – Donagh
- Beef genomics – Donagh
- €uro-Star Indexes – Andrew
- Validation of New Maternal Beef Index - Noirin
- AOB

ICBF.com

IRISH CATTLE BREEDING FEDERATION

Beef Breeding Trends.

Killeshin Hotel, Portlaoise.
27th July 2011

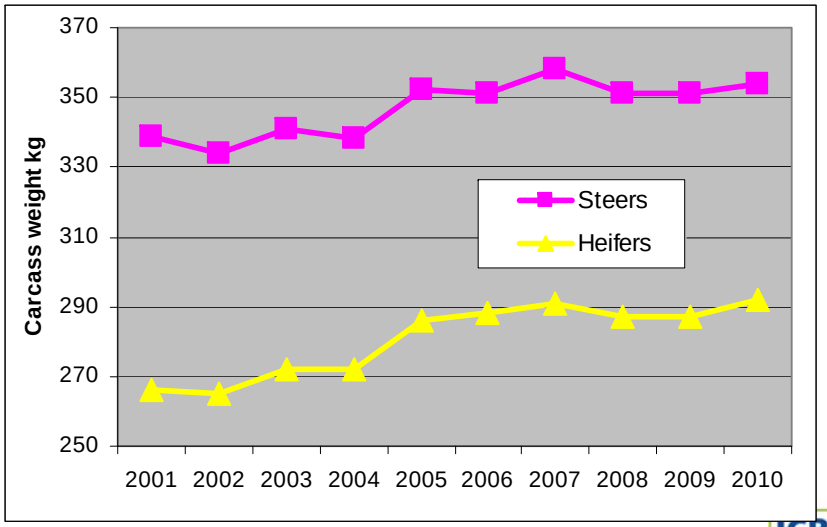
NDP National Development Plan
Transforming Ireland

Suckler cow numbers.

Year	Number	% change from previous year
2006/2007	1,039,565	
2007/2008	1,090,831	4.9%
2008/2009	1,046,346	-4.1%
2009/2010	950,910	-9.1%
2010/2011	935,564	-1.6%

- Numbers are declining (-5%/year for past 3 years.
- ***Why this decline in numbers?***

Trends in Carcass Weight (kg) (2001-2010)



Trends in Female Fertility (2006-2010)

	2006	2007	2008	2009	2010
Calves/ cow/ year	0.82	0.86	0.81	0.81	0.80
Calving Interval Days	399	399	398	399	406
Age at first calving	30.5	31.2	31	31.4	32

- Carcass weight & price increasing.
- Female fertility decreasing.
- No increase in suckler farm profit.

IRISH CATTLE BREEDING FEDERATION

Maternal weaning weight evaluation

Ross Evans

NDP National Development Plan Transforming Ireland

Current beef evaluations

- Goal trait:
  - 150 to 300 day weaning weight
- Predictor traits
  - 300 to 600 day live-weight
  - Carcass weight
  - Foreign EBVs – UK & FRA

→Original research is dated and now have more data

Proposal

- **Increase reliability and relevance of trait**
  - **Re-definition of the pertinent trait**
  - **Including predictor traits (cow milkability score)**
  - **Exploiting information on the link between genetics for growth (direct effect) and genes for milk (maternal effect)**

When is maternal weight maternal weight?

- **Estimate contribution of direct (i.e., growth) and maternal (i.e., milk) to differences in animals across different ages**

	Heritability	
	Direct	Maternal
A 0-10	0.46	0.24
B 10-50	0.49	0.08
C 50-150	0.28	0.23
D 150-250	0.36	0.25
E 250-350	0.39	0.24
F 350-450	0.44	0.18
G 450-550	0.41	0.12
H 550-700	0.33	0.12

Starts to decline

When is maternal weight maternal weight?

- **Estimate contribution of direct (i.e., growth) and maternal (i.e., milk) to differences in animals across different ages**

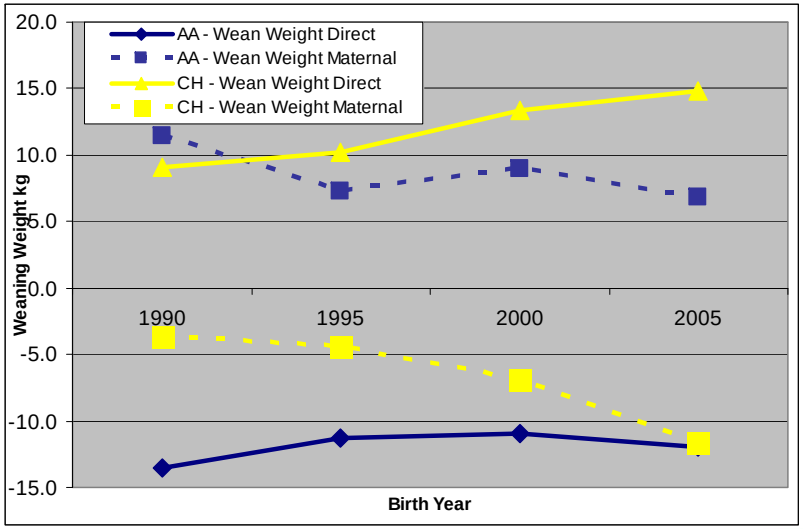
	Heritability		Correlation
	Direct	Maternal	with milkability
A 0-10	0.46	0.24	0.16
B 10-50	0.49	0.08	0.00
C 50-150	0.28	0.23	0.24
D 150-250	0.36	0.25	0.71
E 250-350	0.39	0.24	0.35
F 350-450	0.44	0.18	0.29
G 450-550	0.41	0.12	0.56
H 550-700	0.33	0.12	0.32

h^2=0.40

Exploiting growth v milk correlation

- Across breeds "beefiness" and "milkiness" are generally antagonistic
  - Holstein v Friesian
  - We are trying to identify the exceptions to the rule, but with no other information averages are useful
- Currently no assumed genetic correlation between direct (i.e., Growth) and maternal (i.e., milk) weaning weight
- Recommendation to change to -0.35 estimated from data; correlation of 0.97 to 0.98 between proofs
  - France use -0.30; UK use -0.43

