Dairy Breeders' Conference **Morning Session**



Focusing on continuous improvement of:









Program

10:30	Setting the Scene – Brian Wickham.
10:40	Session 1. Evaluations & Breeding
10:45	Dairy genetic evaluations & EBI – Ross Evans
11:00	Genomics – Francis Kearney
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12.00	G€N€IR€LAND® – Andrew Cromie
12.15	General discussion & feedback
12.30	FBD G€N€ IR€LAND® Awards
1.00	Lunch.





Setting the Scene

- Our mission breeding more profitable dairy cattle ...
- Continuous improvement:
 - every generation of cows better
 - every year ICBF services improve
- Focus on:





Continuous Improvement Cycle

Research - gather & analyse data

Review - outcome

Decide - what to change

Implement - improvements





Genetic Evaluations

- EBI improvements updated economic weights, maintenance subindex, enhanced fertility evaluations – Ross Evans
- Genomics progress & plans Francis Kearney







- Service enhancements security, data access, stock reports, genetic trends, link with milk processor & your feedback
 - Kevin Downing







- Bull selection avoid limiting future gain (inbreeding) by selective mating of top cows – Sinead
- Spring 2010 service to achieve optimum annual increase in EBI – Andrew
- Recognition of achievements FBD
 G€N€ IR€LAND® Awards





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IRISH CATTLE BREEDING FEDERATION

Developments in EBI

Ross Evans





Overview

Update of Economic Values

New Maintenance Sub-index

New Fertility evaluation





Update costs and price (Teagasc, Moorepark)

Milk price – Milk price currently at 30c/l

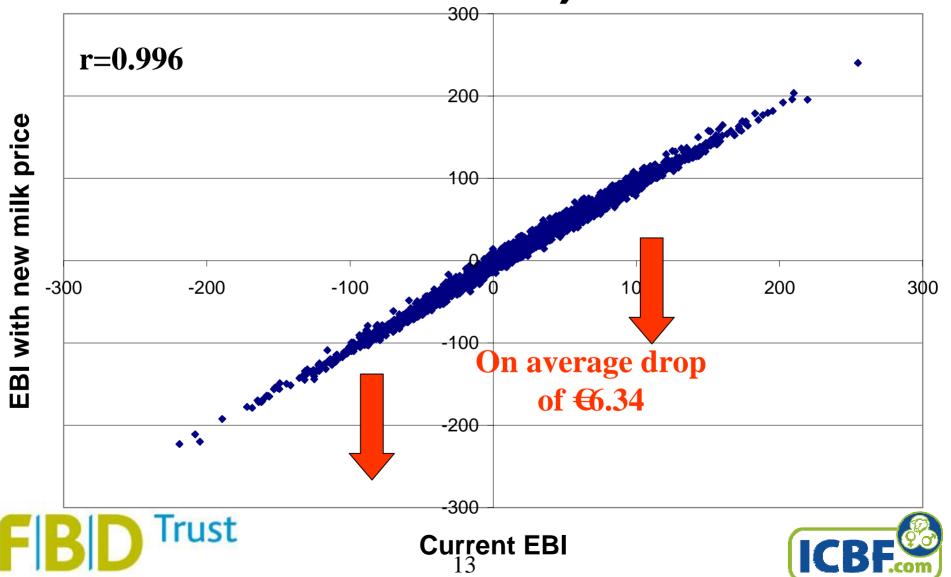
FAPRI latest projections 27c/l

- Fertiliser costs increased
- Energy costs increased
- Replacement heifer costs increased





Impact on sire-proofs (2,351 Al sires)



Current Beef Sub Index

Revenue from Beef Sales

- Male Carcass traits
- Cull cow carcass wt (+)

Maintenance cost of cow

• Cull cow carcass wt (as a predictor of liveweight) (-)

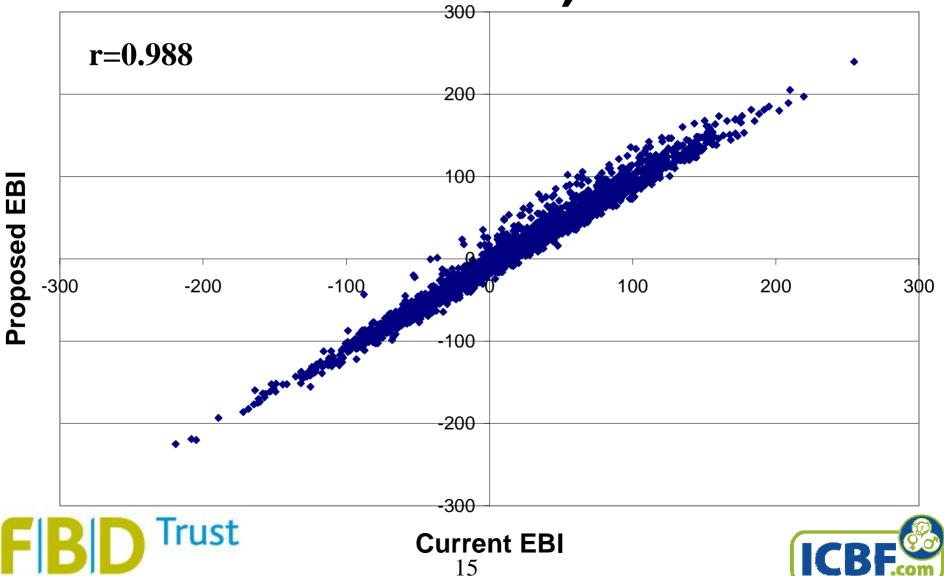
Plan to split up these into 2 separate indexes

