



IRISH CATTLE BREEDING FEDERATION

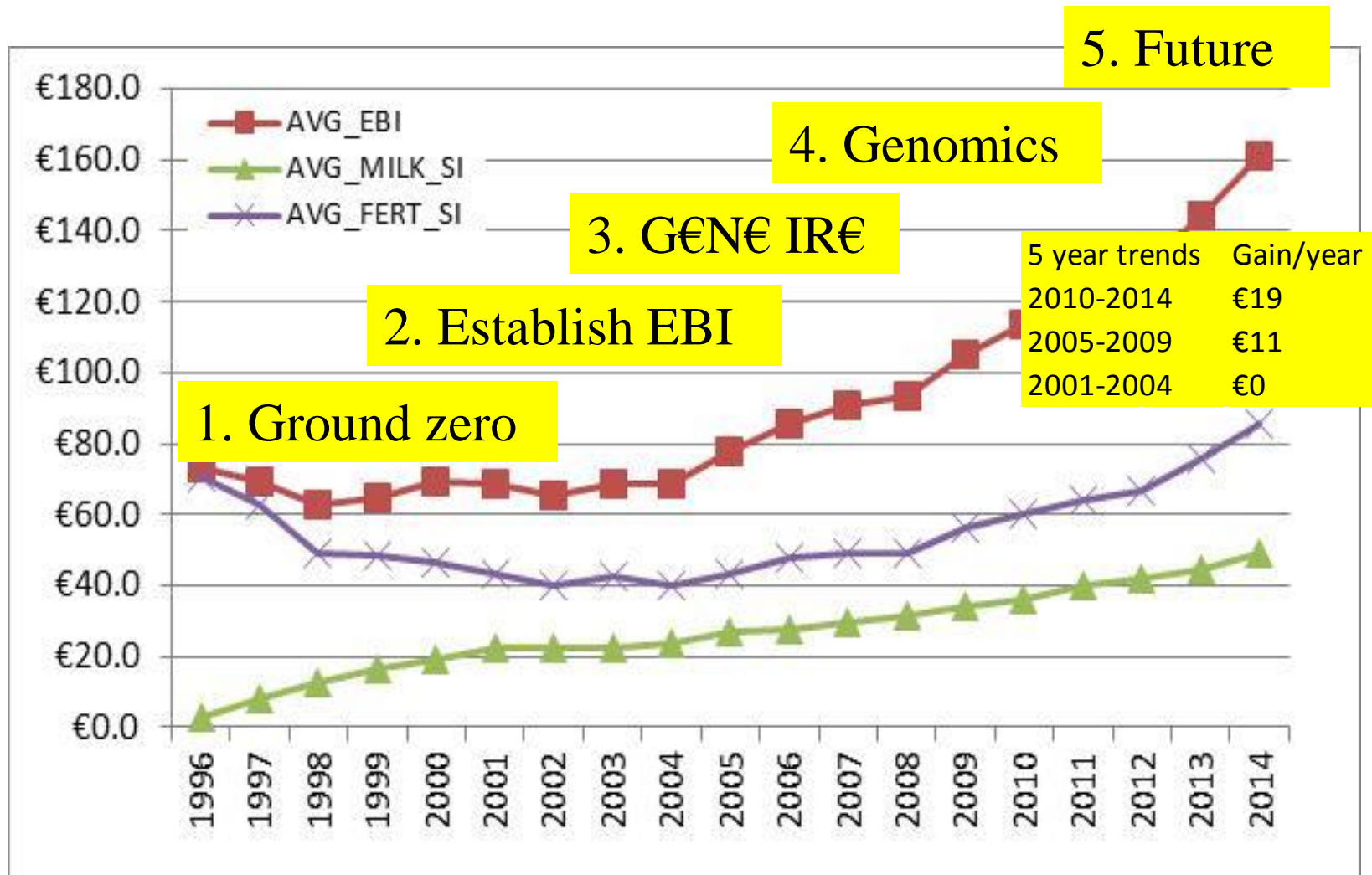
# The Irish Collaboration Story.



# A story in 2 parts!

- Today; The Irish collaboration story.
  - *“.....will share tales of a decade long story about partnership, leadership and commitment to produce a better breeding service for Irish farmers”*
- Tomorrow; When 1+1 is more than 2.
  - *“.....the Irish have demonstrated rewards from close connections between herd test and genetics. Andrew Cromie describe the keys to that success”*

# Overview of Today's Talk.



# Does genetics work?

## Evolution is just a theory?



Well, so is gravity, and I don't see you jumping out of buildings.

—Richard Dawkins

# Global explosion in interest.

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# Screening for diseases.



# What about cows?

## HIGH EBI DELIVERS

Will a high EBI herd deliver better fertility? Yes is the answer so far in Cork

**JACK KENNEDY**  
DAIRY EDITOR

[jkennedy@farmersjournal.ie](mailto:jkennedy@farmersjournal.ie)

**T**he Elite high EBI herd in the Teagasc Kilworth farm is outperforming the

what is the diet.

Both genetic herds are divided into three groups on three different feeding treatments. The three Elite herds (EBI €244) on average are yielding 18.0 kg, at 4.94 F%, 3.96 P% (1.57 kg MS/day),



- One example; Results from Teagasc “Next Generation” Dairy Herd.
  - Established in 2013 to validate/further improve EBI.

