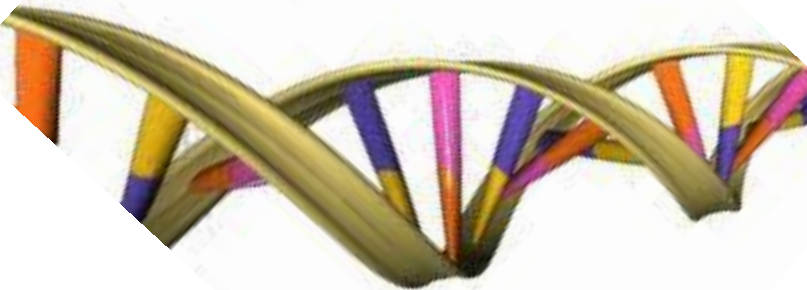


Putting Genomics into practice on the farm



**Kevin Downing
Whitechurch
Co. Cork**

Overview

- Farm Background
- Herd Breeding Policy
- G€N€ Ireland Bulls to date
- Heifers Genotyped
- Financial Gain
- Summary

Farm Background



Farm Background

- 125 Ped. Ho. cows – Currently converting from Liquid to Spring Milk

Group	No. of cows	Average days in milk	Completed Lactations Only							SCC	EBI €
			M Kg	M Gall	F%	P%	F Kg	P Kg	F+P Kg		
Overall	108	368	8221	1756	4.93	3.56	406	293	705	147	96
		305 CI: 419	7144	1526	4.88	3.5	348	250	598		

- Co-op data 2011 - F% 4.34, P% 3.57, 593 F+P kg/cow

Animal Group	Num of Cows	Milk Kg Fat % Prot %	Surv% CI Days	Milk % Contrib	Fertility % Contrib	Calving % Contrib	Beef % Contrib	Mainten. % Contrib	Health % Contrib	EBI €
Cows with EBI	129	190		€ 48.8	€ 40.4	€ 19.1	€ -5.6	€ -2.5	€ -0.9	€ 99
Missing a Sire*	0	9.7 0.05	1.5	41.6%	34.4%	16.3%	-4.8%	-2.1%	-0.8%	
Total Cows	129	9.0 0.05	-1.9							

- Young Stock – Milk 34%, Fertility 43%

Herd Breeding Policy

- Bulls used in 2011 (excl. 35 G€N€ IRL Straws)
- Fertility >€110, Milk >€70, F+P Kg >25, Positive F+P%
- Min. team of five GS Bulls

Code	Bull Name	Sire	EBI	Rel%	Proof	Milk	Fert	M kg	F+P Kg	Fat%	Prot%	Calv Int
SOK	(IG) SUNNYBANK OMAN	OJI	€279	55	GS	€73	€170	154	25.4	0.15	0.12	-8.82
HRJ	(IG) HILLSDALE RUDE JUSTICE	OJI	€214	62	GS	€65	€126	187	23.3	0.1	0.09	-7.15
CGH	CROCKETT-ACRES EIGHT-ET	OJI	€203	66	DP-INT	€85	€76	488	34.2	-0.04	0.03	-2.57
IRP	MILLANDS PRINCE	BWZ	€201	54	GS	€69	€119	100	22.7	0.16	0.14	-5.31
MZY	MEENASCORTHY STAR	BWZ	€189	59	GS	€72	€96	175	29.3	0.22	0.10	-4.85
PKK	PARKDUV MARK	RUU	€177	60	DP-INT	€66	€89	139	23.5	0.15	0.11	-4.38
SPY	(IG) SPARTA LENNY	KYC	€179	53	GS	€62	€103	85	25.0	0.25	0.11	-5.0
SJI	(IG) SUNNYBANK JUSTIN	OJI	€259	50	GS	€68	€154	139	24.0	0.16	0.11	-8.6
SIZ	SHINE DANO	HZO	€156	69	DP-IRL	€71	€73	280	28.0	0.08	0.07	-4.03
Data as of 10 th March 2011			€210			€71	€113	201	26.3	0.13	0.10	-5.58

Herd Breeding Policy

* Includes deduction of €9.36 for over-estimate of Genomic Milk Sub-Index

2009	Sire Name	EBI when selected €	Current EBI €	Difference €
HZL	HILLSDALE LIONEL	188	168	-20
CZR	CLONTEENS RENALDO	173	105	-68
UPH	MARS UPHILL	162	177	15
BYJ	BALLYDEHOB JUSTICE	189	152	-37
GYK	GARRYMARTIN KEET	184	193	9
OTH	MERRYWELL ATHOL	185	177	-8
	Average EBI of Team	180	162*	-18
2010				
BHZ	BALLYBROOK ASHLING JUSTICE	240	187	-53
BZR	BALLYBRIDE DANO	229	225	-4
NRB	HENDEL RAMOS BERLAND	203	166	-37
PKK	PARKDUV MARK	183	216	33
SOK	(IG) SUNNYBANK OMAN	268	257	-11
UPH	MARS UPHILL	217	177	-40
	Average EBI of Team	223	205*	-19