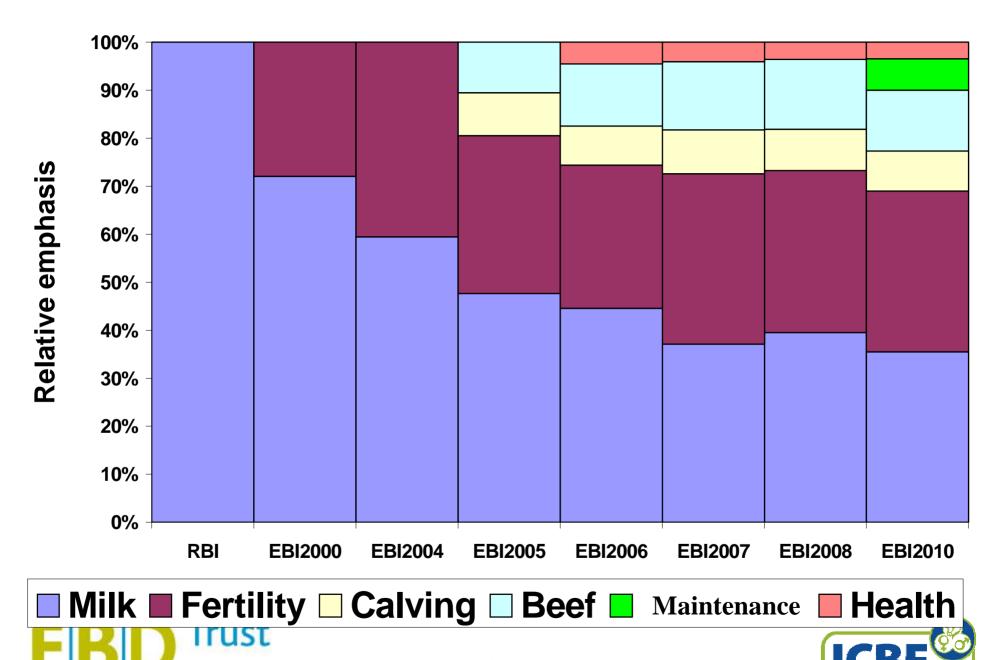
- Maintenance sub-index: Initially cow liveweight
 - Beef sub-index: Calf value and cull cow value





Impact on sire-proofs (2,351 Al sires)







IRISH CATTLE BREEDING FEDERATION

New Fertility Evaluation





Old (existing) evaluation

- 14 traits
- 6 Goal Traits
 - Calving intervals 1, 2 and 3 parities
 - Survival 1,2 and 3 parities
- 8 Predictor Traits
 - Milk yield 1,2 and 3 parities
 - 4 linear type traits
 - Lifespan (number of parities cow has)





Issues with current system

- Calving interval and survival for Parities >3 not included
- Strong relationship between calving interval and milk yield
 - Important for young sires and cows: penalised for high genetic merit for milk
- With insemination records (4 million) now in a position to look at alternative predictors of calving interval
 - Calving to first service interval, no. services





New evaluation: 25 traits

- 10 Goal Traits
 - calving interval 1,2,3, 4, 5
 - Survival 1,2,3, 4, 5
 - Age at first calving
- 14 Predictor Traits
 - Calving to first service 1 to 3
 - Number of services 1 to 5
 - Milk yield 1,2,3, 4, 5
 - Lifespan
- Work nearing completion
- Bigger differences in fertility likely





To Conclude

- Economic Value and Maintenance Sub-index ready for inclusion in Spring 2010
- Work nearing completion on a new fertility index which will provide earlier and more accurate predictors of fertility





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IRISH CATTLE BREEDING FEDERATION

Genomics Update

Francis Kearney





Outline

- Implementation
- Uptake
- Results
- Future Plans
- Operational Service





Implementation

- Genomic Evaluations were introduced in Ireland in Feb 2009
- Bulls with genomic EBIs were eligible for Active Bull list where reliability ≥35% and calving reliability based on progeny was ≥50%
- Farmers advised to use a minimum of 4 bulls
- Bulls on fresh semen rotated bulls on a daily basis to ensure farmers received multiple bulls





Impact on Active Bull List

	2007	2008	2009
EBI€	118	124	150
Milk SI €	46	52	69
Fert SI €	60	60	64
Ave Rel %	74	76	58
IRL bulls	22	17	16
Bulls <7yr	12	11	48
No. GS bulls	0	0	39





Uptake

- Examined 462,000 inseminations from Jan Nov
- Looked at 3 categories of bulls
 - DP-IRL proven with daughters milking in Ireland
 - DP-INT proven with no daughters milking in Ireland
 - GS selected on DNA and parent average





Uptake of GS bulls

Proof	No. Bulls	Straws/bull	% Use	Bulls/Herd
DP-IRL	942	177	37	2.7
DP-INT	522	262	29	3
GS	98	1613	34	4

- GS bull accounted for 34% of all inseminations
- Mean number of bulls/herd was 4 in line with recommendations





Why such an uptake?

- Top two bulls had limited availability and were costly
- Pressure on milk price, cost of production farmers were looking for excellent genetics at a good price

	Spring 2009		Spring 2008	
Proof	Mean EBI	Mean Rel	Mean EBI	Mean Rel
DP-IRL	120	86	109	75
DP-INT	133	56	99	43
GS	179	55	-	-
Mean	144	66	106	64





Why such an uptake?

- Mean difference between DP-IRL and GS bulls was €59
- Competitive pricing of GS bulls range from €15-€18 euro
- Al companies marketed teams of bulls (high fertility, high protein, easy calving etc)
- Discount offered for buying bulls in teams





How have GS bulls performed?