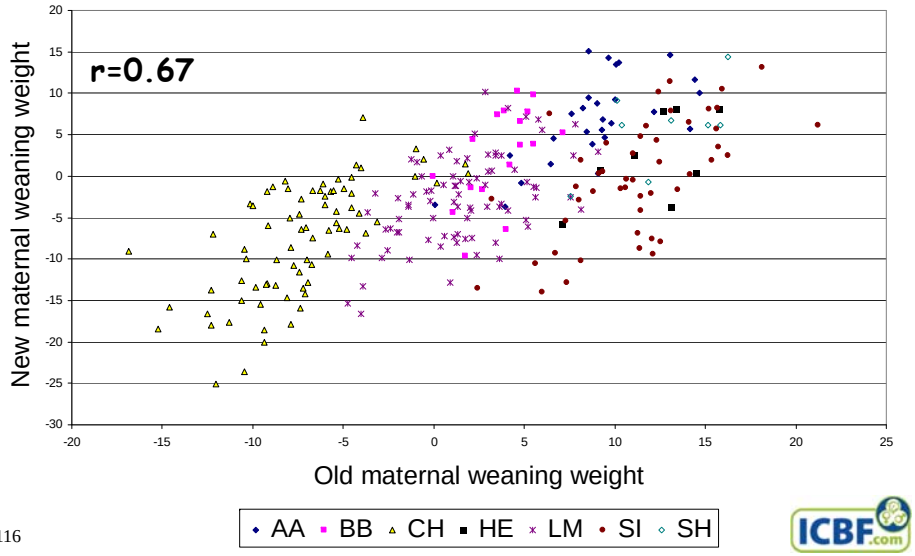
Genetic trends – negative association



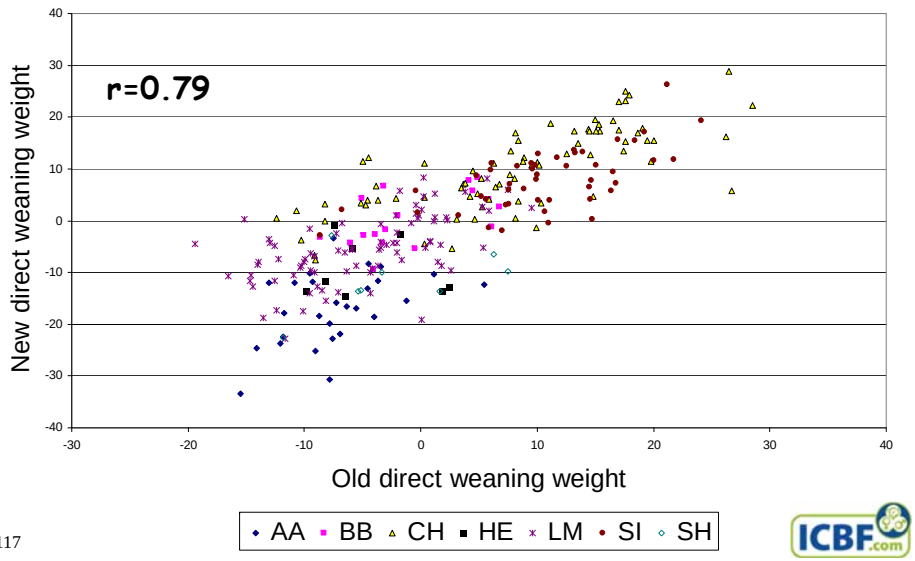
New model

- Goal trait
  - 150 to 250 day weight
- Predictor traits
  - Live-weight in other age categories
  - Farmer milkability score
  - Direct weaning weight as predictor of maternal weaning weight and vice versa
  - Foreign EBVs – UK & FRA

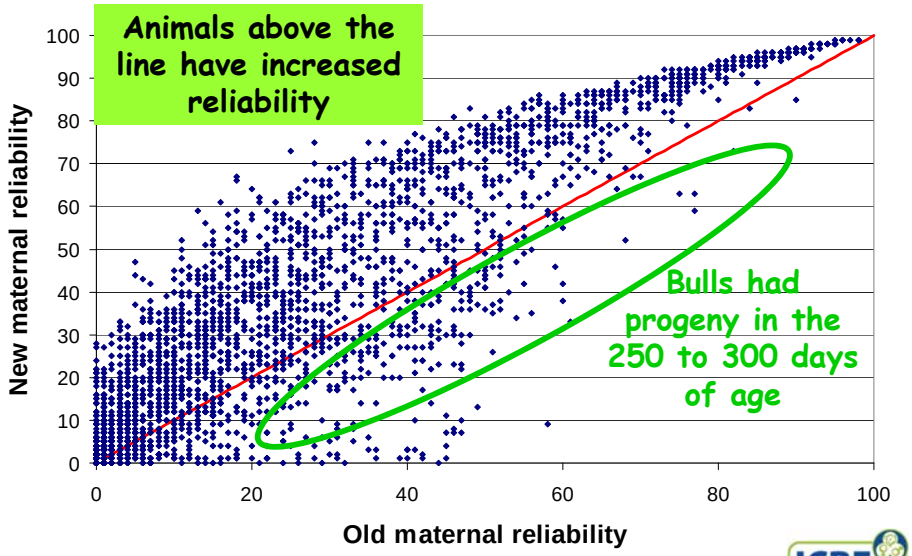
Old versus new maternal proofs



Old versus new direct proofs



Old versus new maternal reliability



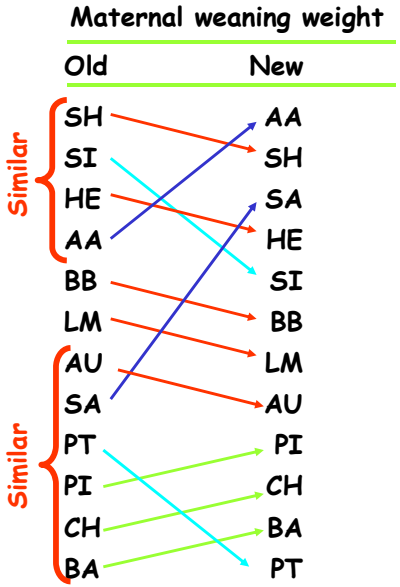
Breed means – old v new evaluations

	Maternal		Direct	
Breed	Old	New	Old	New
AA	10.6	6.0	-3.6	-11.9
AU	-4.5	-4.9	-0.9	-0.1
BA	-10.1	-8.6	-2.7	1.5
BB	3.7	-1.0	-2.5	1.4
CH	-6.3	-6.8	8.8	10.0
HE	11.2	1.0	-4.0	-4.2
LM	1.9	-3.2	-2.4	-3.8
PI	-5.0	-5.3	-2.5	-5.5
PT	-4.9	-13.3	4.9	-2.8
SA	-4.6	2.4	1.2	-6.6
SH	12.7	4.8	-2.9	-11.0
SI	11.9	0.2	10.1	7.0