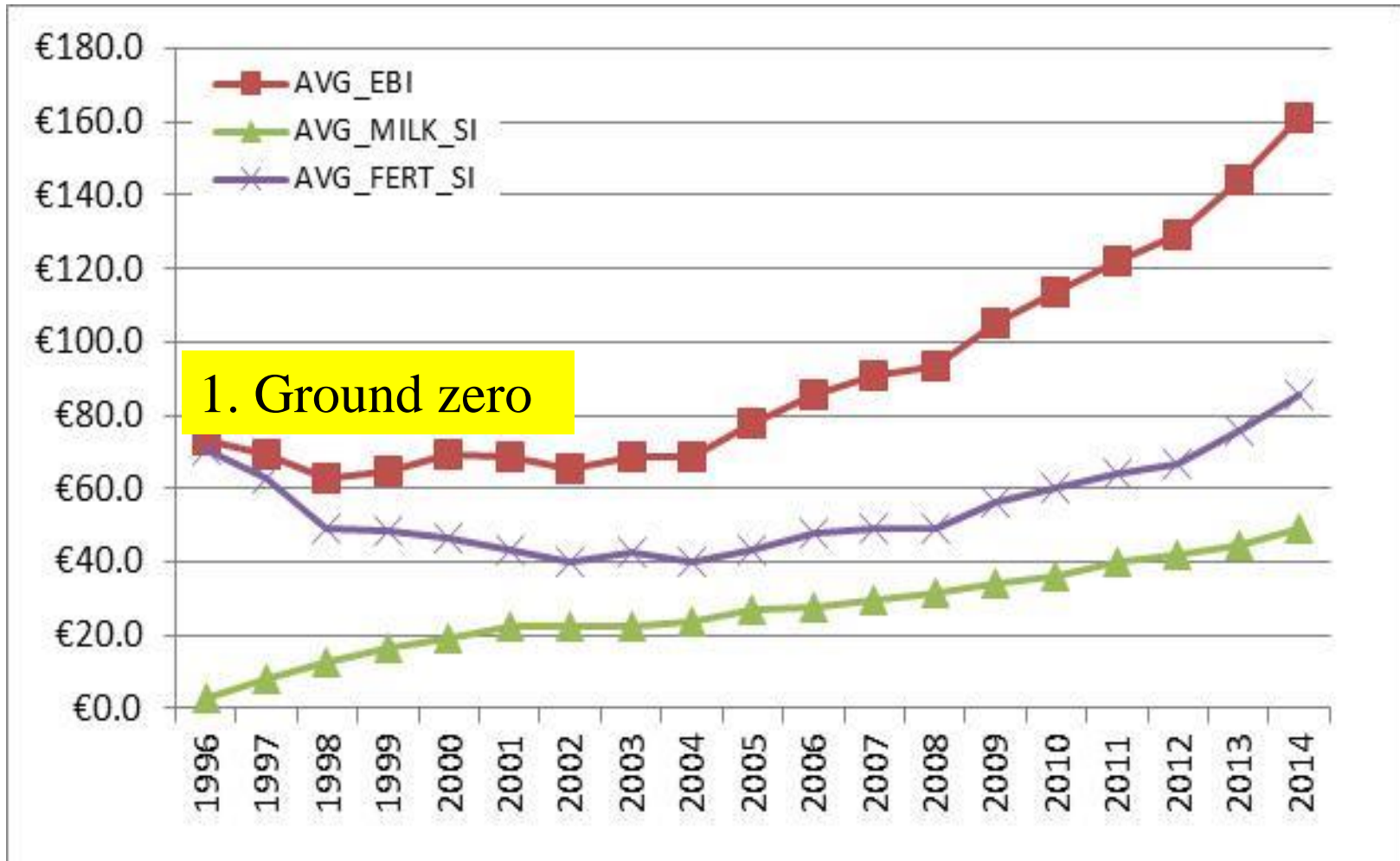
# Teagasc NGH Results (13 & 14)

	Elite	Nat Ave	Diff
<b>Predicted at birth based on genomic EBI</b>			
EBI (€/lactation)	€249	€133	<b>€232</b>
Milk Solids (€/lactation)	€69	€49	
Fertility (€/lactation)	€169	€63	
<b>Actual performance (1 &amp; 2 lactations only)</b>			
Milk Solids (Fat + Protein kg/lactation)	397	390	<b>€301</b>
Calving Interval (days)	370	379	
Survival (% from lact to lact)	90%	76%	

- Moving from average to top 1% = ~€300m.
- Based on current gain of €19, ~10 years to move from average -> top 1%. Worth ~€1 bn to dairy industry. Permanent & cumulative. Core to 2020.



# How do we capture this €1 billion?



# 1. Ground Zero.

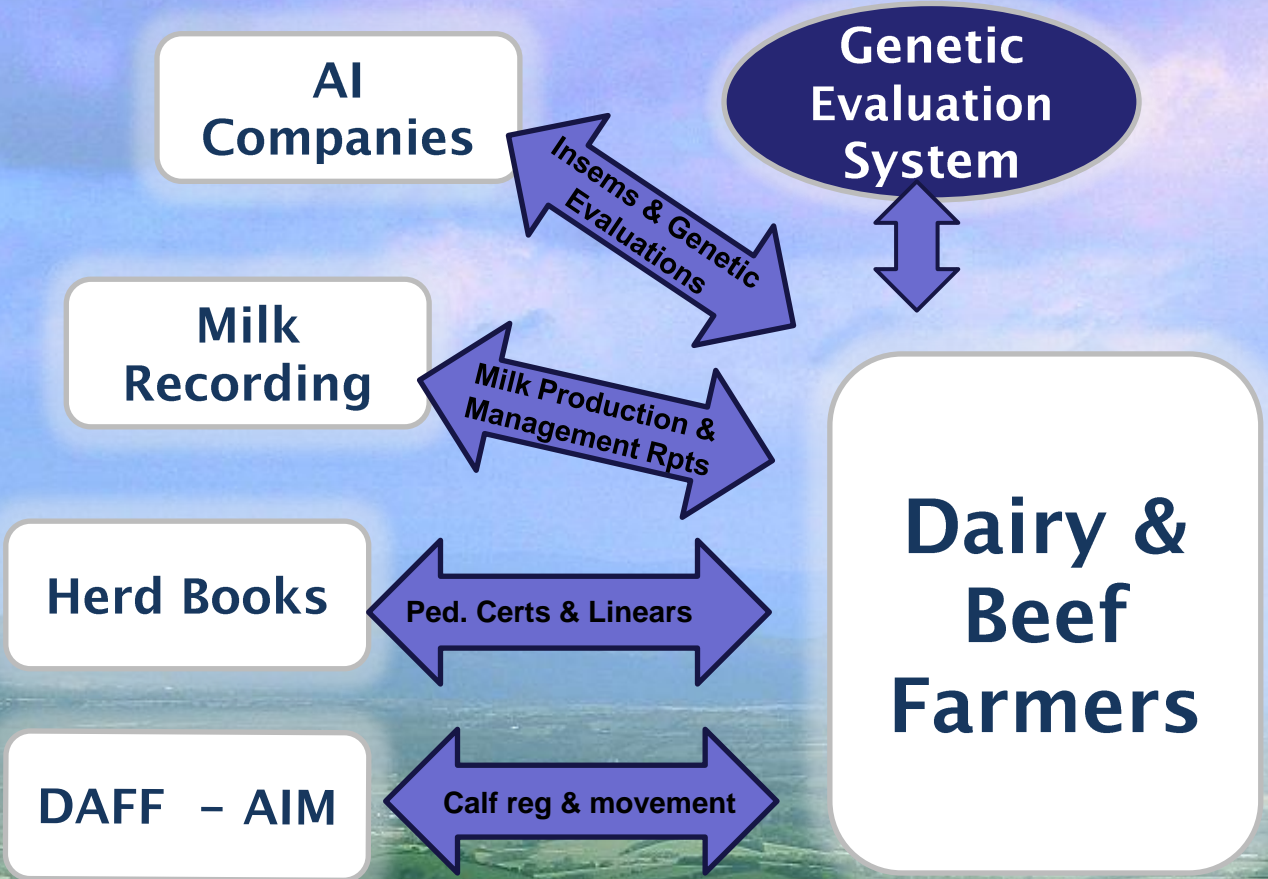
## Challenges

Fragmented industry.