G€N€ Ireland Bulls to date

- 3 accepted into G€N€ IRL programme to date
 - **PKI** - PARKDUV IRONMAN (Spring, 2007)
 - **PKK** - PARKDUV MARK (Spring, 2008)
 - **PKP** - PARKDUV PANNIS (Autumn, 2008)
- **Five** bulls genotyped by AI companies this Spring
 - One increased by €57 while another dropped by €44
- **One** purchased for 2012 G€N€ IRL programme
 - Remaining four will be sold as Stock Bulls

G€N€ Ireland Bulls to date

PKK

Parkduv Mark EBI € 216

30-Sep-2006

<i>Overall Indexes</i>	EBI	EBI Rel	Milk	Fertility	Calving	Beef	Health	Maintenance
	€ 216	79%	€ 86	€ 102	€ 36	€ 3	-€ 2	-€ 9

<i>Milk Traits</i>	Milk Kg	Fat Kg	Prot Kg	Fat %	Prot %
	338	22.5	15	0.17	0.07

<i>Fertility Traits</i>	CI
	-5.3(days)

**Top Bull from 2008 G€N€ Ireland Programme
Currently on the ICBF Active Bull List 2012**

Sire

Ruud 22 (RUU) € 152

by **Zandenburger Royal (ZRR)**

Dam

Parkduv Margo 7 GP 80 RI10101978 € 158

by **Qg Europe ET (QUR)**

Milk Kgs	BF%	PR%	BfKgs	PrKgs	SCC	Days	Lact	Calving Date
6651	4.98	3.79	331	252	117	305	1	08-01-03
7301	5.02	3.92	367	286	118	287	2	13-02-04
8171	4.64	4.02	379	328	204	305	3	18-01-05
8113	5.43	3.79	441	308	127	305	4	17-10-06
8063	4.97	3.93	401	317	75	305	5	28-01-08
8618	5.69	3.69	490	318	233	305	6	24-09-09



48 Heifers Genotyped last Spring

Genomic Evaluation Report

Jumbo	1281	Lact. No	
Tag	IE151013721281	Sex	F
Name		Sire	KSI (€ 122)
DOB	09-Jan-2010 1y 2m	Dam	IE151013771105 (€ 122)
Breed	HO (97%), FR (3%)	Dam's Sire	HFL (€ 150)
Date of Evaluation	29-Mar-2011		

