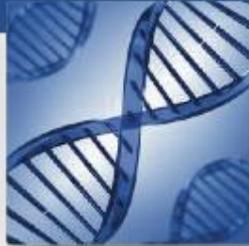




IRISH CATTLE BREEDING FEDERATION

Dairy Breeding Update.



Teagasc In Service Training, 30 & 31 January 2018.



Overview of Talk.

- Is the EBI Working?
- Minimising Risk in Your Breeding Program.
- Changes for 2018.
- Questions & answers.

Where we started; Irish dairy herd 2000

High index Holstein route not the answer

Peter Young

Pregnancy to first service for both groups was just 35 per cent.

1). This year's fertility results

Very disappointing results from three year trial

EIGHT of the twenty-three empty cows were scanned in calf at 30 days. Embryo loss struck to see the eight repeat near the end of the breeding season. That's is the hardest pill to swallow for Jack Kennedy, Flor Flynn and the rest of the team that put in huge effort into getting the cows in calf. "It was hugely disappointing. The cows were well fed since they went out day and night on March 10, and they settled very well,"

said Jack. There was just one embryo loss last year. The biggest problem for them, and for all farmers, is that there is still little known in terms of answers. Feeding more meals is not the solution. The three-year trial clearly shows that there is no effect of feeding level on fertility. The 96 cows were split into three herds. Each herd contained half-high genetic merit cows (RBI 00 X) and half-

Medium merit (RBI 00 y). The herds were fed either

- 400kg meal (Low concentrates, LC)
- 800kg meal (medium concentrates, MC)
- 1500kg meal (high concentrates HC)

The average infertility rate for the different levels of meal was 23 per cent, 25 per cent and 22 per cent respectively.

Table 2

	Current trial (1998-2000)		Previous trial (1995-1997)	
	HGI	MGI	HGI	MGI
Submitted in 1st 3 weeks (%)	88	90		
Calving to service interval (days)	77	77	70	71
Calving to conception interval (days)	93	90	86	88
Pregnancy 1st service (%)	49	57	41	53
Pregnancy 2nd service (%)	42	44	37	58
Services/cow	1.83	1.68	1.75	1.7
Infertile rate (%)	17	12	23	6
Percentage Holstein (%)	88	60	92	52

Measures of fertility needed in index

infertility.

Table 1

Milk production for medium and high merit cows (1998-2000)

	High merit	Medium merit
1998	1,498	1,213
1999	1,675	1,464
2000	1,770	1,564

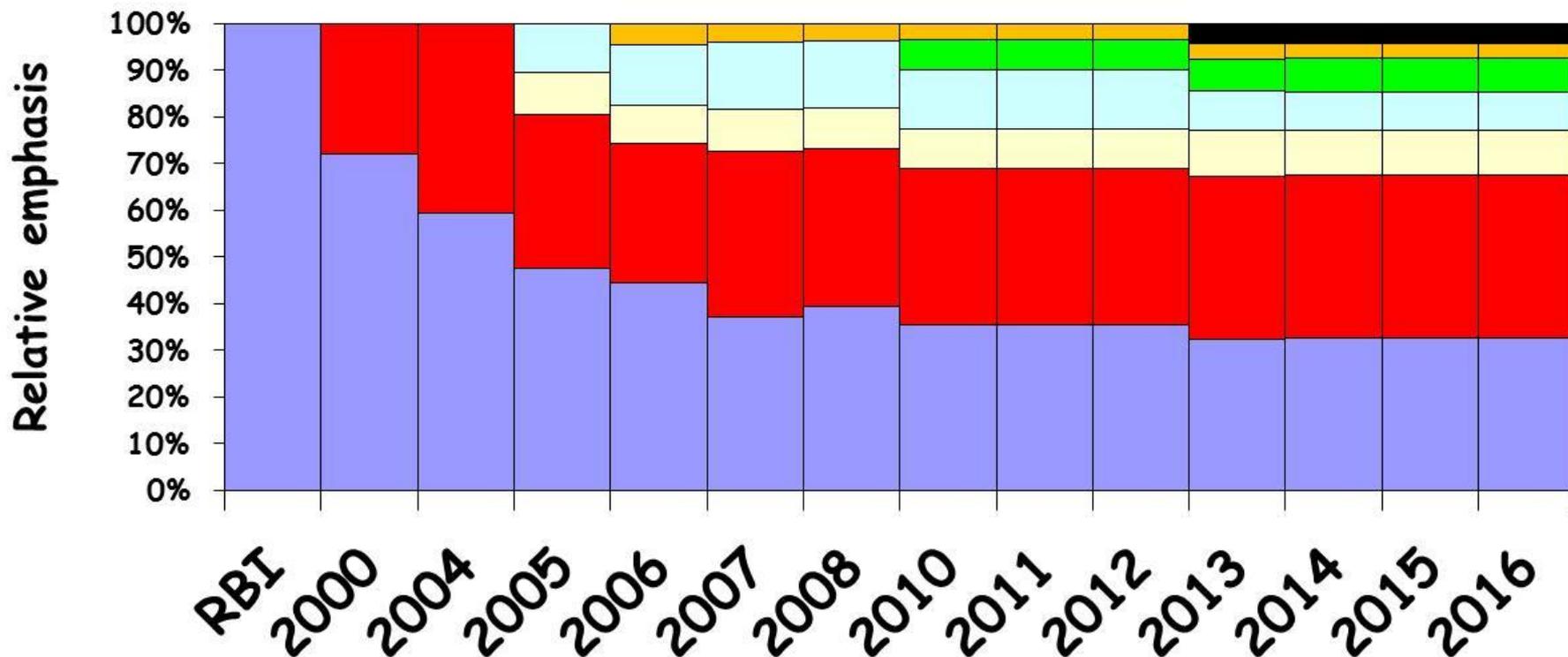
answer for helping to select cows with higher fertility. These cows were bred in Ireland and bought from farmers. The previous high merit cows had been bought in from Holland and France. "However it shows that nationality has nothing to do with it. The results clearly show that poorer fertility is linked to high index Holstein percentage, in the cows