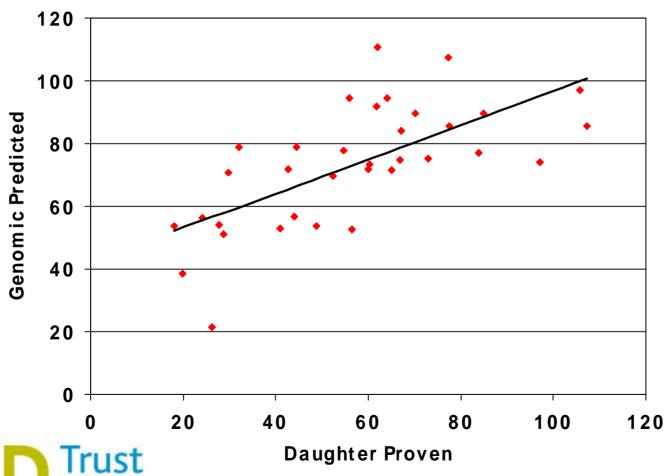
- Test bulls from 2006 marketed as GS bulls in Spring 2009 (e.g.,
- Just received their first proofs based on daughter performance
- 34 bulls with ≥ 70% reliability for production





Milk Sub Index

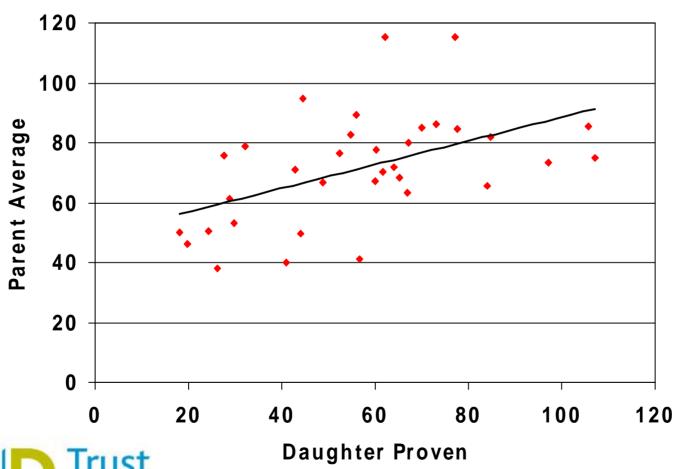
Correlation = 67%





Milk Sub Index

Correlation = 50%







Further Research

- More SNPs available in the future allow across breed genomic evaluations
- More genotypes available
 - UK, Poland, LIC, Switzerland, EuroGenomics (16000 bulls)
- Inclusion of bulls with no Irish daughters
- Inclusion of cows & stock bulls in the genomic evaluation
- Increase reference population from 1000 to 4000
- New methods of genomic evaluation





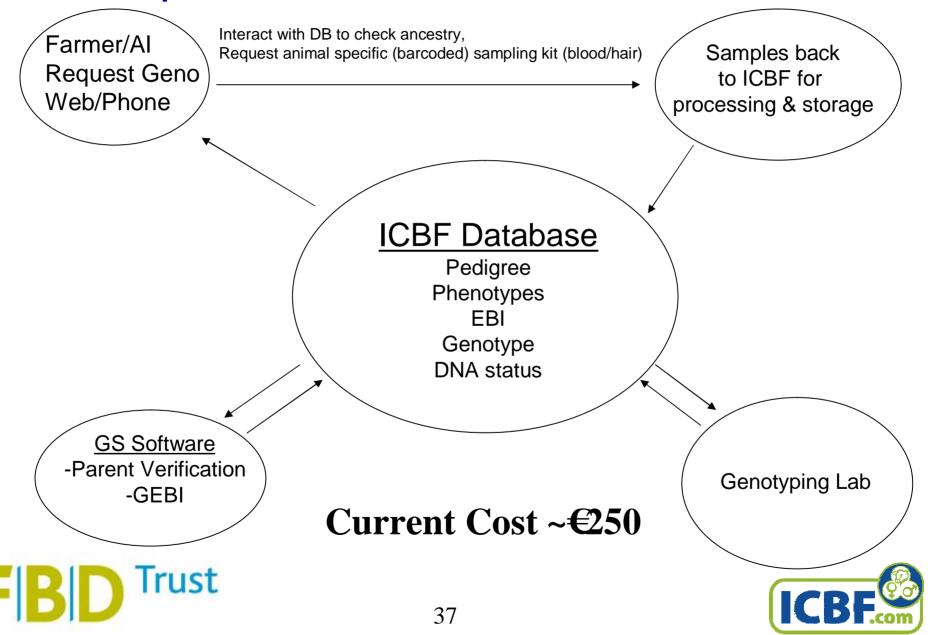
Cows & Stock Bulls

- Samples collected from 1000 high reliability stock bulls and cows with a range of EBI
- Of 2000 requested 1000 samples returned
- Genotypes of very high quality have been received
- Included in the analysis over the next number of months





Operational Genomic Service



Summary

- Initial genomic predictions are promising better than parent average
- Increasing reference population will increase reliability
- Bigger SNP chip to facilitate multiple breeds
- Genomic Service will be offered in the Spring time for farmers wishing to get GEBI
- Genomic selection will accelerate genetic gain but continue to use team of bulls





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Producing Elite Young Test Bulls for G€N€ IR€LAND

Sinéad Mc Parland*, Kearney[†], Evans[†], Cromie[†] & Berry^{*}

*Teagasc Moorepark Dairy Production Research Centre

† I rish Cattle Breeding Federation



Objective

Design a mating scheme to generate

ELITE bull calves annually for entry into

G€N€ IR€LAND

Focus:

- 1. Continually improve genetic gain
- 2. Maintain genetic diversity







Rationale

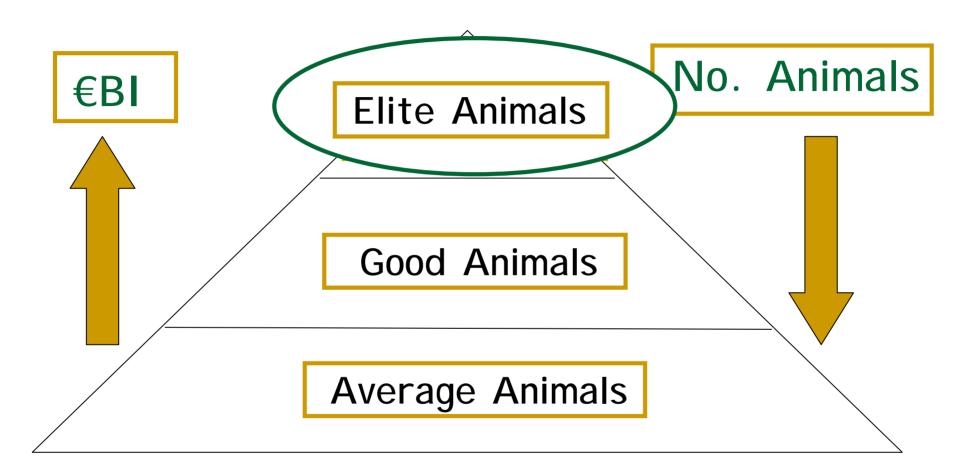
- Maintenance of genetic gain is important
- SHORT TERM genetic gain must not come at a cost to LONG TERM genetic gain
- n Ensure the best sons of new families are continually coming to the top







Population Structure









Current Active Bull List

Rank	Bull code	Name of Bull	Sire	EBI
1	OJI	O-BEE MANFRED JUSTICE	HCM	€287
2	MJI	MORRISHEEN OJI FRANK	OJI	€252
3	UPH	MARS UPHILL	OJI	€240
		BALLYBROOK ASHLING		
4	BHZ	JUSTICE	OJI	€229
5	ROF	RALMA O-MAN CF CRICKET	OJI	€225
6	MMU	MACOMBER O-MAN BOGART	OJI	€224
7	AXP	ALL-RIEHL PAXTON	OJI	€221
8	CGH	CROCKETT-ACRES EIGHT-ET	OJI	€221
9	RDO	RADON	RXO	€219
10	TTY	TIMMER TYSON	OJI	€215







Not as bad as it looks

- n OJI, his sire and maternal grand-sire not used extensively
- n OJI has a low relationship with the average breeding female in the population
- OJI genes not prominent in todays population







3 Steps Involved

- I dentify elite bulls to act as bull siresSought globally
 - I dentify elite cows to act as bull dams
 National data base
 - I dentify best combination of matings between elite bulls and cows







Selection of Bull Dams

- n Production information refertility information
 - q Milk solids>350kg
 - n >300kg in Parity 1
 - q Parity 2 9
 - Milk sub-index value (+'ve)

- q Calving interval (300 to 500 d)
- a Calved in the last 18 mo
- q Fertility sub-index value (+'ve)

- In addition
 - a EBI > €120
 - 2 complete generations of pedigree recorded
 - Feet & legs and mammary composite >70
 - Prominent sire lines removed
 - q Top 150 daughters & granddaughters per bull







Selection of Bull Dams

- n Production information n
 - q Milk solids>350kg
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Selection of Bull Dams

- n Production information
 - q Milk solids>350kg
 - n >300kg in Parity 1
 - q Parity 2 9
 - q Milk sub-index value (+'ve)

- n Fertility information
 - Age first calving (22 to 38 mo)
 - Calving interval (300 to 500 d)
 - Calved in the last 18 mo
 - Fertility sub-index value (+'ve)

- n In addition
 - q EBI > €120
 - 2 complete generations of ancestry recorded
 - Feet & legs and mammary composite >70
 - Prominent sire lines removed
 - q Top 150 daughters & granddaughters per bull







Top 2000 potential bull dams

Variable	Average	Minimum	Maximum
EBI (€)	142	128	194
Milk SI (€)	68	1	152
Fertility SI (€)	60	0	152







Top 2000 potential bull dams

Variable	Average	Minimum	Maximum
EBI (€)	142	128	194
Milk SI (€)	68	1	152
Fertility SI (€)	60	0	152
Milk (kg)	6,336	3,505	10,269
Solids (kg)	496	300	784
Fat (%)	4.22	2.66	6.65
Protein (%)	3.64	3.11	4.31
Calving interval	365	301	400







Removing daughters of prominent sires

	Included	Eveluded
	Included	EXCIUGEO
EBI (€)	147 →	142
Milk SI (€)	75	68
Fertility SI (€)	58	60
Milk (kg)	6353	6336
Solids (kg)	500	496
Calving interval	365	365
Sires represented	226	256

3 Steps Involved

- I dentify elite bulls to act as bull siresSought globally
- I dentify optimum combination of matings between elite bulls and cows







Determine optimum matings

- § Elite bull dams and elite bull sires are entered into computer programme
 - § Computer generated "phantom" matings
 - § All combinations of bull sire and bull dam
- Screen all potential matings for the best sire-dam combinations
 - § Parent average EBI
 - § Relatedness to future females
 - § Balanced for milk and fertility