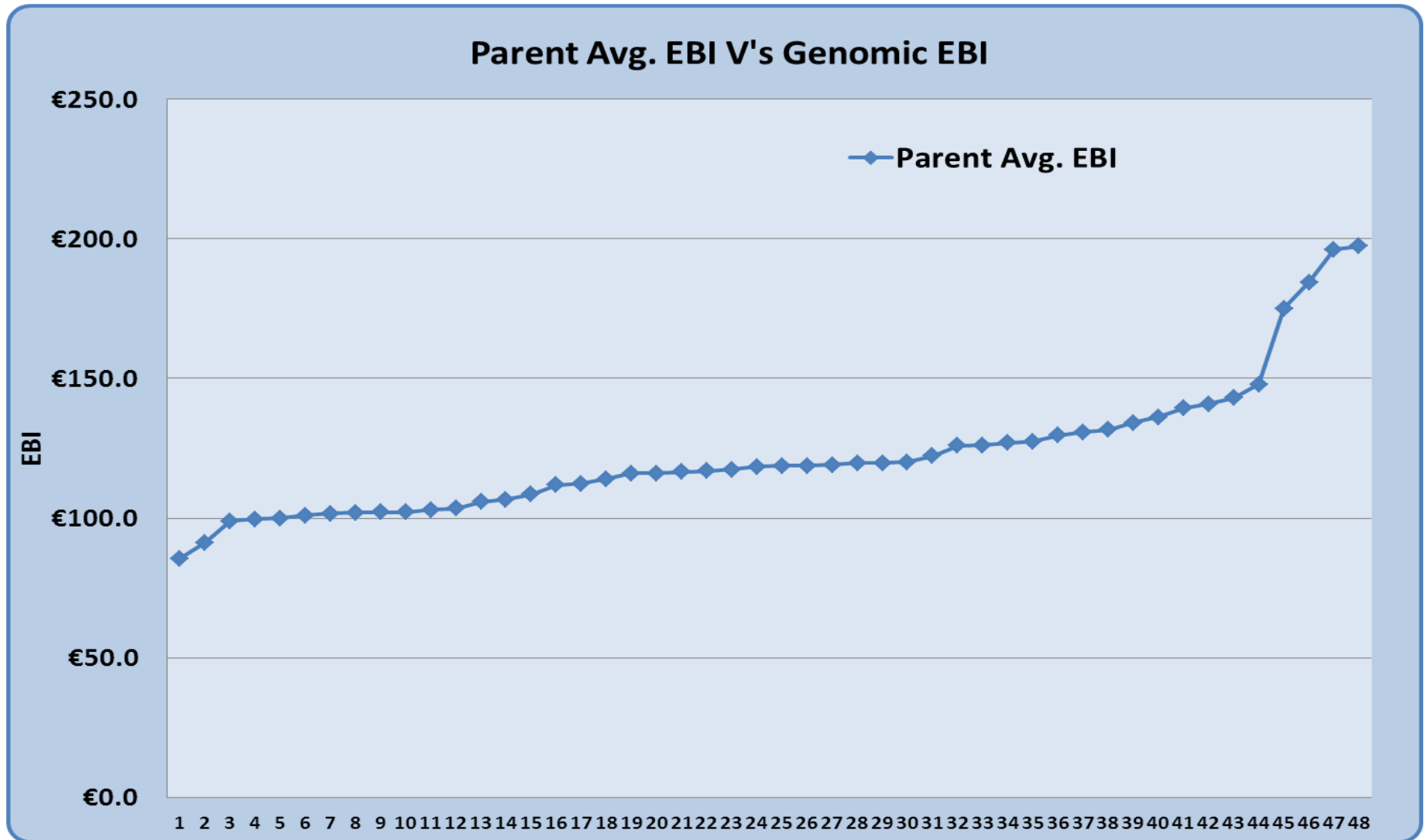
Index	Official Genomic Evaluation	Reliability	Weighting on Genomics	DNA Value	Parent Average Evaluation	Reliability	Diff.from Parent Avg	Increase In Reliability
EBI €	147	53%	32%	127	122	31%	+25	22%
Milk Sub Index €	52	63%	41%	51	42	37%	+10	26%
Fertility Sub Index €	91	43%	26%	73	74	23%	+17	20%
Calving Sub Index €	19	54%	28%	17	20	36%	-1	18%
Beef Sub Index €	-14	49%	26%	-14	-17	31%	+3	18%
Maintenance Sub Index €	3	44%	23%	3	4	27%	-1	17%
Health Sub Index €	-4	58%	41%	-4	-3	30%	-1	28%

Parent Average V's Genomics

Number of Heifers 48			
	Parent Avg.	Genomic *	Difference
EBI	€123	€130	€7
Reliability %	32%	55%	23%
Max. EBI	€197	€236	€38
Min. EBI	€86	€36	-€50
* Includes deduction of €9.36 for over-estimate of Genomic Milk Sub-Index			