Jack Kennedy, whose season allow t spread option,

IRISH farmers desperately need an index that includes measures of fertility. The Moorepark research increases the urgency of the new index being drawn up by the ICBF and due to be released in late November. For the first time the index will be produced that will include traits linked to fertility. "Other countries are starting to record traits that are linked to fertility. With our compact calving system the need in Ireland is much greater," said ICBF geneticist Dr.



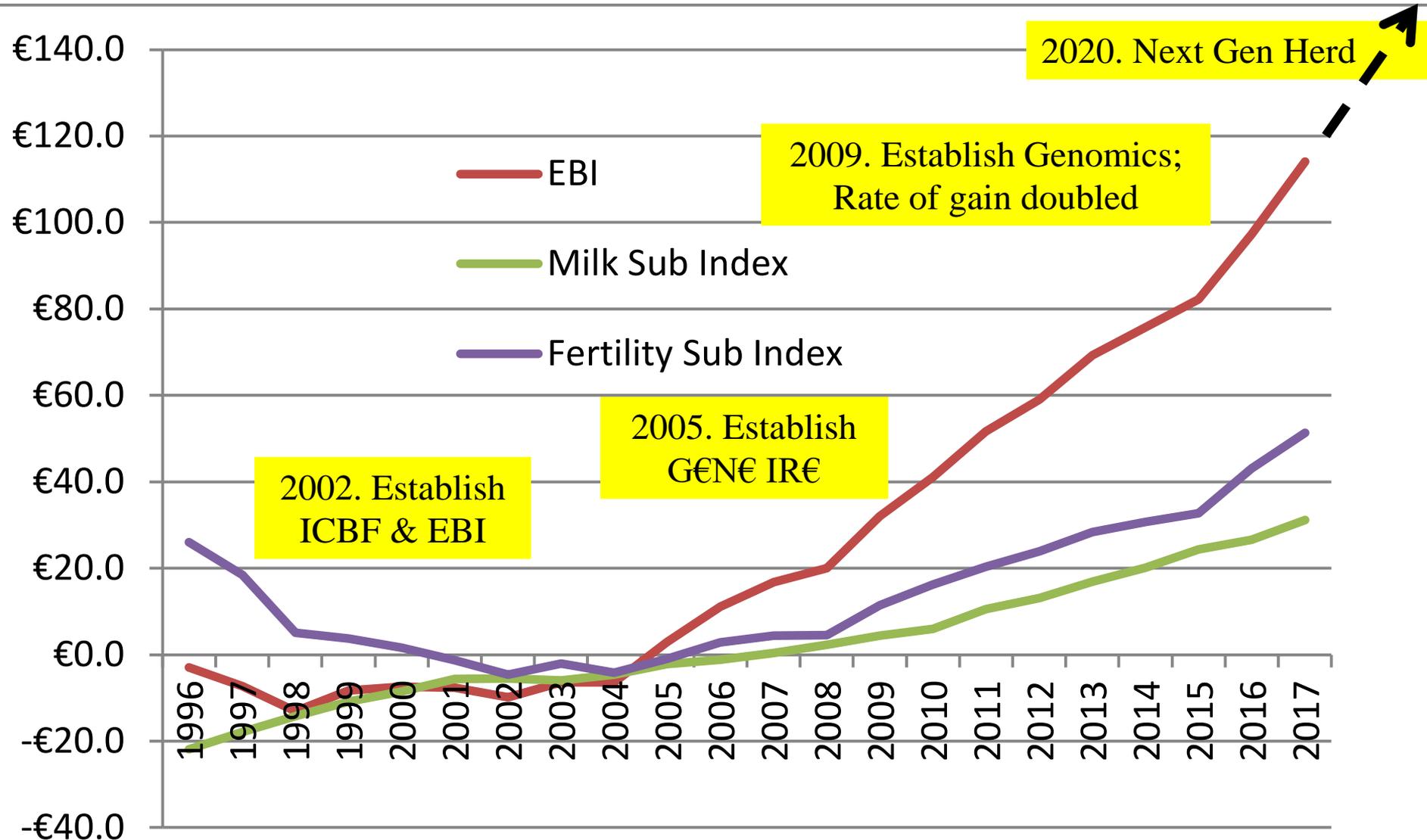
Evolution of the EBI (2000–2016)