## Opportunity

# 1. Ground Zero.

Challenges	Opportunity
Fragmented industry.	A common purpose – > Establish ICBF & Central Cattle Breeding Database.





AI  
Companies

Genetic  
Evaluation  
System

Less paper,  
more profit!

Milk  
Recording

Milk Production &  
Management Rpts

Herd Books

Ped. Certs & Linears

DAFF – AIM

Calf reg & movement

ICBF

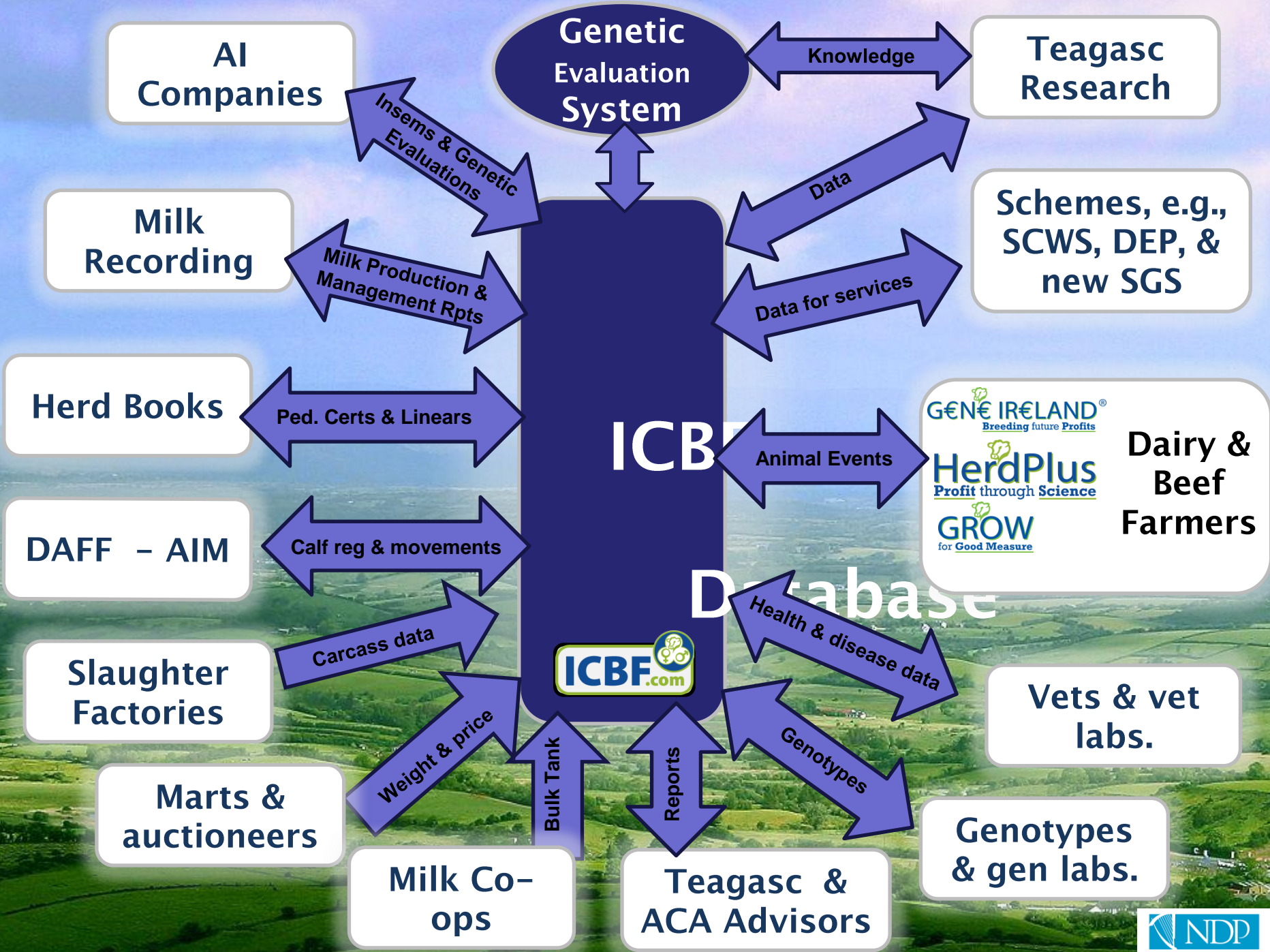
Animal Events

Dairy &  
Beef  
Farmers

Database







**Genetic Evaluation System**

**AI Companies**

**Teagasc Research**

**Milk Recording**