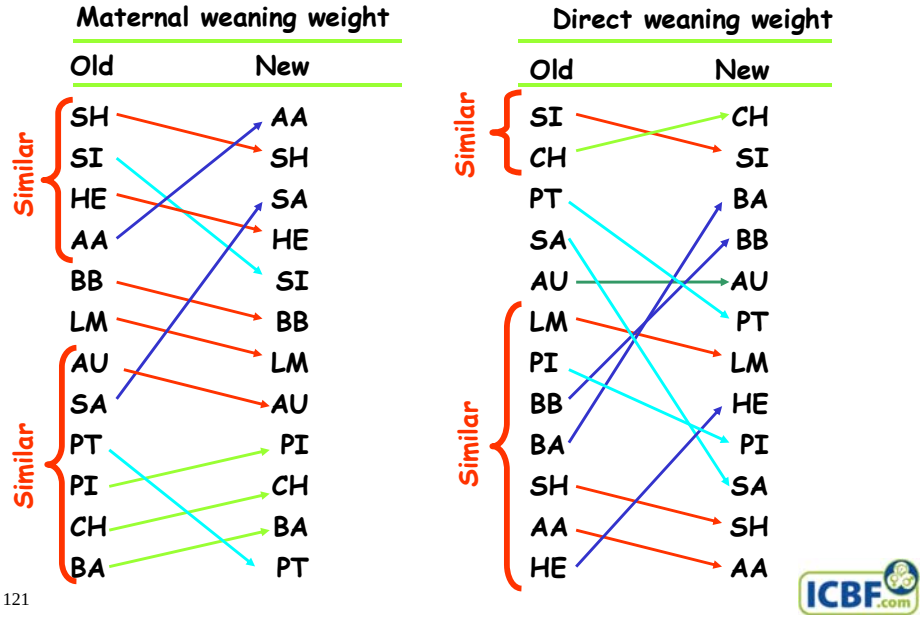
Avg. drop of 3

Avg. drop of 2.5

Breed means – rankings



Breed means – rankings



Conclusions

- Biologically 150 days to 250 days of age is more logical
  - More accurate (biologically) reflection of reality
  - Short window
    - options:
    - Current – other age categories are corrected traits
    - Test-day model - N. McHugh
  - Reduction in reliability of some bulls

IRISH CATTLE BREEDING FEDERATION

Beef Fertility evaluations

Ross Evans & Donagh Berry

NDP National Development Plan Transforming Ireland

Current beef evaluations

- Parity 1 only
- Contemporary group defined within parity 1 animals (loss of data)
- Calving interval and survival in multi-trait evaluation

→Low reliability!!

Dairy evaluations

- Parity 1 to 3 *(moving to 5)*
- Each parity treated as separate traits with separate contemporary groups
- **Goal traits:** calving interval, survival
  - **Predictors:** insemination data, age at first calving, milk yield (for survival)

→ **better use of available data!**

Proposal – increase reliability

- **More data (i.e., more lactations and more recordings – suckler welfare scheme)**
- **Better statistical model – increase heritability**
- **Use of predictor traits (e.g., live ultrasound measures as predictors of carcass quality)**

Proposal – increase reliability

- **More data (i.e., more lactations and more recordings – suckler welfare scheme)**
  - Lactations 1 to 10
  - Redefinition of contemporary group across parities
- **Better statistical model – increase heritability**
  - Better definition of contemporary group for age at first calving
  - Repeatability model
- **Use of predictor traits (e.g., live ultrasound measures as predictors of carcass quality)**
  - We know body condition score (i.e., fat) is related to fertility so what about carcass fat?
  - Live-weight, muscularity, docility, price ……

Research

1. **Increase number of lactations to 10 and re-estimate genetic parameters**
   - Fertility traits: Age at first calving, calving interval, survival, calving in the first 42 days of calving season (heifers and cows separately)
2. **Investigate potential genetic predictors of fertility**
   - Calving difficulty
   - Linear type traits
   - Cow live-weight, price, and carcass weight, conformation and fat
   - Progeny live-weight, price, and carcass weight, conformation and fat
   - Farmer scored weanling quality and docility
- **8 months computing time – large dataset to get good estimates**

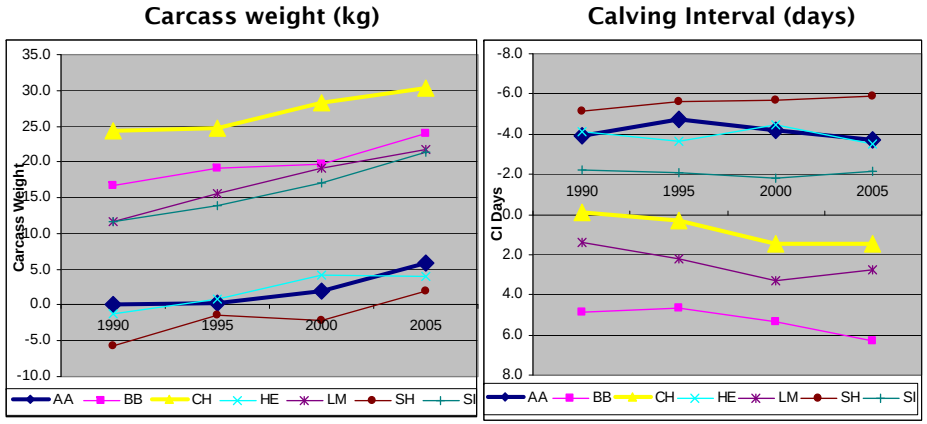
Results

1. **Repeatability model is a good compromise between biology (i.e., genetic architecture) and more data**
   - Heritability – 0.01 to 0.06
   - Repeatability – 0.02 to 0.06