■ Milk ■ Fertility ■ Calving ■ Beef ■ Maintenance ■ Health ■ Management

- The ideal Irish dairy cow; High milk solids (500 kg MS/cow/year) & excellent fertility (CI = 365 days).

Rate of genetic gain in EBI (€/lact) for dairy females born in Ireland between 1996-2017



Farm Profit

	Elite	NatAv
Labour cost (€)	32,443	31,660
Replacement costs (€)	29,079	46,022
Total costs (€)	163,081	178,782
Livestock sales (€)	34,792	42,593
Profit Farm (€)	92,305	68,023

**+ €220/
COW**

Trend in herd performance 2010 – 2016

Based on 2,801 creamery suppliers with EBI, milk co-op and fertility data

Criterion	2010	2011	2012	2013	2014	2015	2016
EBI Performance							
- Herd EBI (Cows only)	€2.3	€22.4	€41.8	€53.1	€58.2	€67.8	€69.5
Milk Co-op performance							
- Milk litres delivered/cow	4,858	4,872	4,713	4,795	4,845	5,240	5,170
- F+P kg/cow	363.4	367.8	359.5	365.9	374.0	410.4	407.1
- Fat%	4.00%	4.05%	4.13%	4.12%	4.17%	4.20%	4.28%
- Protein%	3.48%	3.50%	3.50%	3.51%	3.55%	3.64%	3.60%
Fertility performance							
- CI Days	393.5	393.8	388.7	385.8	387.2	383.3	381.2
- Six week calving rate	55.3	56.2	59.5	62.1	61.3	62.0	63.9
- % calving 22-26 mths		67.4	70.2	73.4	70.5	72.0	74.8
Total milk solids							
- F+P kg/Herd	28,222	30,713	31,042	33,014	34,370	41,097	43,808
- % increase		8.8%	10.0%	17.0%	21.8%	45.6%	55.2%