**Schemes, e.g., SCWS, DEP, & new SGS**

**Herd Books**

**ICBF Database**

**GENE IRELAND®**  
Breeding future Profits  
**HerdPlus**  
Profit through Science  
**GROW**  
for Good Measure

**Dairy & Beef Farmers**

**DAFF - AIM**

**Slaughter Factories**

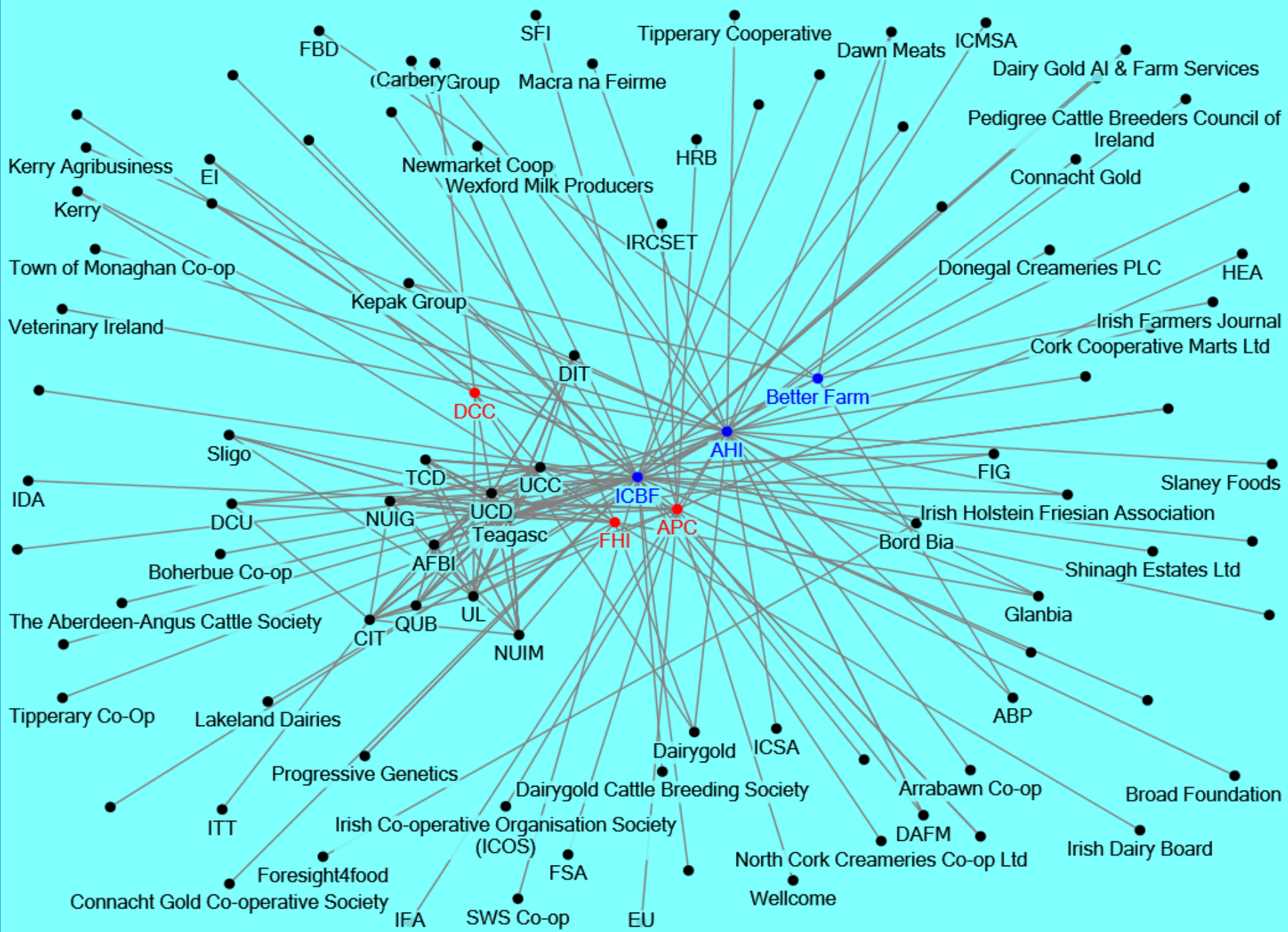
**Marts & auctioneers**

**Milk Co-ops**

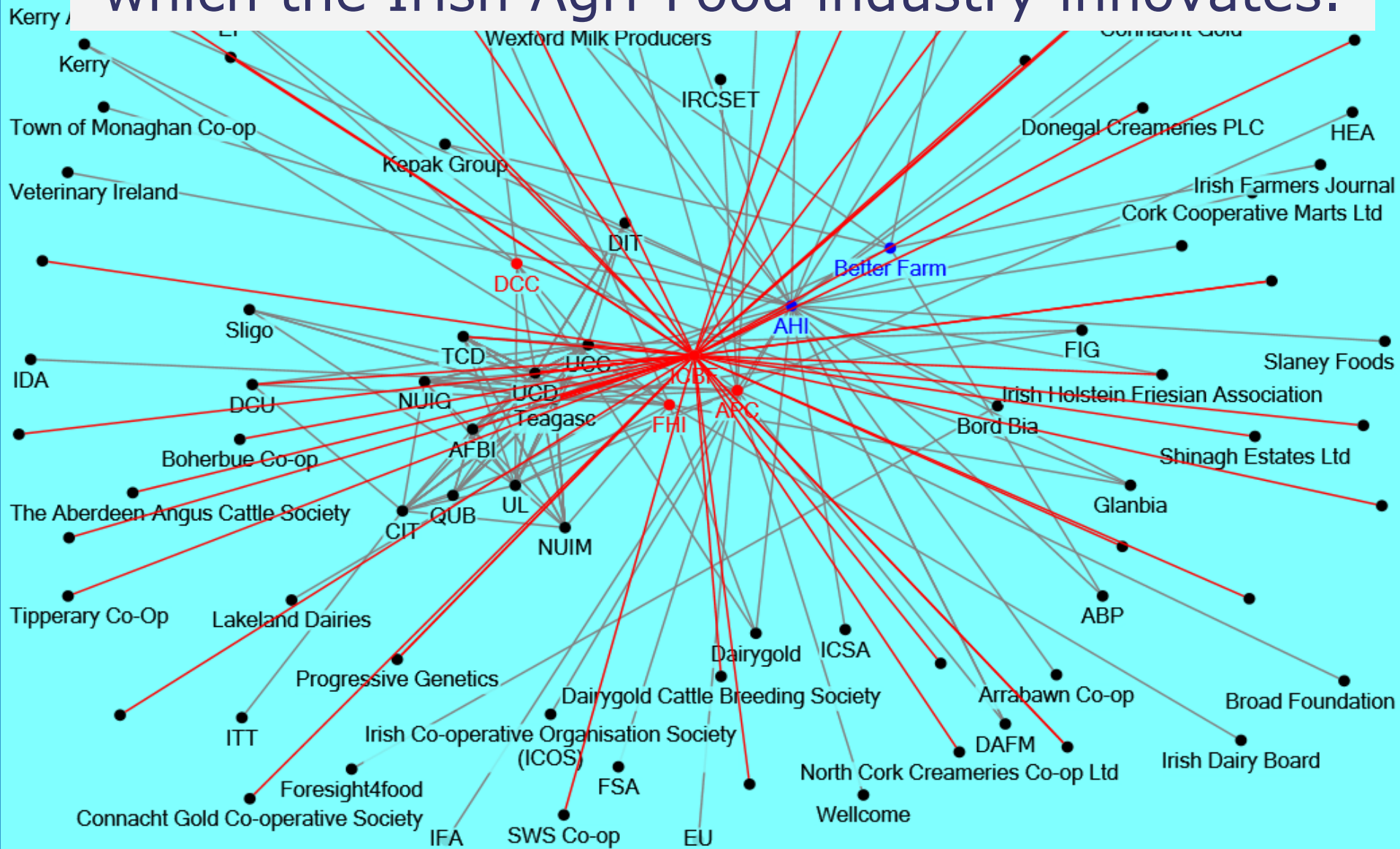
**Teagasc & ACA Advisors**

**Vets & vet labs.**

**Genotypes & gen labs.**



The ICBF database is the system through which the Irish Agri-Food industry innovates.