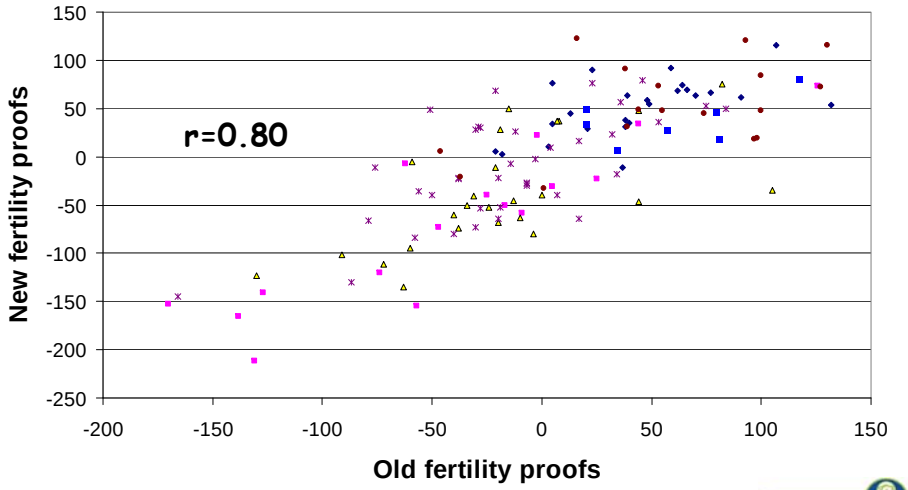
Results

2. **Genetic predictors of fertility**
   - Dystocia direct and dystocia maternal
     - *More difficult calving → worse fertility* (avg $|r_g|$ = 0.30)
   - Weanling calf quality & docility (farmer scored)
     - *Better quality and docility → worse fertility* (avg $|r_g|$ = 0.38)
     - *Good heritability estimates (0.26 to 0.28)*
   - Weaning & post-weaning liveweight
     - *Heavier animals worse fertility* (avg $|r_g|$ = 0.30)
   - Progeny carcass weight, conformation, and fat
     - *Heavier, better conformation and lower fat score → worse fertility* (avg $|r_g|$ = 0.14)
   - cow milk score and docility score (farmer scored)
     - *poorer milkability and docility → poorer survival* (avg $|r_g|$ = 0.13)

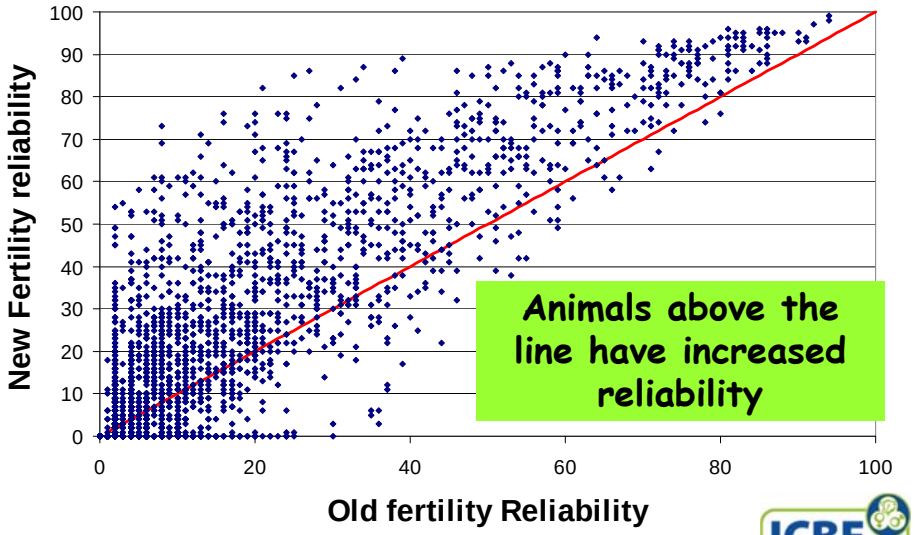
More genetic trends….



Increasing number of parities Proofs (rel. >65%)



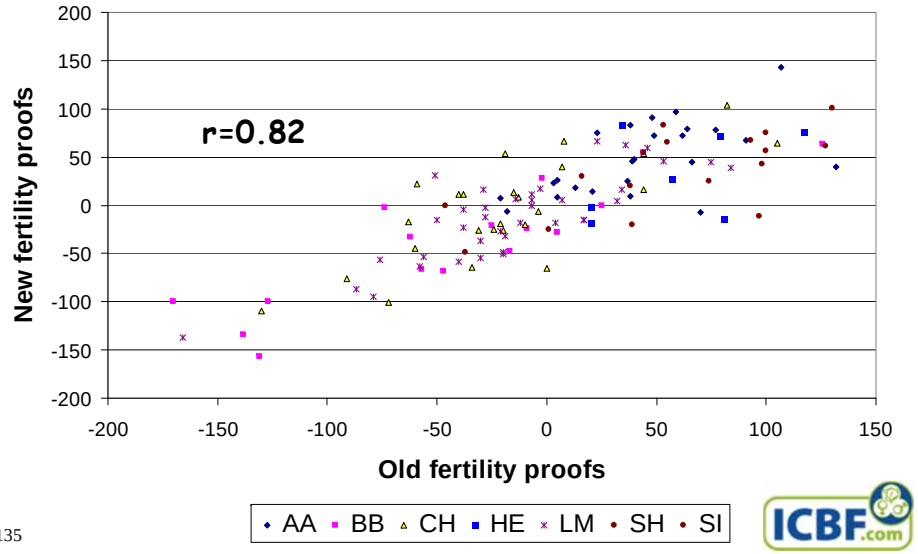
Increasing number of parities Reliability