Questions over genomics at Greenfield



As the first-calvers approach the end of the first lactation

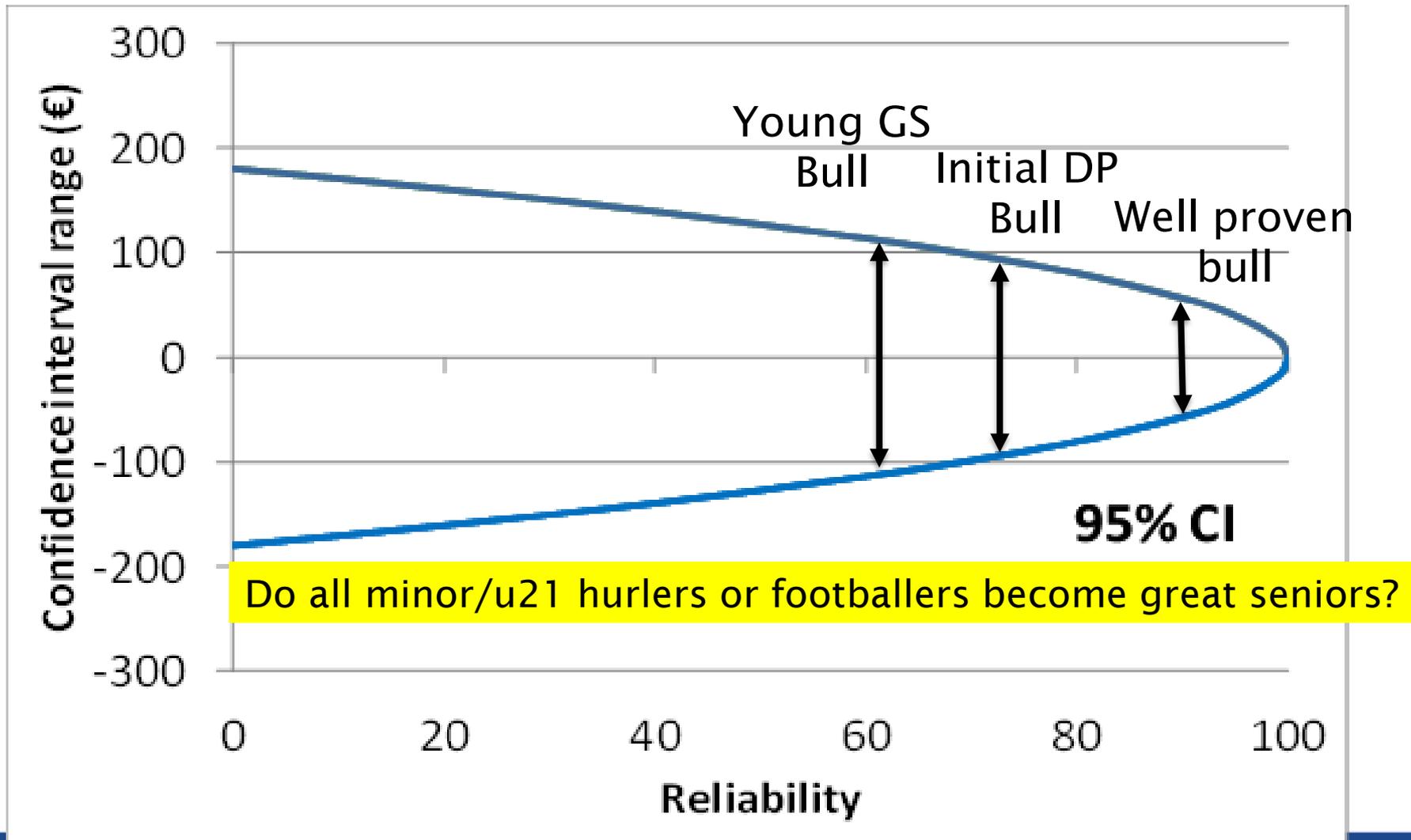
Looking at some of the first calvers in Greenfield as they approach the end of the first lactation, you would have to question if this is the type of cow that will stay long-term on the farm. Some of the GZY-sired heifers look very leggy, big and Holstein-like compared with the mature cows on the farm. Now, I say this, recognising that heifers are in their working clothes at this time of the year and it isn't looks that puts milk solids in the tank. I also say this in the full knowledge that the milk solids and fertility performance of the herd as a whole has improved significantly over the last five years.



evaluation proof was available in 2014 when GZY was used so he was selected not knowing if she was hard calving or easy calving. After a few years in use, he now has a calving difficulty of 3.2, which means he is a hard calver. For me, AI sires need to be less than two for heifers and

proof takes shape. So it looks like this sire, having started out with a good looking milk proof, is not going to do much to bring more fat and protein into the bulk tank. The fact that 25% of our heifers are bred from GZY means we have lost opportunity for genetic gain with

Bull proofs will change over time.



Our breeding industry will change over time => Game Change.

- How will our breeding industry change in the next 10 years?
 - New technologies.
 - Genomics, sexed semen, gene editin.....
 - New traits.
 - Mastitis, lameness, diseases (TB, fluke...).
 - Feed intake/efficiency => cow size.
 - Fertility => compactness of spring calving.
 - Changing economic values...
 - Cost of labour...
 - Impact of GHG & environmental legislation.
 - Anti-microbial resistance => dry cow therapy.

Game change. Football=> Aussie Rules.



- Joe Kernan.
- Is it the same game?
 - Are the best in one still the best in other?
- What did Joe do to try overcome the differences and win the test series?

What are the main differences between football and Aussie Rules?

What did Joe do to try and overcome these?

What are the main differences between football and Aussie Rules?

What did Joe do to try and overcome these?

Different Shaped Ball.

Large squad.

4 posts.

Rotation.

Different shaped pitch.

Not overuse key players

Amateurs versus pro's

Enlist local AFL players.

Weather/ground conditions

Younger players

Two referee's

Hassle the ref!

No Dub's!