# 1. Ground Zero.

Challenges	Opportunity
Fragmented industry.	A common purpose – > Establish ICBF & Central Cattle Breeding Database.
Breeding index focused on just milk output = unprofitable COWS.	

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Challenges	Opportunity.
Fragmented industry.	A common purpose – > Establish ICBF & Central Cattle Breeding Database.
Breeding index focused on just milk output = unprofitable COWS.	Develop EBI focused on milk solids + fertility = profitable COWS.



# Milk yield only = Unprofitable cows.

## 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

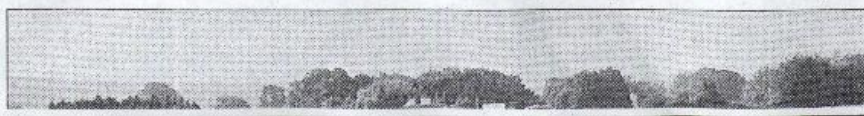
Jack Kennedy, whose season allow spread option,

IRISH farmers desperately need an Index that includes measures of fertility.

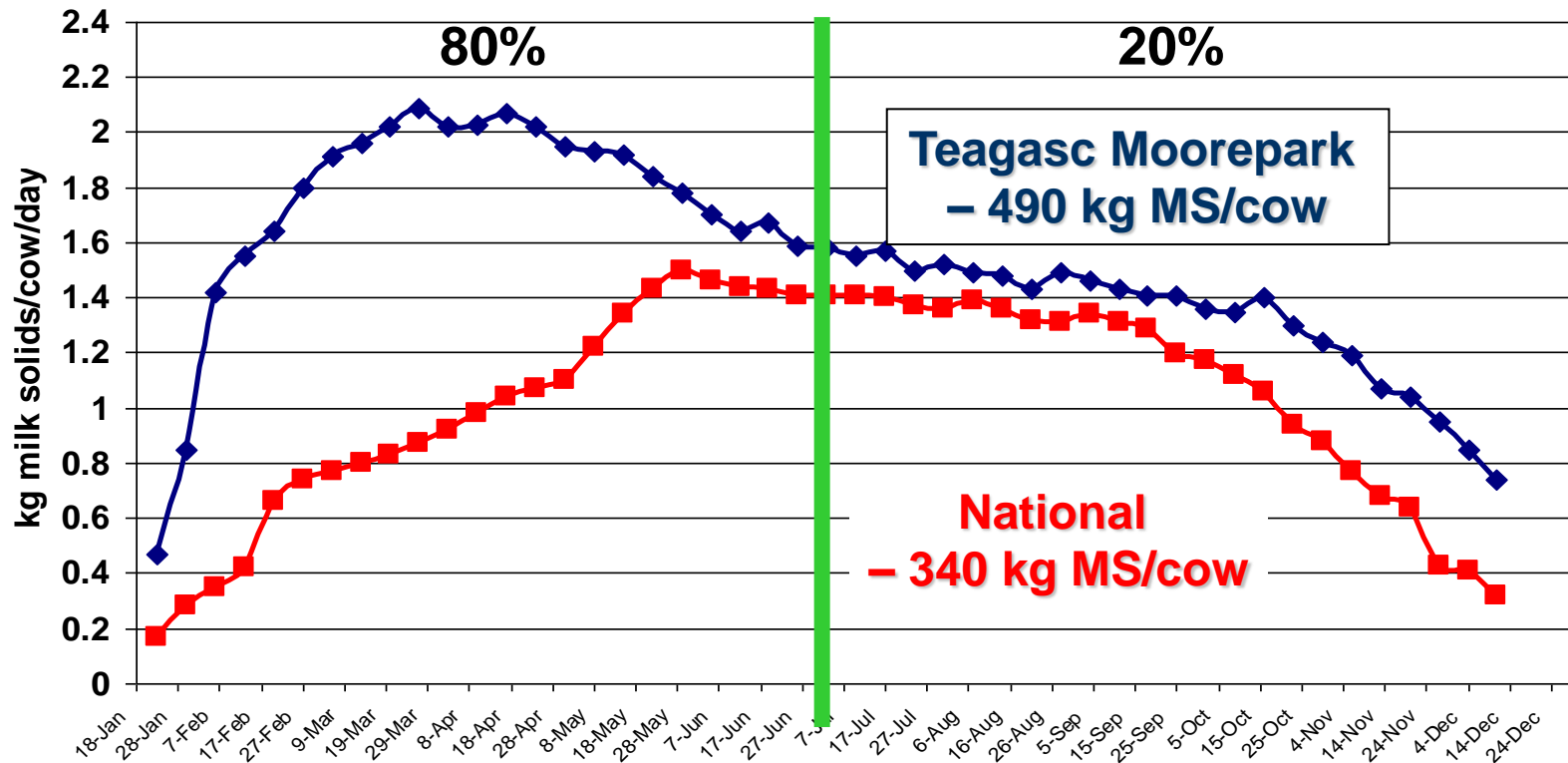
The Moorepark research increases the urgency of the new index being drawn up by the ICBF and due to be released in late November.

For the first time the index will be produced that will include traits linked to fertility.