Genomic selection

- n The necessary elite cows are in Irish herds
- More difficult to identify cows because of lower reliability compared to proven bulls
- n Genomic selection can increase reliability of cows
- Need to revise breeding programme
 - q Genotype heifers and mate
 - q Use bull yearlings as sires of test bulls







In Conclusion

- National breeding programme incorporating traits important to I rish farmers is the key to sustainable genetic gain
- n I dentifying elite bull dams is crucial to achieve this
- Interaction and collaboration between farmers, the dairy industry, the ICBF and Teagasc is vital







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HerdPlus Developments

- § Password and Authorisation
- § Stock/Nitrates Report
- § Herd Trend Report
- § Calving & Fertility Report Changes
- § Co-op Performance Report
- § Breeding Partner Infrastructure
- § HerdPlus Survey Results

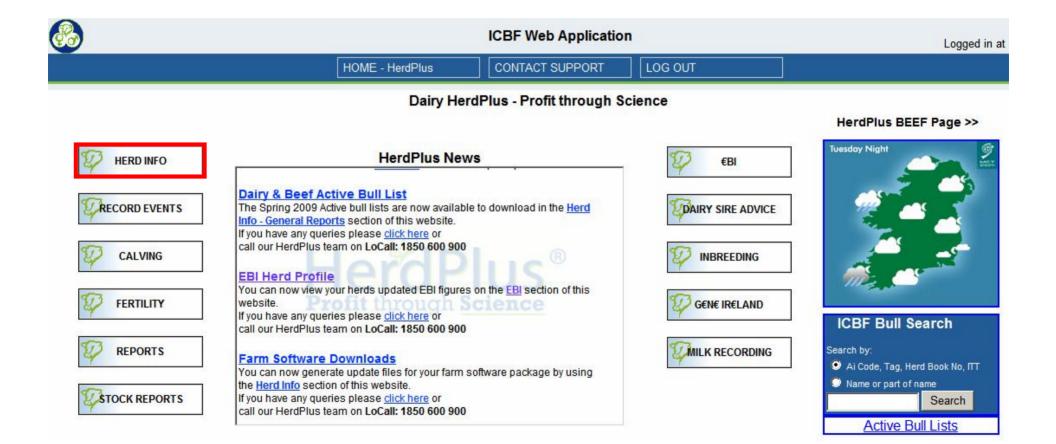








Password & Authorisation











Password & Authorisation

§ Change your Password & Edit who can access your herd data.



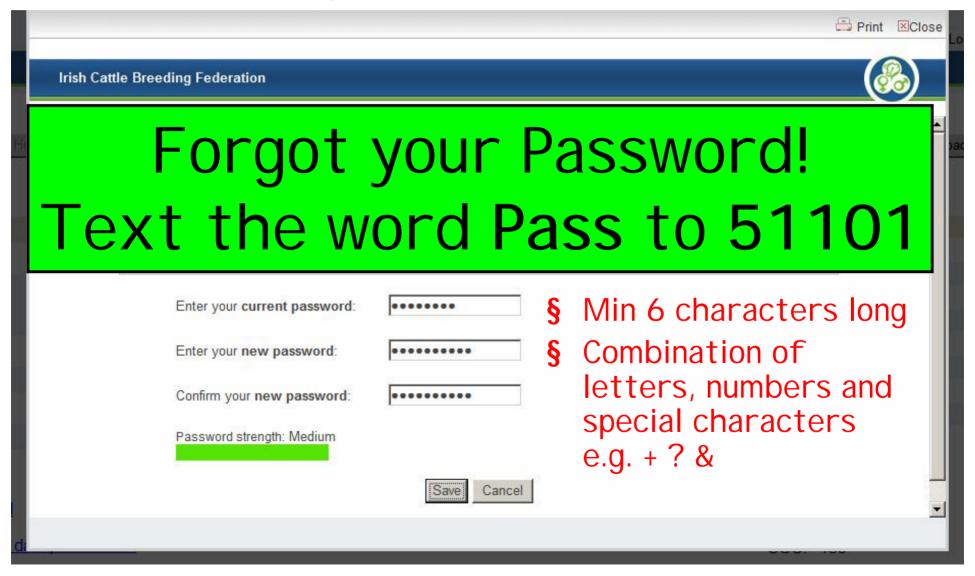








Change Your Password







Data Authorisation

§ View/Edit who can access your herd's data











Change Herd Authorisation



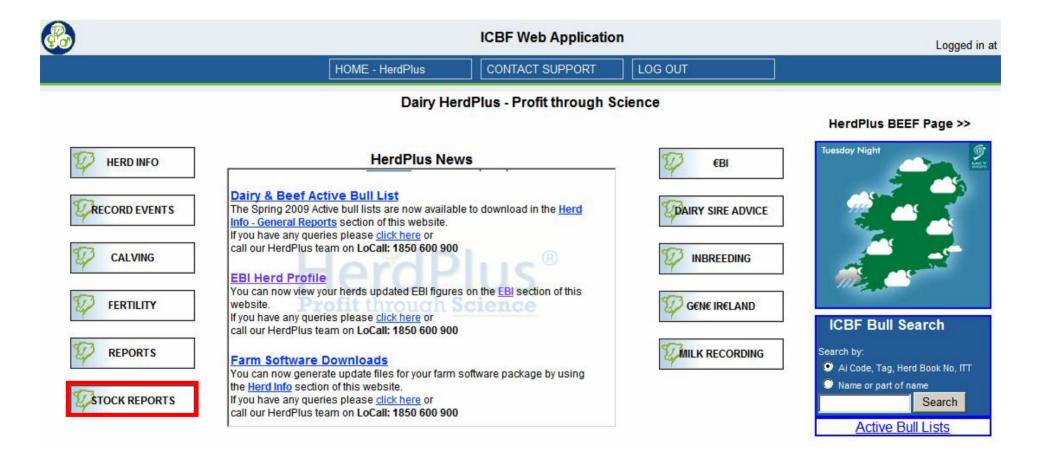








Stock/Nitrates Reports











Stock/Nitrates Reports

§ 3 New Stock Report Layouts

- Standard Stock Report
- Stock Reconciliation Report
- Nitrates Report











Nitrates Report

- § Average Monthly Stock Numbers
- § Year to date Kg/hd of Nitrogen & Phosphorus