Breeding decisions 2018+

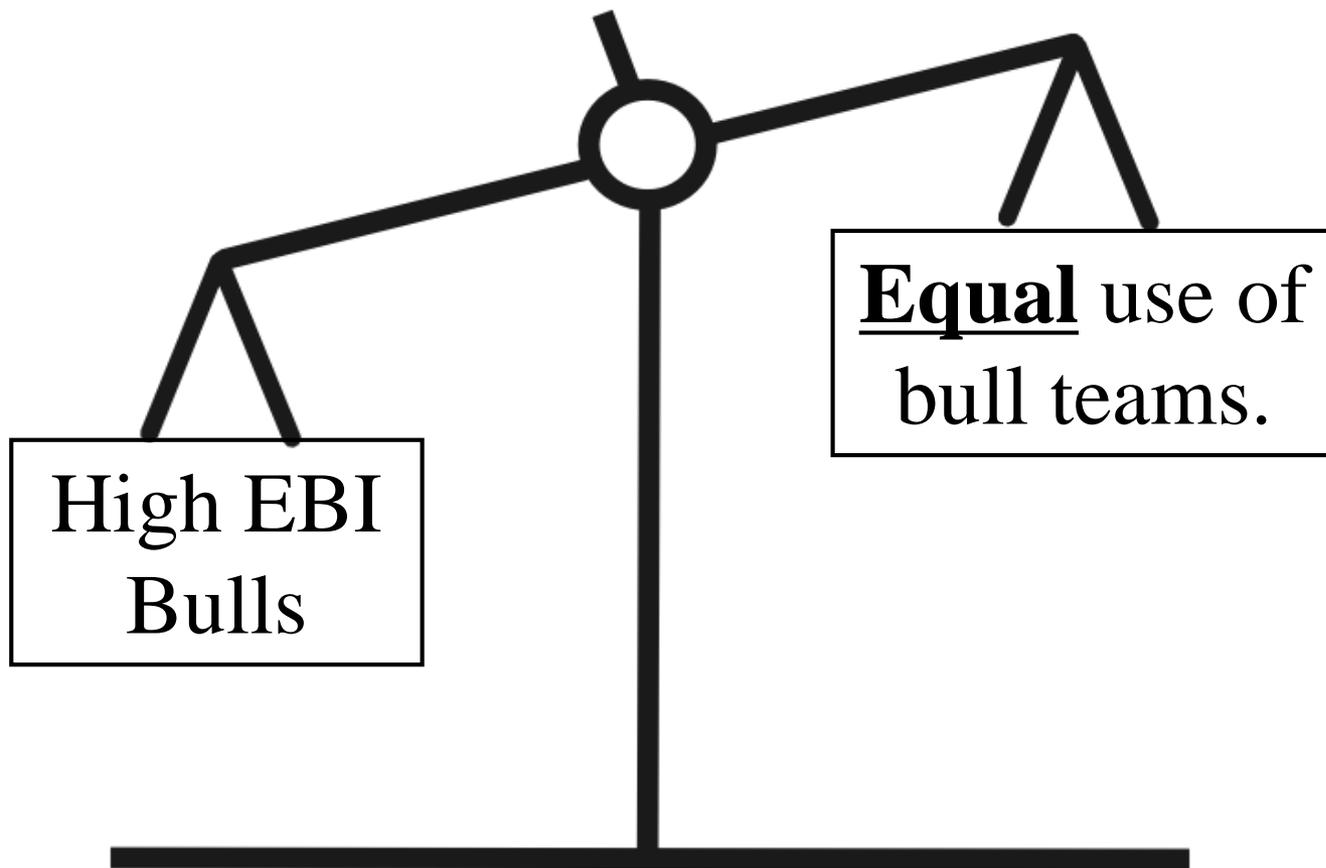
- Back to breeding cows, given anticipated changes our breeding industry in the future, how should we approach bull selection?

Managing Risk – Use of Bull Teams

	Herds*
Number herds	5,973
Number bulls used	7.5
% to most heavily used bull	34%
% to most heavily used 3 bulls	69%
% herds where usage of 3 most heavily used bulls <=50%	18%

- Yes we use teams of bulls
- But we majorly over-use individual bulls
 - Especially relevant for heifers – herds using 1 or 2 bulls on heifers!

Breeding Program Strategy



Updated Bull Usage Guidelines

Herd Size (incl. Heifers)	Minimum Bull Team
50 - 100	7
101 - 150	8
151 - 200	10
201 - 250	11
251 - 300	12
301 - 400	14

- New guidelines account for;
 - relatedness of bull teams
 - increase in reliability of bull team from 90% to 95%
 - impact of herd size/industry
- Minimum use targets & equal usage of bulls

Managing Risk - Use Young GS Bulls.

	Genomic	Daughter Proven
No. cows/herd	96.2	76.4
Herd EBI	€92	€73
% calf 2011-14 calf crop GS	72%	13%
Milk production 2016		
Litres /cow	5,176	4,853
Fat kg/cow	223.9	204.3
Protein kg/cow	187.4	174.6
F+P kg/cow	411.3	378.9
Fertility 2016		
CI Days	378.0	379.1
6-week calving rate	67.7	63.9
Heifers calved at opt age	81%	66%

- Progeny of young GS bulls perform better than daughter proven bulls.