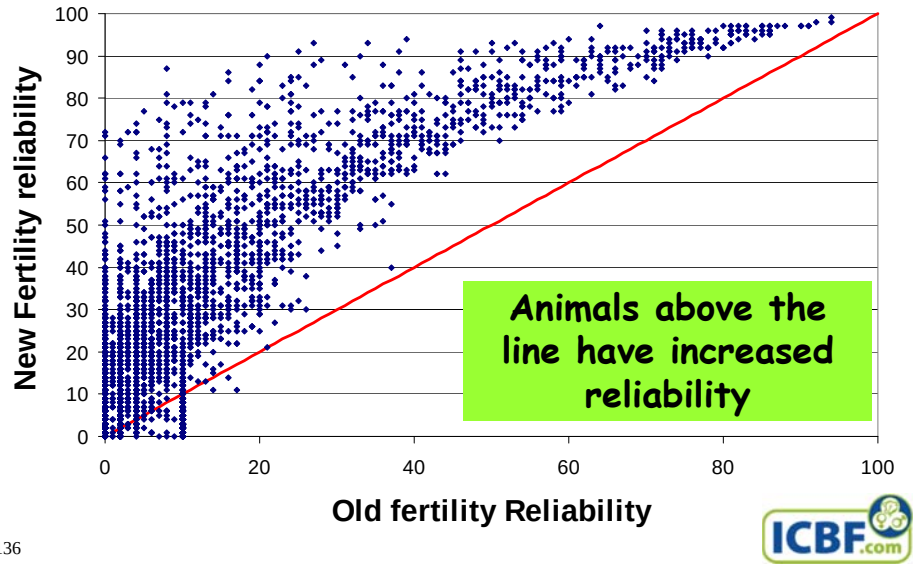
Increasing number of parities Summary

- 3150 AI bulls
- Good correlation given the changes
  - Lots more data (impact on reliability – remember correlation between parental average and proven bulls is theoretically max 0.7)
  - New model
  - Contemporary group definition
- +9 percentage unit increase in reliability (i.e., 61% increase from 15% → 24%)
- Decrease in reliability of some bulls due to stricter definition of contemporary group

Also using predictor traits Proofs



Also using predictor traits reliability



Also using predictor traits Summary

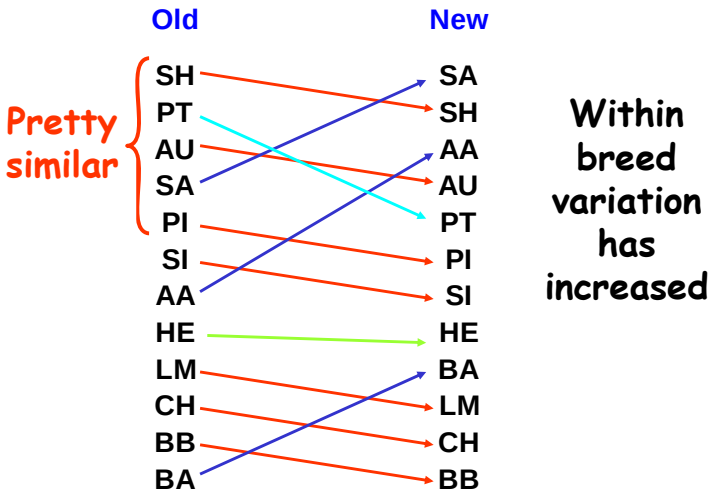
- 3150 AI bulls
- Good correlation given the changes
  - Lots more data information from correlated traits
- +19 percentage unit increase in reliability (i.e., 300% increase; 15% → 44%)
- Proofs for 15% more bulls that previously had a reliability of zero
  - Average reliability now of 14% (range: 1% to 72%)

Breed means – old v new evaluations

	Proofs		Reliability	
Breed	Old	New	Old	New
AA	57	56	17	33
AU	94	53	9	24
BA	-46	21	10	27
BB	-31	-44	13	29
CH	-1	-6	14	39
HE	44	23	11	24
LM	3	5	23	49
PI	89	30	7	18
PT	94	42	7	22
SA	89	63	17	38
SH	105	62	12	27
SI	63	25	18	40

Avg. drop of 12

Breed means – old v new evaluations



Within breed variation has increased

Conclusions

- Lots more data
  - More parities and traits
- Increased reliability of proofs
- More accurate reflection of reality
- Still need on-going fertility information

- Feedback?

IRISH CATTLE BREEDING FEDERATION

Beef Genomics

Donagh Berry

Transforming Ireland

The steps

1. DNA of bulls of good reliability in Ireland ✓...
2. Funds to genotype the bulls (~€150/animal) ✓...
3. Software ✓...?
4. Test ?
5. Implement ...

DNA

- Blood, semen, hair, (ear) tissue
- Collected 84 semen/hair samples on my trip (more on the way)
- Donated / purchased – AI stations, breed societies, farmers
- DNA banks (dairy and beef)
  - Teagasc – 6353 records
  - ICBF – 189 AI bulls + stock bulls
  - Weatherbys - >34,000

Genotypes

- Illumina "HD chip"/"High Density chip"
  - ICBF – 420 beef AI bulls done
  - Teagasc – awarded tender 1,000 samples to weatherbys
  - ICBF – a further 1,500 samples
  - **~2,900 genotypes by November 2011!!!!**

Choice of bulls to genotype

- Good and bad bulls
- No over-representation of family lines
- Founder bulls
- Good reliability for especially the difficult to measure traits prioritised
  - Milk & fertility
- Weighted across breeds

Choice of bulls to genotype

Breed	Genotyped	Marked for genotying	Total
AA	39	440	479
BB	38	191	229
CH	117	865	982
HE	40	403	443
LM	128	800	928
SI	58	289	347
Total	420	2988	3408

Driving on..

- International list of bulls circulated
  - UK, Canada, France, Australia, Switzerland
  - Others?? Names???
  - International events
  - Dairying: 2,000 genotypes → ~8,000 genotypes
- Feedback
  - "I can see a few overlaps at a quick glance"
- **"We are genotyping >2,000 AI bulls using the Illumina High Density chip and are keen to swap"**

IRISH CATTLE BREEDING FEDERATION

Developments in Breeding Indexes & evaluations.

Killeshin Hotel, Portlaoise.
27th July 2011

NDP National Development Plan Transforming Ireland

Economic Indexes.

- Teagacs have started work to develop a "full-farm economic" model for beef.
  - Teagasc, Abacus Bio & ICBF.
- New "Suckler Cow Value" being developed (discussed at last meeting).
  - Peter Amer & Tim Byrne with us during summer. Available this Autumn.
  - Index to select female replacements. Ties in with development work on maternal traits.
- Developments in Derrypatrick herd.
  - Increased focus on maternal traits.
  - ½ and ¾ bred animals.