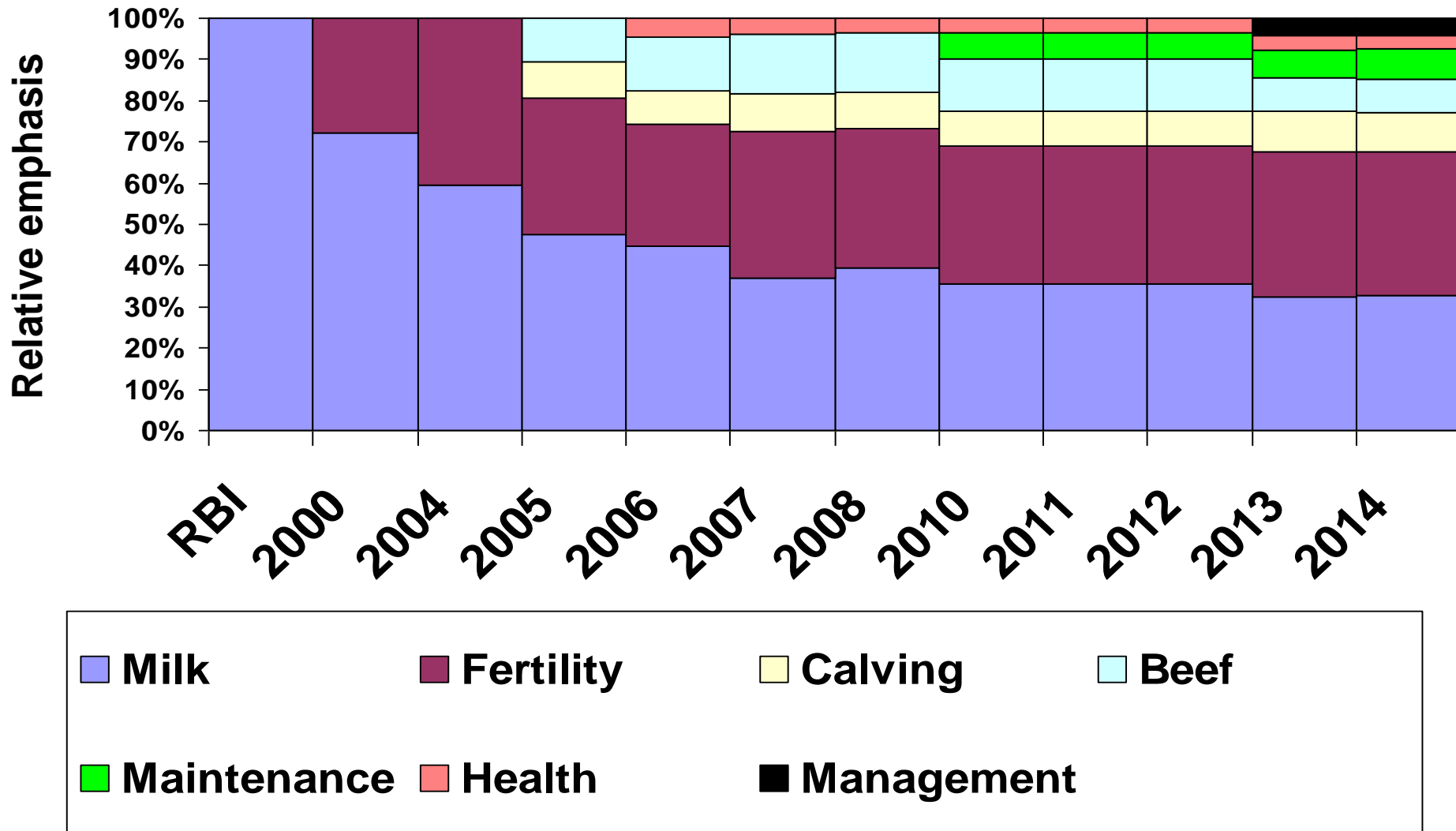
"Other countries are starting to record traits that are linked to fertility. With our compact calving system the need in Ireland is much greater," said ICBF geneticist Dr.



# The profitability challenge.



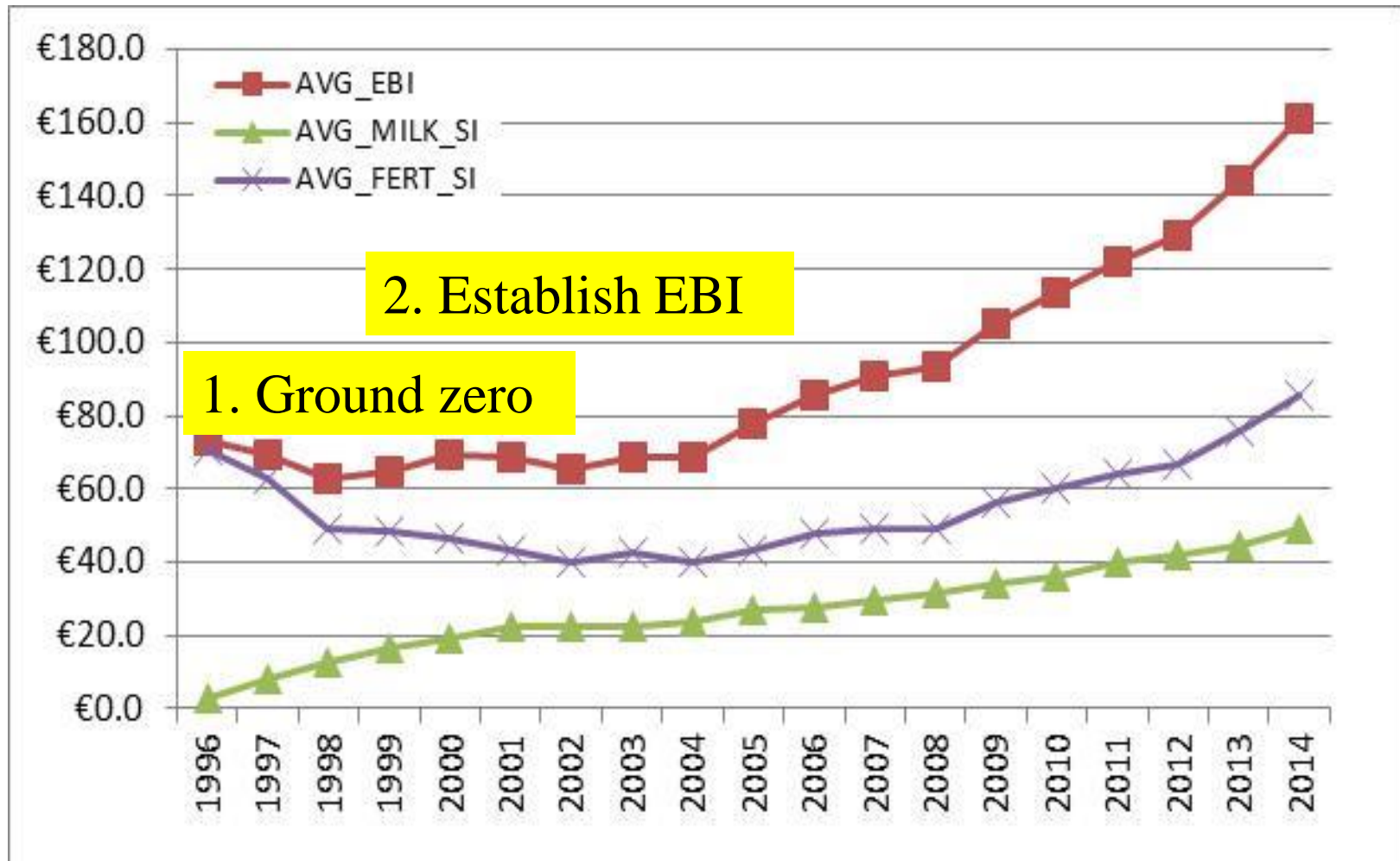
# EBI (2000 - 2014)