Changes to EBI for 2018+

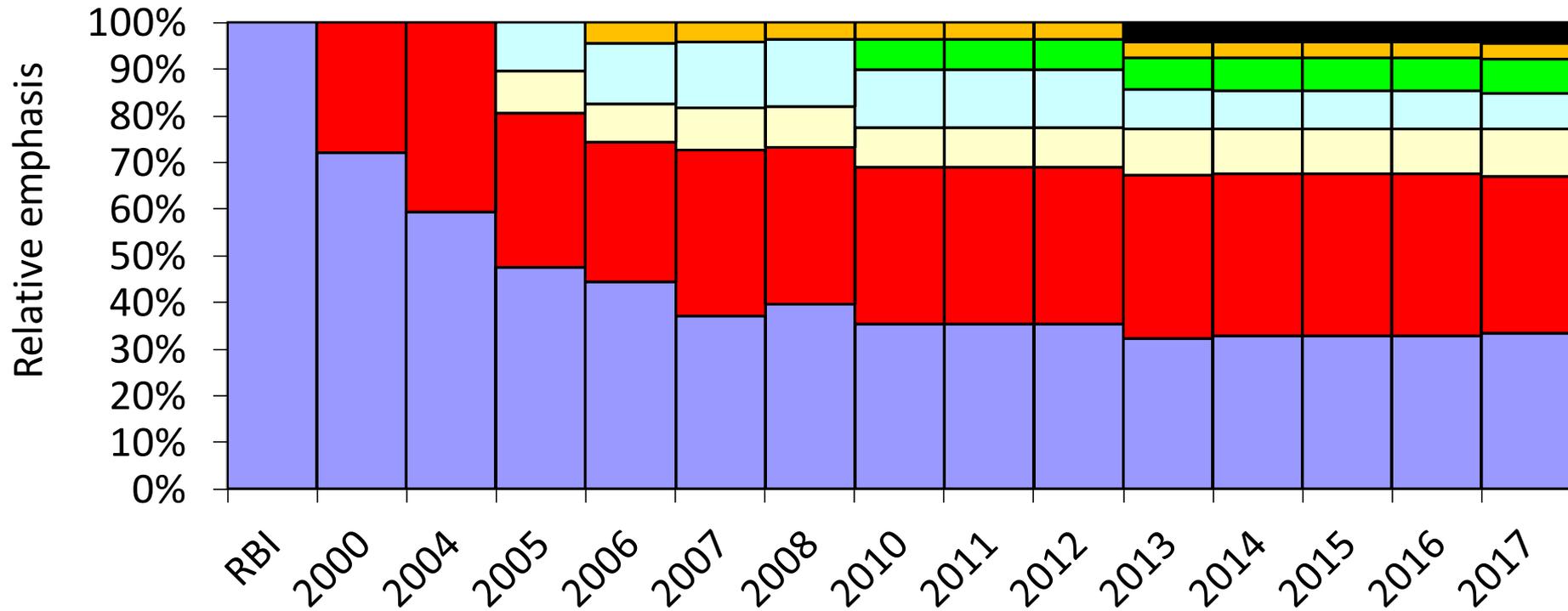
- Updating the economic values in the EBI.
 - Not updated since 2014.
- New genetic evaluations for milk traits.
 - New Test Day Model evaluations.
- Update the training population.
 - More bulls added => increased accuracy.
- New genetic evaluation software.
 - More frequent and increased accuracy.
- New genomic evaluations for health & disease traits.
 - The new “fertility” => increasing problem at farm level.

Updating Economic Values in EBI.

Trait	2014	2017
Milk (kg)	-0.09	-0.09
Fat (kg)	1.04	2.08
Protein (kg)	6.64	5.88
Calving interval (d)	-12.43	-12.59
Survival (%)	12.01	12.43
Calving difficulty dir (%)	-3.52	-4.19
Calving difficulty mat (%)	-1.73	-2.31
Gestation (d)	-7.50	-7.93
Calf mortality (%)	-2.58	-2.58
Cow (kg)	-1.65	-1.65
Carcase weight (kg)	1.38	1.38
Carcase conf	10.32	10.32
Carcase fat (units)	-11.71	-11.71
Cull cow (kg)	0.15	0.15
Lameness (%)	-54.26	-72.47
Mastitis (%)	-77.10	-82.65
SCC (Log _e)	-43.49	-43.49
Milking duration (seconds)	0.25	0.21

- **Correlation among proofs (n=4208) of 0.9986**
- **Correlation among proofs of Active Sires (n=650) of 0.992**
- **Upward shift in mean EBI value (+€10-€15), mainly due to milk price increase & fat kg.**

Evolution of the EBI (2000–2017)



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Why change milk evaluations?