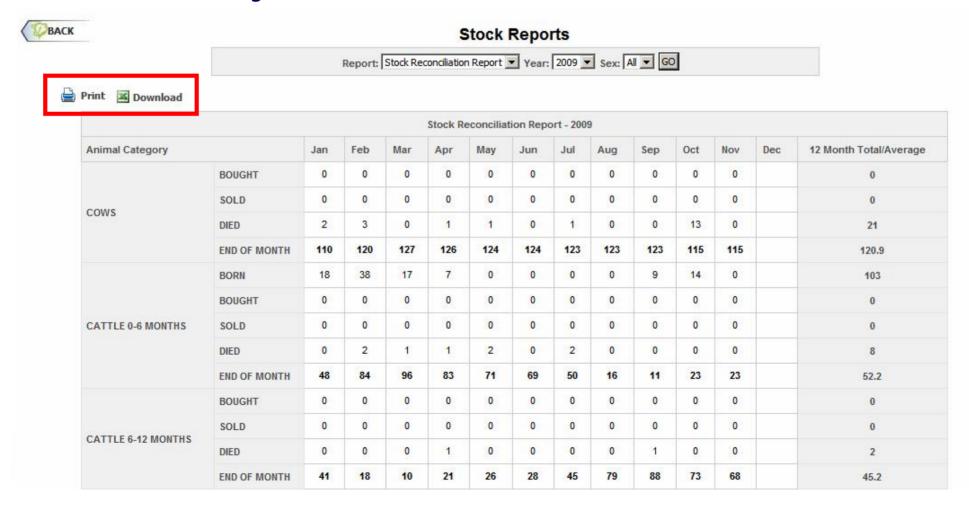






Stock Reconciliation Report

§ Monthly Births, Deaths, Sales & Purchases







Herd Trends Report

- § New 5 Year Herd Trend Report
- § 6 KPI's Graphically Presented
- § Apply current criteria (e.g. EBI values) back over 5 years
- § Benchmark against Top 15% Herds
- § Available to HerdPlus members at www.icbf.com









Herd Trends Report

§ EBI

- 1. Dairy Herd EBI
- 2. Replacement Calves EBI
- § Calving
- 3. Calving Interval (Days)
- 4. Six Week Calving Rate

§ Milk

- 5. Average Milk Solids / Cow
- 6. Average SCC

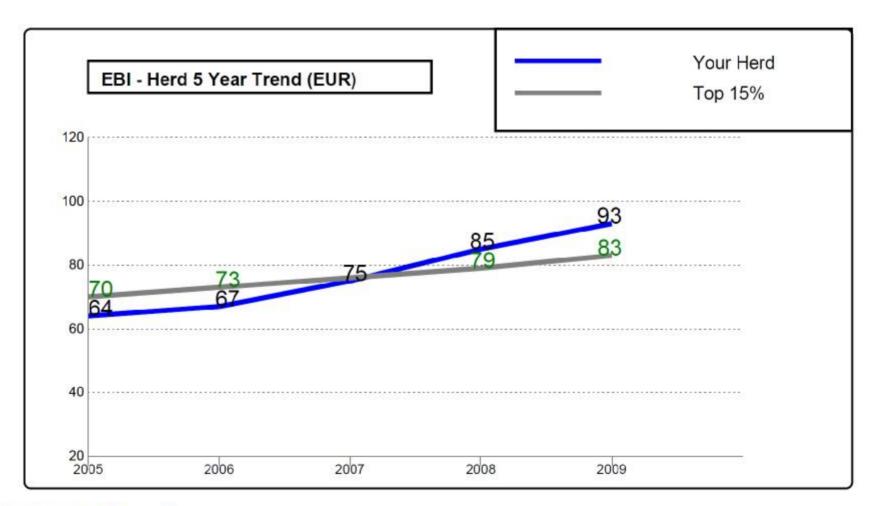








5 Year Trend on Herd EBI











Calving & Fertility Report Changes

- § Run Reports when you wish and as often as you like.
- § Use default start dates or update to an alternative date.

Calving Reports



Report Name	Last Update	
Dairy Calving Report	August 01, 2009	Click Here
Expected Calving List	January 01, 2010	Click Here









Co-op Performance Report

- § Glanbia Herd Performance Report
- § 4 Reports per year sent to all suppliers
- § Yearly comparison of Milk deliveries
- § Graph Milk solids/cow/day & SCC
- § Scorecard for Milk, Fertility & EBI
- § Benchmark V's Average and Top 10%