- The ideal Irish cow; High milk solids (450 kg MS/cow/year) & excellent fertility (CI = 365)



# 2. Establish the EBI



## 2. Establishment of EBI

Challenges	Opportunity.
<p>A cattle breeding industry sceptical of change</p> <ul style="list-style-type: none"><li>- Pedigree Holstein Friesian Breeders.</li><li>- AI companies.</li></ul>	



## 2. Establishment of EBI

Challenges	Opportunity.
<p>A cattle breeding industry sceptical of change</p> <ul style="list-style-type: none"><li>- Pedigree Holstein Friesian Breeders.</li><li>- AI companies.</li></ul>	<p>National awareness campaign; (i) profit with AI, (ii) validation, (iii) EBI competition, (iv) Meetings &amp; workshops.</p>

# The pedigree show scene!



# EBI €100 Herd Competition.



# EBI - *making more money*

	EBI	Milk kg	Fat kg (%)	Pr kg (%)	CI	
High group EBI	€100	5,740	232 (4.05)	217 (3.75)	365	
Bottom group EBI	€34	5,730	215 (3.75)	207 (3.62)	379	
Difference	€66	+ 10	+ 17	+ 10	-14	<b>Total</b>
Value		<b>- €1</b>	<b>€26</b>	<b>€52</b>	<b>€99</b>	<b>€176</b>

- Profit difference per 40 cows is €7,040

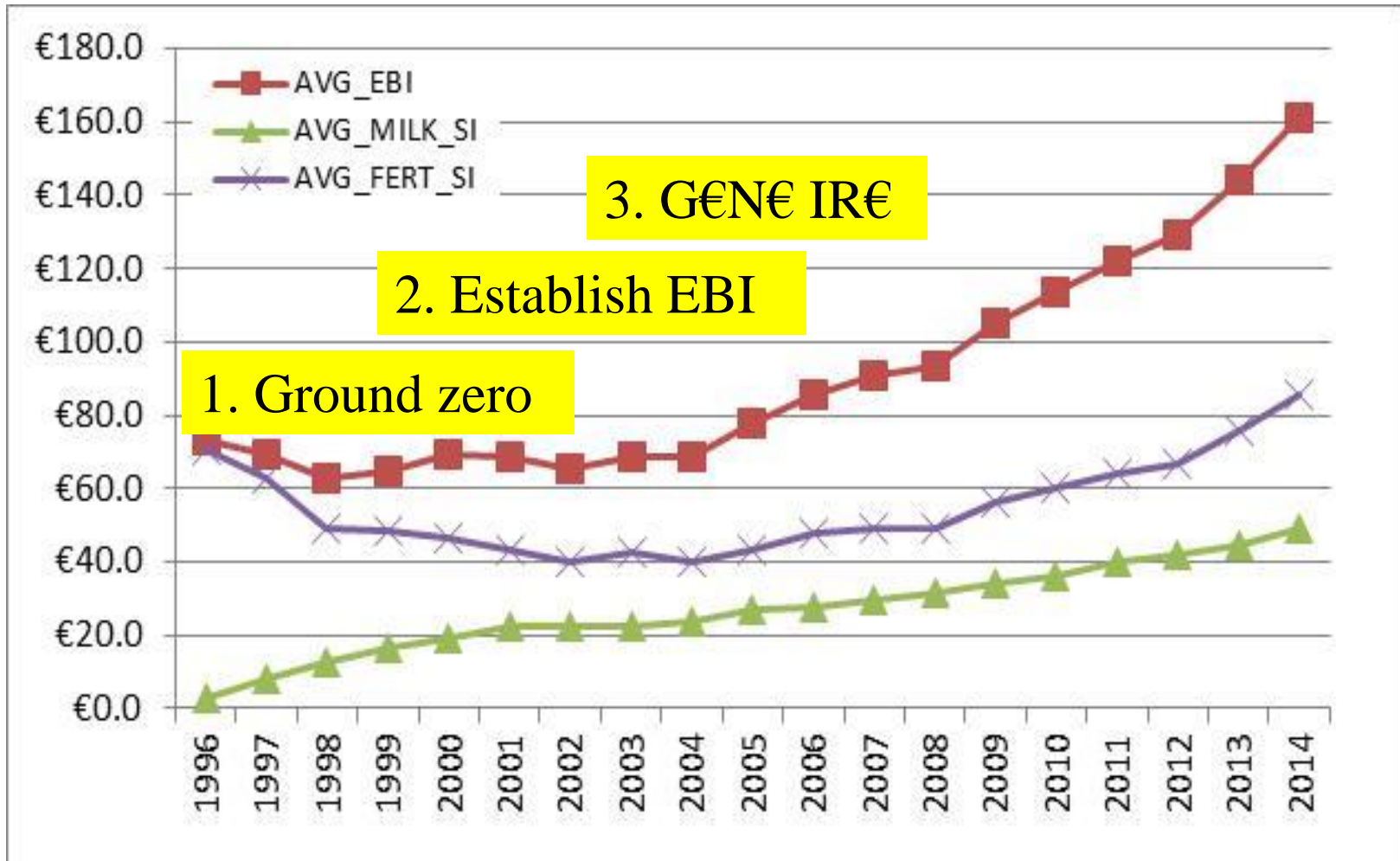
***Recommendation:*** Use EBI to increase farm profit

# The net effect.

- Only high EBI bulls used.
  - AI and natural service.
- No increase in cross-breeding, despite obvious benefits.
  - The “social” aspect of breeding.
- Increase in dairy AI usage; ~1.5%/year since 2005.
  - 900k dairy inseminations for 1.1m cows.
- Milk recording increasing by 4%/year.



# 3. GENE IRELAND.



# 3. GEN€ IR€LAND.

## Challenges

Reliance on imported genetics (proven and PTEST).

## Opportunity.

# 3. GEN€ IR€LAND.

## Challenges

Reliance on imported genetics (proven and PTEST).

## Opportunity.

The best genetics are in your own country;

- Build an Irish breeding program based on EBI.
  - Female fertility.
- Have a system to support this.