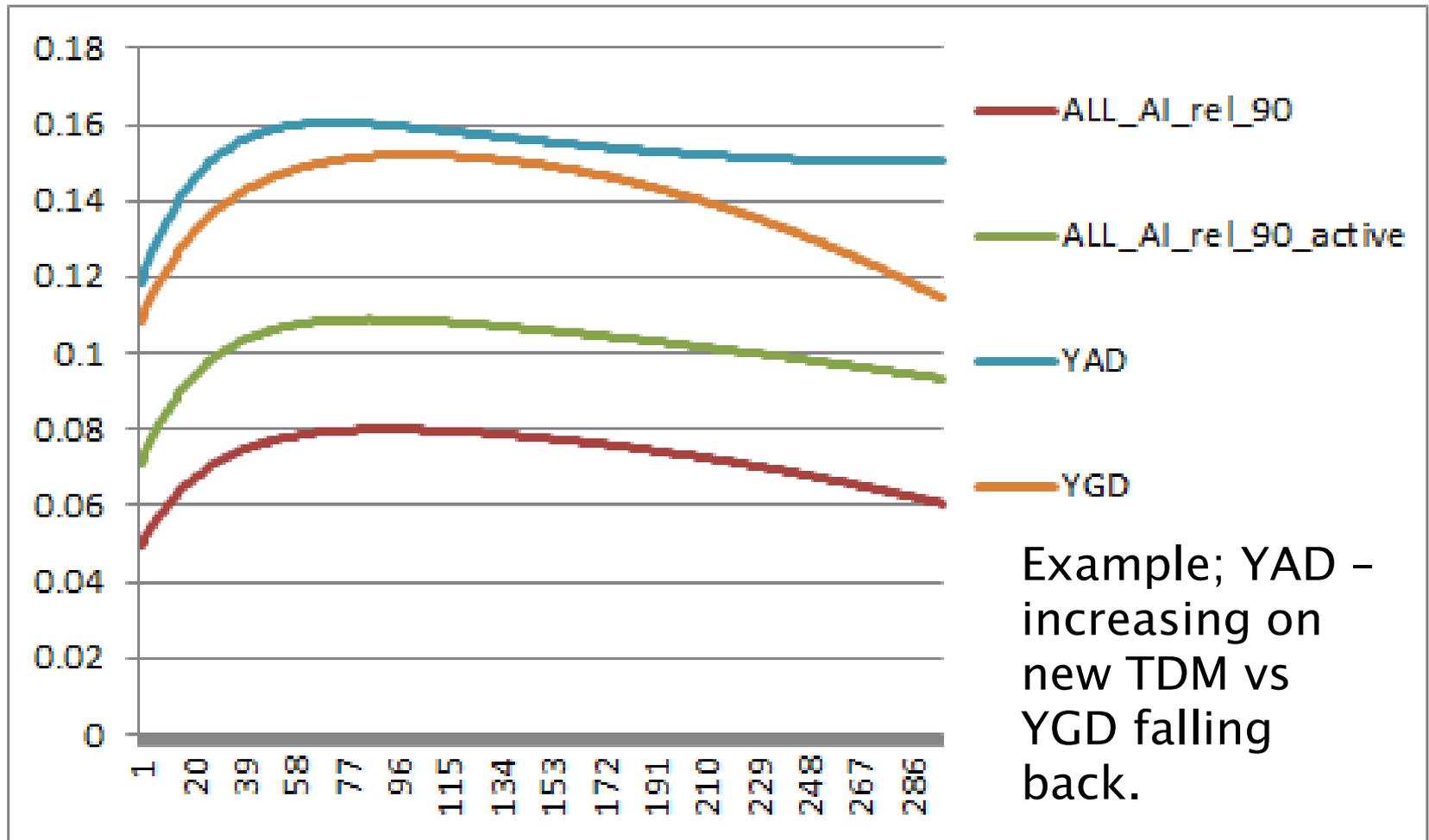
- Old milk production evals based on predicting individual test days => 305-day yield and then undertaking genetic eval on the 305-day yield.
- More accurate approach is to evaluate the individual test day (better account for effects specific to that test day, e.g., weather, grass quality, conc feeding) and then sum these to an overall value for each animal.
 - Also allows for animals (& sires) to have different shapes of lactation curve => new traits such as persistency.
 - In-line with international best practice.
- Extensive R&D undertaken over last 3 years.

Base cow production.