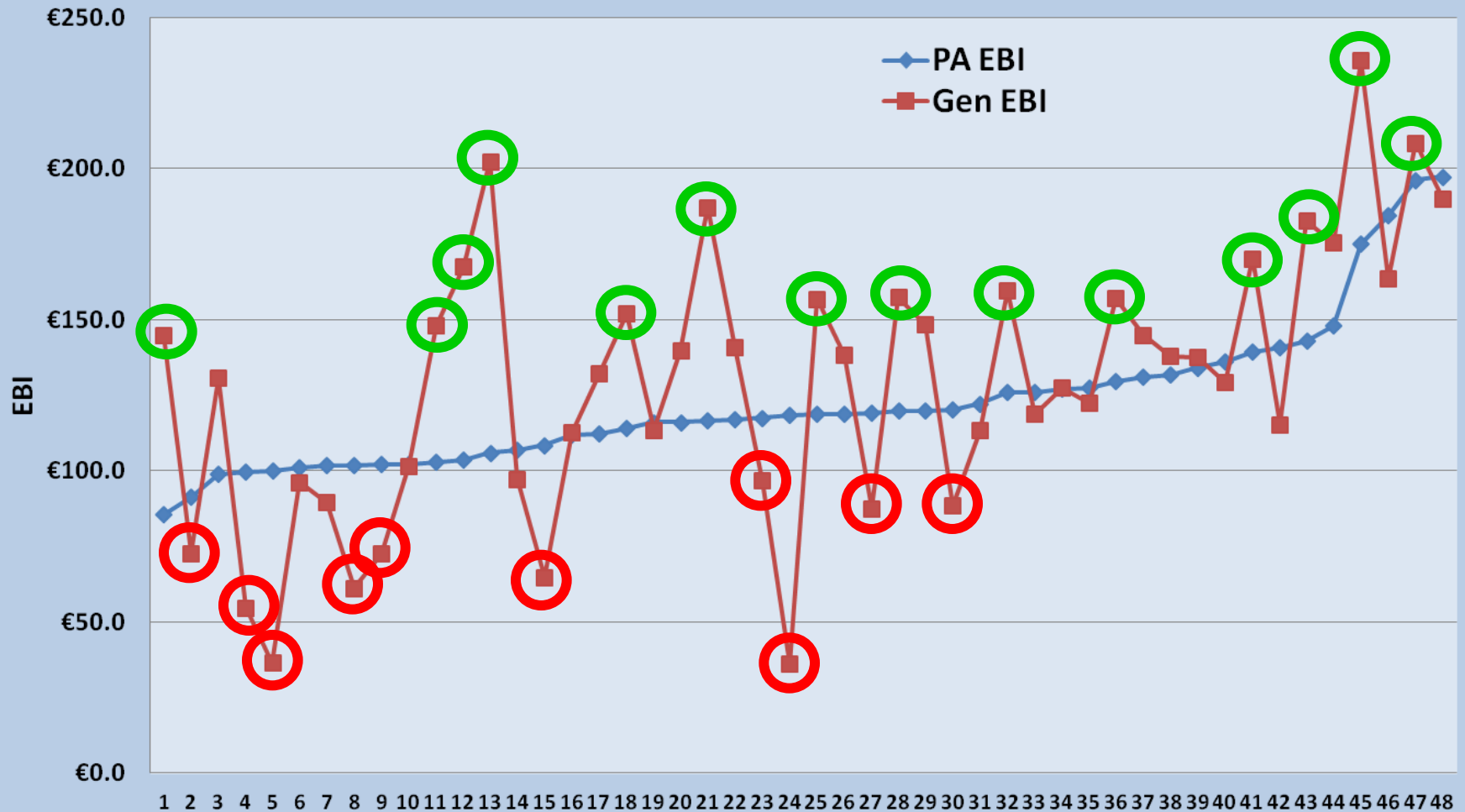
- **Increase** of €7 in average EBI
- **23%** increase in reliability - Equivalent to 14 progeny
- **Range** in EBI increased (greater max & mins)