Questions?

- Are the €uro-Star indexes accurate?
  - Animals slaughtered &/or sold.
  - Female replacements.
  - Bulls sold in Autumn 2009.
- Evaluations for imported sires.

Do €uro-Stars work – Carcass traits?

	1 Star	3 Star	5 Star	Diff (1-5)
Age (months)	29	30.7	28.8	-0.2
Carcass weight (kg)	343.6	396.1	417.5	73.9
EU Grade & Fat Score	O+3+	R=3=	R+3=	3 pts
Price (€/kg)	3.31	3.44	3.45	0.14
Lifetime Gain (kg/day)	0.34	0.38	0.43	0.09
Value (€)	€1,137	€1,362	€1,439	€301
Carcass Sub Index (€)	-€16	€37	€77	€93

- Based on animals slaughtered in Feb11.
- 5 star animals versus 1 star.
  - Higher lifetime gain (+.09 kg) = €301 more profit.
- Yes, the €uro-Stars work.

Do €uro-Stars work – Fertility Traits?

Fertility Index	1 star	3 star	5 star	Diff (1-5)
% calved at ~24 mths	23%	34%	48%	25%
Average age at 1st calving	31.9	30.3	28.8	-3.1
% with CI<390 days (1-2)	26%	39%	51%	25%
Average CI Days	435.1	414.5	397.7	-37.4
% alive & with 3 calves	11%	25%	42%	31%
Average number calvings	1.77	2.06	2.27	0.50

- ¾ bred beef heifers born Spring 2006.
  - % calved at 24 month?
  - % recalved within 390 days?
  - % still on farms with 3 calves to date?
- Similar results for ½ bred beef heifers.
- Yes, the €uro-Stars work – even at low reliability.

Do €uro-Stars work – Pedigree bulls?

- Bulls sold Autumn 2009.
- How do their proofs compare with now?
- 623 bulls catalogued for society sales in Autumn 2009 (€uro-Star catalogues).
  - 5 breeds represented.
  - Initial focus on calving traits.
  - Will build up to consider other traits in due course.


Lot 87 COTTAGE DEVON Breed: Charolais
IE341478991537 DOB: 15-Sep-2008 Male
Owner: Tom Butler - Ballymore Cottage Gooldscross Cashel Co Tipperary
TEXAN-GIE
PORTO
MARQUISE
COTTAGE AMELIE (ET)
OSCAR
FARMLEIGH LOURDA
Within Breed Index Data rel Across Breed
★★★★★ Suckler Beef Value € 190 21% ★★★★★
Beef Value
★★ Calving Traits -€ 19 15% ★
★★★★★ Weanling Export € 123 30% ★★★★★
★★★★★ Beef Carcass € 180 28% ★★★★★
Replacement Value
★★★★ Milk & Fertility -€ 151 8% ★★
★★★★★ Calf Quality € 478 28% ★★★★★
Other Key Traits
★★ % Difficulty Calving 9.15% 23% ★
Docility % %
Data Rel: 40 - 60% = Ave 20 - 40% = Below Ave <20% = Poor
€uro-Star Traits €uro-Star Rating ICBF Aug 2009)
Calving Traits
Calv Diff (%) 9.15
Gest Len (days) 2.49
Mort (%) 1.09
Weaning Export, Beef Carcass & Replacement Calf Traits
Wean Wt Dir (kg) 42.94
Wean Calf Quality (%) 21.84
Carc Wt (kg) 44.39
Carcass Conf Score 1.82
Carcass Fat Score -0.78
Dry Matter Intake (kg) 0.63
Replacement Milk & Fertility Traits
Calv Int (days) -0.66
Survival (%) -0.5
Age 1st calv (days) 8.38
Wean Wt Mat (kg) +4.87
Calv Diff Mat (%) 5.33
Cull Cow (kg) 49.09
Comments
BLUP Linear Type
MUSCLE 131
SKELETAL 138
FUNCTIONAL 117
RELIABILITY 39

Fate of these bulls?

Data	BB	CH	HE	LM	SI	Overall
Number bulls	36	294	67	174	52	623
Culled/died	3	56	23	34	9	125
% Culled/died	8%	19%	34%	20%	17%	20%
With 1 or more progeny	24	154	20	94	31	323
% with 1 or more	67%	52%	30%	54%	60%	52%
With 50% rel CD%	10	82	8	54	12	166
% with 50% rel CD%	28%	28%	12%	31%	23%	27%

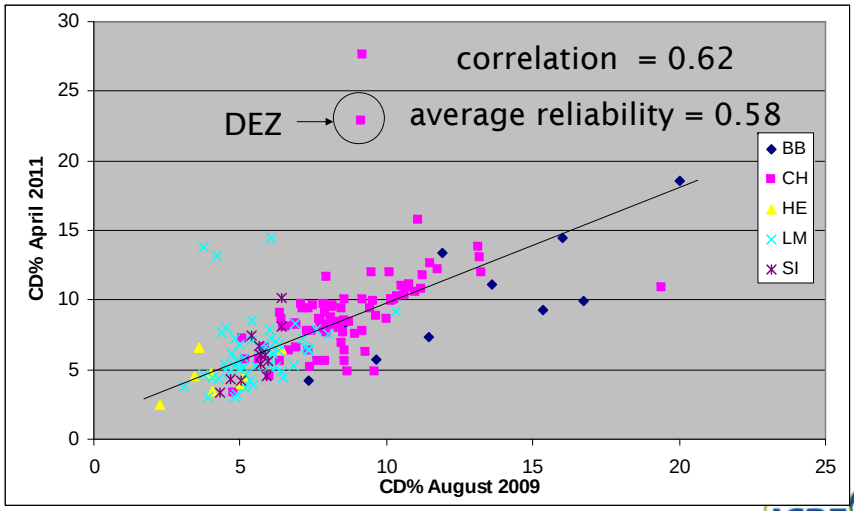
- Of the 623 bulls catalogued for society sales in Autumn 2009 (€uro-Star catalogues).
  - 20% now culled/died.
  - 52% with 1 or more progeny.
  - 27% with >50% CD rel in April 2011 evals (~16 progeny).
- Can we improve these figures?