Co-op Monthly Milk Supply

			2009							20	800			
Month	Milk (Ltrs)	Fat %	Ptn %	Total MS (kg)	sc	Dairy	/day (ill cow:)	Milk (Ltrs)	Fat %	Ptn %	Total MS (kg)	scc	Total Dairy Cows	MS/cow /day (all cows)
Jan	0	0%	0%	0	0	50	0.00	0	0%	0%	0	0	48	0.00
Feb	10,621	4%	3.2%	787	423	54	0.52	4,944	4.07%	3.45%	383	166	55	0.25
Mar	31,737	3.96%	3.16%	2,327	12	57	1.32	36,657	3.86%	3.36%	2,725	172	57	1.29
Apr	42,501	3.67%	3.29%	3,046	176	60	1.59	36,321	3.41%	3.26%	2,494	106	57	1.68
May	37,319	3.66%	3.25%	2,655	23	59	1.61	40,690	3.59%	3.28%	2,878	193	54	1.90
Jun	45,954	3.72%	3.26%	3,303	29	57	1.66	49,926	3.66%	3.3%	3,578	184	54	1.89
Jul	30,927	3.79%	3.29%	2,255	359	56	1.44	36,427	3.73%	3.33%	2,648	202	54	1.75
Aug	29,592	3.86%	3.39%	2,209	320	56	1.41	38,580	3.85%	3.38%	2,872	288	54	1.52
Sep	33,756	3.96%	3.59%	2,624	26	56	1.34	37,099	3.92%	3.55%	2,853	209	54	1.51
SubTotal	262,407	3.8%	3.31%	19,206	259	56	1.21	280,644	3.72%	3.35%	20,431	193	54	1.31
Oct								23,432	4.1%	3.81%	1,908	233	53	1.29
Nov		*						14,593	3.97%	3.55%	1,130	285	50	0.81
Dec								0	0%	0%	0	0	50	0.00
Total								318,669	3.76%	3.39%	23,469			
Avg/mth							_	26,556			1,956	200	53	1.16









Milk Performance Scorecard

	Your Herd	Glanbia Average	Glanbia Top 10%	Your Rank out of 100	Your Star Rating
Your Milk performance for 2009 (Jan - Sep) based of	n Glanbia dat	a			
Fat % to end September 2009 The weighted average Fat % from Jan - Sep 2009	3.80	3.73	3.87	77%	* * * *
Protein % to end September 2009 The weighted average Protein % from Jan - Sep 2009	3.31	3.31	3.41	51%	* * *
Fat + Protein (Kg/cow) Average Fat and Protein yield per cow for your herd (Table 1)	343	269	335	93%	* * * * *
Average Milk Value (cpl) Incl. VAT Average milk value received from Jan - Sep 2009, on your farm performance.	21.8	21.7	22.7	64%	* * * *
SCC (,000 cells/ml) The weighted average Somatic Cell Count for Jan - Sep 2009	259	251	144	41%	* * *









Breeding Partner Infrastructure

- § As well as supporting AI, Milk Recording & Herdbooks there are new opportunities for the ICBF Database to add value, examples;
 - Co-ops Data sharing, as per Glanbia model;
 - Animal Health Ireland, Health events recording;
 - Teagasc Colleges, young farmer education on breeding;
 - ACA advisors, farmer education, data sharing;
 - Marts, display EBI's at ring-side, brochures.









HerdPlus Survey

- § Nov. 2009 Annual Customer Survey of HerdPlus Dairy Farmers
- § Looking for Feedback (Ease of use, Benefits, Improvements, etc.) on;
 - ü HerdPlus Web Site,
 - ü HerdPlus Reports & Tools,
 - ü Discussion Groups Membership,
 - ü G€N€ I R€LAND Progeny Test Programme.
- § 1,016 HerdPlus users emailed survey, 325 replied.









HerdPlus Survey - Results

HerdPlus Web Site	Value of Info/Data Relevance to Farmer	Ease of Finding Data Speed of web
HerdPlus Reports	EBI Report SCC Report	Dry Off Report Need for Health Reports
HerdPlus Tools	Bull search Herd Profiles	No On Line Calf Reg. Enhance Sire Advice









HerdPlus Survey - Results

Discussion Group Membership	Benefit of Sharing Data + Social element. EBI + Fert Report data	More Benchmarking with other groups. More ext. speakers
G€N€ IR€LAND Programme	Get to use the Best Genetics	Better Quality Bulls More Choice







HerdPlus® Products





EBI REPORT



PERSONALI SED POCKET NOTEBOOK



FERTILITY REPORT



BREEDING CHART



DAIRY COW REPORT



SIRE ADVICE



STOCK/NITRATES **REPORTS**

ALL FOR €60 PER YEAR



DISCUSSION GROUP REPORTS

Helpdesk Support Lo-call 1850 600 900





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Sponsored by: FIBID



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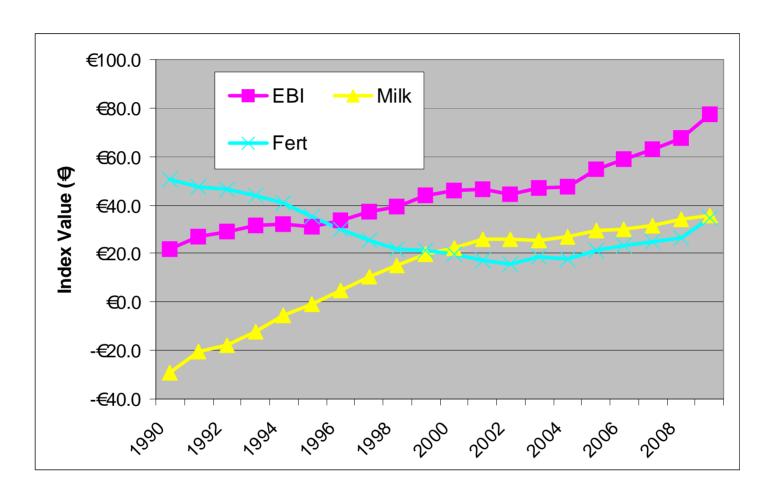
IRISH CATTLE BREEDING FEDERATION

G€IR€LAND®

Andrew Cromie



Genetic Gain in EBI.