There will be re-ranking



There will be re-ranking

Parent Avg. EBI V's Genomic EBI



Top 15 Heifers on Parent Avg. EBI

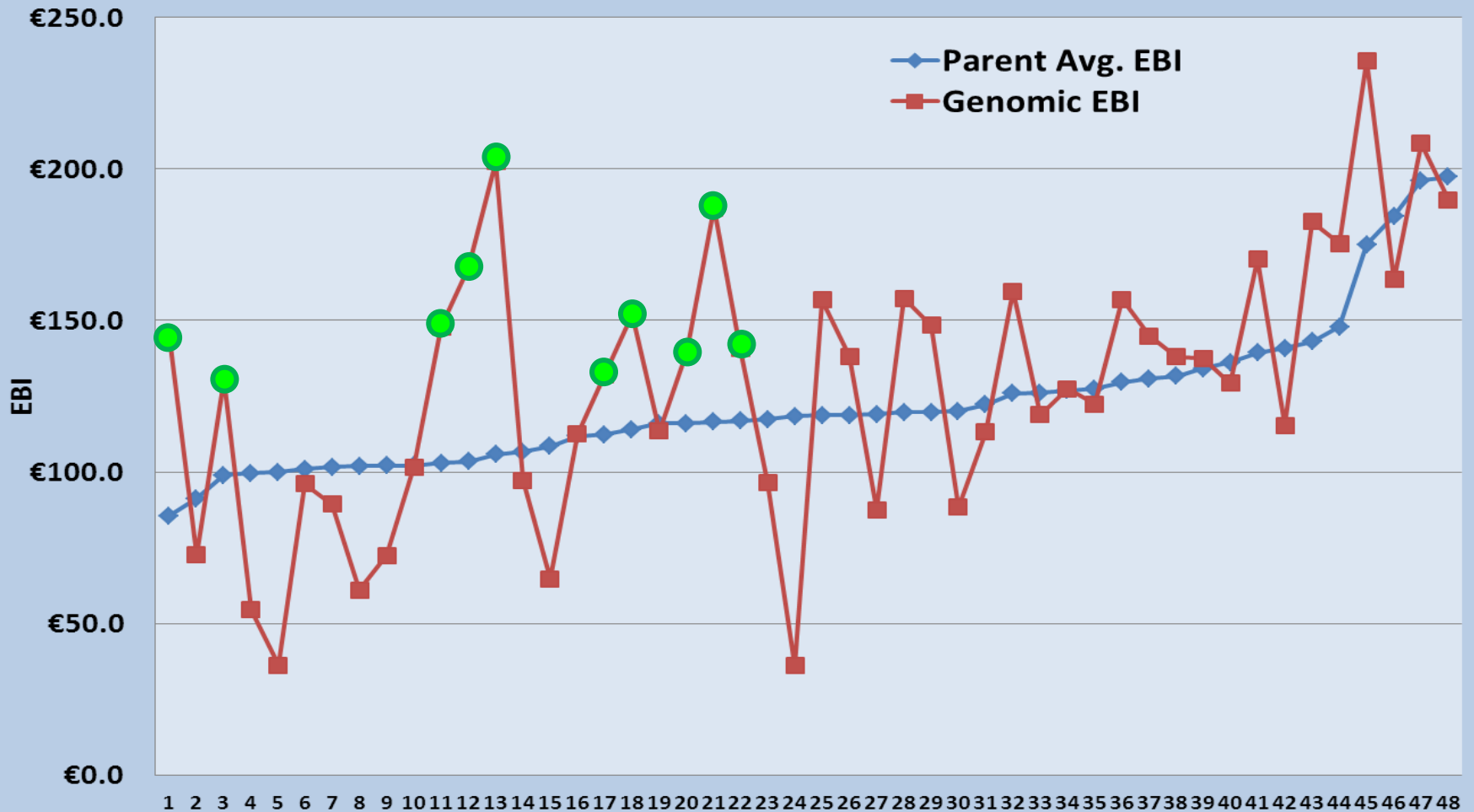
Tag Number	Sire	PA Rank	PA EBI	Rel%	Gen Rank	Gen EBI	Rel%
IE151013721273	OJI	1	€197	35	4	€190	62
IE151013761269	OJI	2	€196	35	2	€208	66
IE151013721323	OJI	3	€184	31	10	€164	57
IE151013731332	OJI	4	€175	35	1	€236	56
IE151013771352	GYK	5	€148	31	7	€175	54
IE151013741358	CUL	6	€143	27	6	€183	45
IE151013741283	BYJ	7	€141	31	31	€115	56
IE151013791288	KSI	8	€139	33	8	€170	53
IE151013781262	RMW	9	€136	34	27	€129	55
IE151013741300	CHQ	10	€134	29	24	€138	51
IE151013751342	RMW	11	€132	34	23	€138	55
IE151013711297	KSI	12	€131	33	18	€145	51
IE151013731258	RMW	13	€130	33	13	€157	49
IE151013751350	CHQ	14	€127	28	29	€122	50
IE151013791263	CUL	15	€127	25	28	€127	49

KEY MESSAGE!

- Clear re-ranking of some heifers
- Increased reliability in decision making +23%
- **10 heifers that were for sale are now being kept!**

The 10 Heifers Now Being Kept!

Parent Avg. EBI V's Genomic EBI



Financial Gain

- Average EBI of the 10 heifers we are now keeping has gone up to **€154**
- While the average EBI of the 10 heifers we now intend selling has dropped to **€104**
- Average increase of **€50** per animal
- EBI is expressed as half the animals own performance, therefore the actual increase per animal is **€100**
- Average 4.5 lactations = $4.5 \times €100 = \textbf{€4,500}$

Return on Investment

- Cost of genotyping 48 heifers is €30/hd
 - $48 \times 30 = \text{€1,440}$
- **€4,500** more profit from the 10 we're now keeping v's the 10 we're now selling
- Return €4,500 : €1,440 Investment
- This equates to at least a **3:1** return on investment from having information available to us at an early stage.



Other benefits to genotyping

- **Parentage verification**

- There can be 5-10% error rates in calf pedigrees
- Parentage verification costs ~€40
- Genomics will help in (i) identify parentage errors
(ii) allocate correct sire to calves

- **Identifying elite animals for breeding programme**

- Heifers can change by +/- €90

- **The 'National Good'**

- Option of selling heifers to the Next Generation herds
- Increase the reference population for genomics in the national herd thus increasing the EBI reliability

Summary

- Continue to use GEN Ireland & genomic bulls
- Focus on improving fertility while maintaining herd milk solids
- Genomically test female calves each year
- Genomically test top 4-5 bulls each year
- Contract mate top cows to AI bulls recommended by ICBF/Teagasc

The End



Thank You