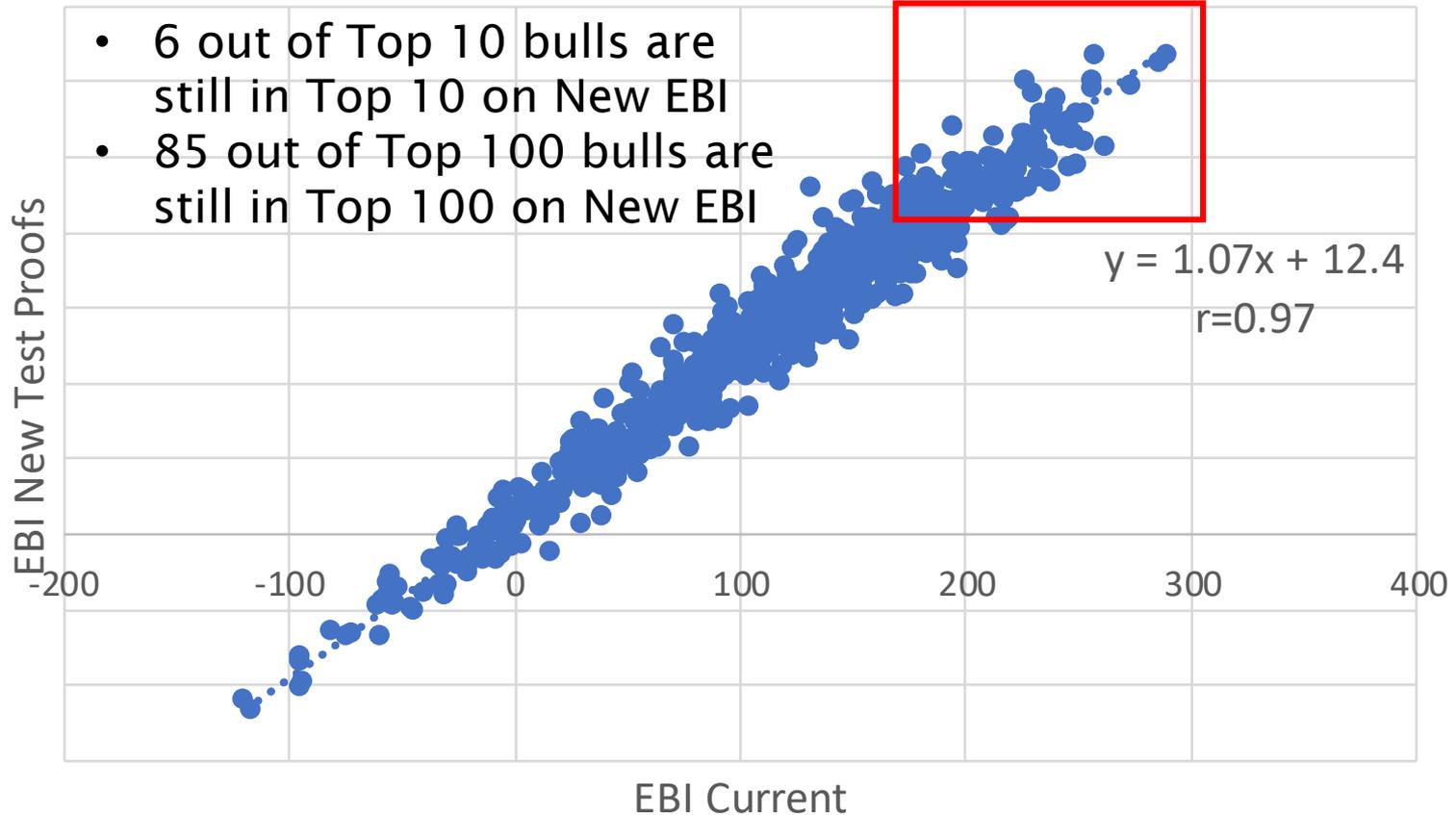
	Milk kg	Fat kg	Protein kg	Fat%	Protein%
Parity 1	5538	216.3	188	3.91%	3.39%
Parity 2	6246	243.7	216.1	3.90%	3.46%
Parity 3	6587	258	227.1	3.92%	3.45%
Overall	6044	236.2	207.5	3.91%	3.43%

- Same group of animals as before (born 2005, milking 2007). Now expressed against first 3 lactations as opposed to heifer equivalent => more in line with best practice.
 - Base cow production = 6,044 Milk kg, 236.2 Fat kg & 207 Ptn kg
 - Bull A = +300 kg milk, +12 kg Fat, + 10 kg Protein.
 - Daughters = 6,344 milk, 248.2 Fat kg & 217 Ptn kg.

Benefits of TDM – Bulls differences.



Impact; Comparison of Current Official and New Test Proofs*



**Based on 886 Active AI Sires (Test proofs distributed yesterday).*

Summary.

- EBI has worked well on farms.
- Need to shift focus towards EBI and equal use of bulls teams.
- Teams of high EBI GS bulls will perform better than DP bulls.
- Proofs for all bulls will change, both Daughter Proven and Genomic.
- ICBF will continue to “make changes” (new data, new traits, new EV’s, new technology.....). Another key way to help manage risk.
- Ireland is right to have a Genomic based breeding program. Agile & able to respond to change.