G€N€ IR€LAND is a key part of Genetic
 Trust
 Gain Delivery.

G€N€ IR€LAND Review

Year	Bulls Tested	EBI	Daughters/bull
2005	20	€106	81
2006	45	€118	93
2007	44	€129	113
2008	71	€140	130
2009	52*	€165	Next year

- Program focused on increasing scale, EBI & efficiency.
- Goals have been achieved.





Results - 2006 Program

- Excellent results from 2006 program.
- 46 bulls tested (Spring program).
 - Parent Average EBI = €115
 - Actual EBI = €118 (€48 milk & 62 fertility) & average 55 daughters in genetic evaluation
 - Most bulls within +/- €20 of parent average.
- Top 6 bulls have an average EBI of €182.
- Breeders rewarded today.
- Excellent return from program.
- Well done!

Group	Number
Gained 20+ EBI	9
Gained 10-20 EBI	6
No Gain	15
Lost 10-20 EBI	6
Lost 20+ EBI	10
Overall	46





G€N€ IR€LAND - 2009 Program

- 1,045 herds involved taking, on average, 46 straws.
- Range of breed packs.
- High EBI & JE/HF (including JE genomic) most popular.
- Started sign-ups in mid-January. Completed by early March.

Breed	Straws	Herds
Friesian	5681	124
Holstein Friesian	31268	680
Mixed Breed	2493	54
JE & HF	8638	188
Overall	48080	1045





Data recording...

- Success of program is dependant on farmer participation.
- Good efficiency now being achieved (~7 straws/milk recorded daughter).
- Need to increase level of recording for new traits.
 - New web-screen (mastitis, lameness, retained placenta, temperament, milking speed) just released.
 - Traffic light approach (Green happy, Amber Average, Red Problem in this area).
 - Please record for all 1st lactation animals.





Plans for 2010 Program

- Target of 100 bulls with average EBI of €185 for G€N€ IR€LAND.
 - Minimal OJI sons. For example, first 35 bulls from NCBC have average EBI of €192 & only 3 OJI sons.
- Same range of packs available.
 - High EBI Holstein Friesian, JE & HF, Pure Friesian & Mixed breeds (including reds).
- Semen charged at €6.50/straw.
- Maximum of 105 doses (3 * 35 straw packs) per herd.
- Sign-up today....first come & first served!





Summary.

- Program is delivering.
 - EBI Gain & new top bulls each year for farmers.
- Program will continue to evolve.
 - Implications of genomics.
- Your feed-back is invaluable.
 - Higher EBI bulls & Genetic diversity.
- Thank-you for your continued support.
- Thank FBD for their support for the program.









Dairy Breeders' Conference **Morning Session**

Sponsored by: FIBID



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Program

10:30	Setting the Scene – Brian Wickham.
10:40	Session 1. Evaluations & Breeding
10:45	Dairy genetic evaluations & EBI – Ross Evans
11:00	Genomics – Francis Kearney
11:15	Breeding programs - Sinead McParland
11:30	General discussion
11:45	Session 2. Services
11.45	HerdPlus® – Kevin Downing
12.00	G€N€IR€LAND® - Andrew Cromie
12.15	General discussion & feedback
12.30	FBD G€N€ IR€LAND® Awards
	Paddy O'Keefe Chairman FBD Trust
1.00	Lunch.





FBD G€N€ IR€LAND® Awards Top Bulls

BREEDER NAME	BREEDER ADDRESS	AI CODE	ANIMAL NAME	EBI	EBI REL
JOHN O'SULLIVAN	LISDUFF, WHITECHURCH, CO CORK	LUU	LISDUFF MANFRED ET	205	69
ROBERT & SHIRLEY SHANNON	GURTEENAKILLA BALLYDEHOB CO CORK	BYJ	BALLYDEHOB JUSTICE	187	70
JOHN O'SULLIVAN	KNOCKNALYRE BLARNEY CO CORK	I (= V K	GARRYMARTIN KEET	184	69
DONALD BATEMAN	KNOCKANE, BALLYLOOBY CAHIR CO TIPPERARY	SIZ	SHINE DANO	178	62
RICHARD FEENEY	GLACK, BALLIVOR, CO MEATH	I W IMICÉ	BALLIVOR MANGO ET	176	70
MICHAEL DEMPSEY	JAMESTOWN BALLYBRITTAS CO LAOIS	I W MII	BARROWVALE MARTELL 12	166	63





FBD G€N€ IR€LAND® Awards Top Data Recording Herds

Name	Address	Category	Score
THOMAS ALLEN	KNOCKANE RIVERSTICK CO CORK	150+ cows	324
MICHAEL BATEMAN	KNOCKANROE CROOKSTOWN CO CORK	150+ cows	266
LEXIE BORLAND	RATHTHURLAS NENAGH CO TIPPERARY	150+ cows	235
MICHAEL EVERARD	FORTFIELD MOYNE THURLES CO TIPPERARY	80-150 cows	267
EAMON COUGHLAN	KILLEMERA GLANWORTH CO CORK	80-150 cows	235
JOHN O'SULLIVAN	BALLYWILLIAM KINSALE CO CORK	80-150 cows	201
DONNACHA TOBIN	CURRADARRA, AGLISH CAPPOQUIN CO WATERFORD	<80 cows	216
TOMAS MAHONY	COOLROE OLD PARISH DUNGARVAN CO WATERFORD	<80 cows	211
BERTIE O'CONNOR	URROHOGAL CURRANS FARRANFORE KILLARNEY CO KERRY	<80 cows	190





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