Calving difficulty of these bulls?

Data	BB	CH	HE	LM	SI	Overall
Number bulls	10	82	8	54	12	166
Average progeny Aug 2009	0	0	0	0	0	0
CD% Aug 2009	13.1	8.7	4.2	5.6	5.6	7.5
CD Rel Aug 2009	32	38	39	39	37	38
Average progeny	15.5	18.5	12.1	13.6	14.2	16.1
CD% Apr 2011	10.2	9.1	4.6	6.3	6.0	7.8
CD Rel April 2011	55	59	56	57	56	58
Max Diff in CD%	5.7	5.4	5.3	5.4	5.5	5.4
Act diff (95% Conf Range)	-2.8	0.4	0.3	0.7	0.4	0.3
Bulls outside range	2	3		2		7

- Of the 166 bulls catalogued for society sales in Autumn 2009 that now have >=50% rel CD proofs
  - Average CD in Aug 2009 (parent average) = 7.5%
  - Average CD in April 2011 (actual data) = 7.8%.
  - 20% increase in average reliability (~10 CD records).
  - Only 7 bulls (from 166) outside 95% Confidence range.

Comparison of CD proof



What impact lower reliability?

Data	<30%	31-35%	36-40%	>40%	Overall
Number bulls	15	30	57	64	166
Average progeny Aug 2009	0	0	0	0	0
CD% Aug 2009	9.3	8.0	7.1	7.2	7.5
CD Rel Aug 2009	25.9	33.1	38.6	41.7	37.7
Average progeny	27.7	20.6	14.3	13.0	16.1
CD% Apr 2011	9.5	7.8	7.6	7.7	7.8
CD Rel April 2011	59.6	57.8	57.4	57.6	58
Max Diff in CD%	5.9	5.6	5.4	5.2	5.4
Act diff (95% Conf Range)	0.17	-0.16	0.47	0.47	0.3
Bulls outside range	2	1	3	1	7

- No evidence that differences are larger for low reliability bulls.
- ***Strong conclusion; the €uro-Star indexes are accurate. Expect similar results for other traits.***

Evaluations for imported sires.

- Concerns that €uro-Star indexes for foreign sires are "under-valued"?
- What is ICBF's approach to evaluations for imported sires?
- Past – all bulls came in get an "average" BLUP=100!
- Now – extract file of tags, send to country and get file of proofs (FRA & UK).
- Interbeef is a big help (for French breeds & UK Limousin).

Foreign Animals - Status

	France	UK
Charolais	Wwt-Milk-Mus-Skel	In process
Limousin	Wwt-Milk-Mus-Skel	Wwt-Milk-Mus
Simmental		Wwt-Milk-Mus
Hereford		Wwt-Milk-Mus
Angus		Wwt-Milk-Mus
Belgian Blue		Wwt-Milk-Mus
Blonde d'Aquitaine	Wwt-Milk-Mus-Skel	
Salers	Wwt-Milk-Mus-Skel	
Aubrac	Wwt-Milk-Mus-Skel	
Parthenaise	Wwt-Milk-Mus-Skel	
Maine Anjou	Wwt-Milk-Mus-Skel	

Foreign Animals – Type

breed	country	AI Bulls	Female	Stock Bulls
AA	GBR	202	268	248
AU	FRA	47	3401	1429
BA	FRA	61	1229	606
BE	GBR	188	54	48
CH	FRA	327	7416	3745
HE	GBR	2	124	90
LI	FRA	206	7012	3427
	GBR	34	233	85
OL	FRA	47	2786	1760
PA	FRA	32	1831	712
RO	FRA	1	19	24
SA	FRA	50	3645	1624
SI	GBR	117	153	86
Total		**1314**	**28171**	**13884**

Foreign Animals – Progeny.

	Breed	Frequency	Percent	Progeny impacted
France	Aubrac	4877	11.25	11,206
	Blonde d'Aquitaine	1896	4.37	9,579
	Charolais	11488	26.49	274,847
	Limousin	10645	24.55	321,512
	Parthenaise	2575	5.94	6,717
	Maine Anjou	44	0.1	815
	Salers	5319	12.26	21,210
	OLD	4593	10.59	44,027
UK	Angus	718	1.66	244,294
	Belgian Blue	290	0.67	106,907
	Hereford	216	0.5	889
	Limousin	352	0.81	3,931
	Simmental	356	0.82	72,566

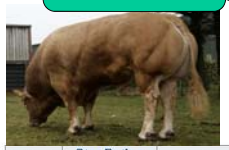
- 43,369 animals & 1.18 million progeny.

PROCTERS CAVALIER S982

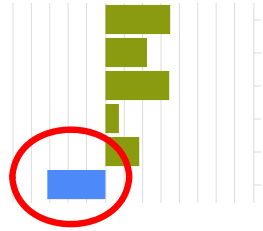
% Rank	Star Rating (within breed)	Index and Traits	€uro-Value	Data Reliability	Star Rating (across breed)	% Rank
	★★★★★	Suckler Beef Value (SBV)	€137	8%	★★★★★	
	★★★★★	Weanling Export	€84	20%	★★★★★	
	★★★★★	Beef Carcass	€95	12%	★★★★	
	★★★	Daughter Fertility	€-9	10%	★★★	
	★★★★	Daughter Milk	€33	2%	★★★	

December 2010

UK Basco March 2011



200 Day Growth	48.0	135	86%
400 Day Growth	63.0	122	85%
Muscle Depth	6.0	134	81%
Fat Depth	-0.2	107	70%
Beef Value	32.0	118	86%
200 Day Milk	-6.0	69	61%



% Rank	Star Rating (within breed)	Index and Traits	€uro-Value	Data Reliability	Star Rating (across breed)	% Rank
99%	★★★★★	Suckler Beef Value (SBV)	€138	13%	★★★★★	98%
99%	★★★★★	Weanling Export	€113	33%	★★★★★	99%
99%	★★★★★	Beef Carcass	€120	17%	★★★★★	93%
55%	★★★	Daughter Fertility	€-2	1%	★★	38%
1%	★	Daughter Milk	€-91	16%	★	2%

April 2011

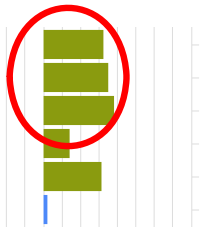
WILODGE CERBERUS S781

% Rank	Star Rating (within breed)	Index and Traits	€uro-Value	Data Reliability	Star Rating (across breed)	% Rank
	★★★★	Suckler Beef Value (SBV)	€76	25%	★★★	
	★★★★	Weanling Export	€51	25%	★★★	
	★★★	Beef Carcass	€80	22%	★★★	
	★★★★★	Daughter Fertility	€13	0%	★★★	
	★	Daughter Milk	€-26	15%	★★	

December 2010

UK Basco March 2011

200 Day Growth	46.0	132	96%
400 Day Growth	81.0	135	96%
Muscle Depth	6.5	138	96%
Fat Depth	-0.3	114	93%
Beef Value	40.0	131	96%
200 Day Milk	0.0	102	81%



% Rank	Star Rating (within breed)	Index and Traits	€uro-Value	Data Reliability	Star Rating (across breed)	% Rank
99%	★★★★★	Suckler Beef Value (SBV)	€145	36%	★★★★★	98%
99%	★★★★★	Weanling Export	€102	52%	★★★★★	98%
99%	★★★★★	Beef Carcass	€125	32%	★★★★★	95%
48%	★★★	Daughter Fertility	€-8	10%	★★	35%
42%	★★★	Daughter Milk	€16	32%	★★★	48%

April 2011

Summary

- Developments in indexes – ongoing.
- Comparison of proofs & reliability.
  - Results are consistent.
  - Continue to review data reliability – in line with beef breeding review
- Imported sires.
  - A lot of progress.
  - New traits, e.g., calving.
  - Files of animals – responsibility of herdbooks & AI companies (correct ID's).
  - G€N€ IR€LAND – the "ultimate" test,

Validation of the new Maternal Beef Index

Nóirín Mc Hugh & Denis Minogue

New Maternal Index

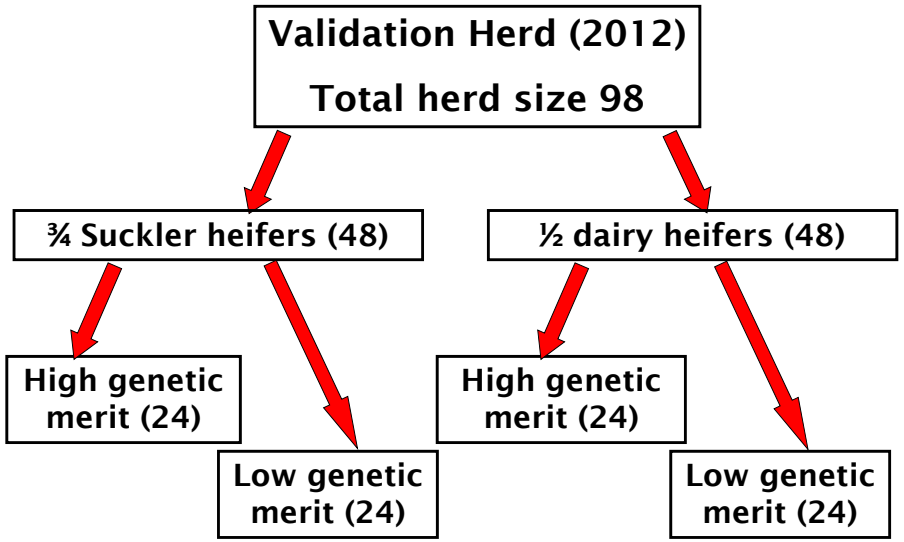
- Index developed for the selection and culling of commercial cows
- Considers the cow directly rather than considering a bull to breed cows
- The expected value of the potential replacement over her lifetime and the lifetime of her descendents
- Based on 23% of her heifers progeny become replacements

Current industry figures

	Age at 1st calving (months)	Calving Interval (days)	Number of Calvings
¾ Continental	30.4	413.6	2.02
½ Dairy cross	29.8	415.1	2.05

Validation Proposal

1. Two breeding strategies:
   - cows sourced from the suckler herd
   - beef cross cows sourced from the dairy herd
2. Two diverse genotypes:
   - high genetic merit animals
   - low genetic merit animals



1. Cows sourced from the suckler herd

- Aim: to evaluate the benefit of the new maternal index for suckler cows to drive profitability further
  - compare phenotypic performance
- Select 6 bulls high reliability bulls based on their new maternal index
  - 3 of high genetic merit
  - 3 of low genetic merit

Proposed Sires

Charolais	
High	Low
CF61	IAS
CF43	PBT
TUT	ALU
OTA	CF55

Proposed Sires

Charolais		Simmental	
High	Low	High	Low
CF61	IAS	ICO	HTY
CF43	PBT	KFY	KDD
TUT	ALU	SEV	MWN
OTA	CF55	IS4	ORP

Proposed Sires

Charolais		Simmental		Limousin	
High	Low	High	Low	High	Low
CF61	IAS	ICO	HTY	S511	RUZ
CF43	PBT	KFY	KDD	ONI	PUP
TUT	ALU	SEV	MWN	RBU	OEI
OTA	CF55	IS4	ORP	FL21	ORS

2. Cows sourced from the dairy herd

- Aim: to evaluate the benefit of the new maternal index for suckler cows produced from the dairy herd
- 6 bulls high reliability bulls will be selected based on their new maternal index
  - 3 of high genetic merit
  - 3 of low genetic merit

Proposed Sires

Angus	
High	Low
RWB	PTN
ERW	KDU
LZE	LRH

Proposed Sires

Angus		Hereford	
High	Low	High	Low
RWB	PTN	RSL	GSQ
ERW	KDU	ICB	TIB
LZE	LRH	S353	BNX

Proposed Sires

Angus		Hereford		Limousin	
High	Low	High	Low	High	Low
RWB	PTN	RSL	GSQ	FL22	FRY
ERW	KDU	ICB	TIB	S511	RUA
LZE	LRH	S353	BNX	RHN	LOX

Data recording

Calves

- Calf management
- Health

- Heifer management
- Target weights

- Puberty
- Age at first service
- Health
- Lameness

- Age at first calving
- Performance
- Calving interval
- Longevity