# Trends in ICBF Active Bull List.

<b>Country of Origin Trend, for main countries</b>				
	NLD	NZL	USA	IRE
2005	56%	40%	3%	0%
2006	59%	34%	7%	0%
2007	42%	42%	13%	2%
2008	25%	39%	19%	18%
2009	5%	27%	16%	52%
2010	9%	17%	31%	42%
2011	4%	34%	24%	38%
2012	0%	54%	4%	42%
2013	1%	49%	1%	48%
2014	0%	35%	0%	65%
2015	0%	15%	1%	84%

# LHZ (IG) LAURAGH EVERT

WHINLEA PALAD ECKLAND ET  
LAURAGH CWJ HEATHER

CALDWELLS JORDANAIRE  
LAURAGH SPW HEATHER

SPEKTRUM PIGEONWOOD RED 2  
LAURAGH MAJ HEATHER V08&



DTR PROVEN

aAa Score  
**423651**

Dam LAURAGH CWJ HEATHER

- ✓ Hugely popular sire
- ✓ LHZ breeds mostly black dairy heifers, below average in size with sound Legs & Feet and Udders
- ✓ Heifers averaging 4800kgs @ 3.57% P

EBI AUGUST 2014									
DTRS: 31 HERDS: 17		Rel		BOTTOM		MEAN		TOP	
		10%	20%	30%	40%	40%	30%	20%	10%
<b>EBI</b>	<b>272€</b>	84%							
Production SI	68	97%							
Fertility SI	167	71%							
Calving SI	38	97%							
Beef SI	-18	95%							
Maintenance SI	20	70%							
Management SI	4	70%							
Health SI	-7	83%							

PRODUCTION					
Milk Kg	Fat Kg	Protein Kg	Solids Kg	Fat %	Prot %
71	14.5	9	23.5	0.22%	0.13%

CALVING DIFFICULTY EVALUATION		
RECORDS	32285	
CALVING DIFFICULTY	2.4	AVERAGE
RELIABILITY	99%	

FERTILITY									
		10%	20%	30%	40%	40%	30%	20%	10%
Calving Interval	-9.4								Shorter
Survival	4.2								Longer

MANAGEMENT TRAITS									
		10%	20%	30%	40%	40%	30%	20%	10%
Milking Time (Secs.)	11.9								Faster
Milking Temp	0.2								Quieter
SCC	0.07								Lower
Body Condition	-0.4								Stronger



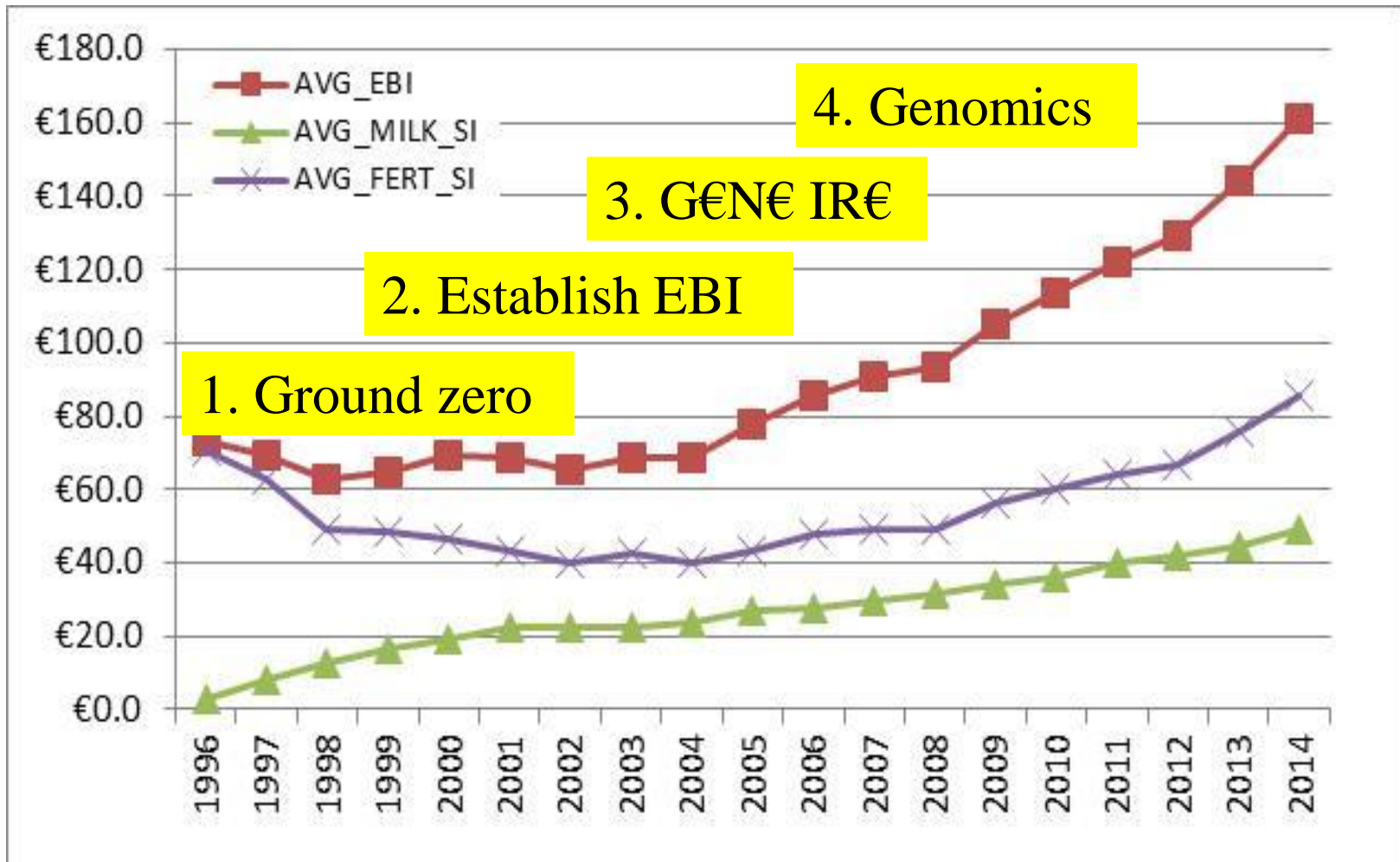
# Irish genetics dominate.

- The best genetics for Irish farmers are in Ireland.
  - Does not preclude genetics from outside.
- Build a system that supports identifying these.
  - 400k males -> 100k PA -> 10k Gen -> 100 AI.





# 4. Genomics.



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## Challenges

Ireland is an “open” system. Other countries nervous of collaboration.

- Farmers can genotype male calves themselves.

## Opportunity..

# 4. Genomics.

## Challenges

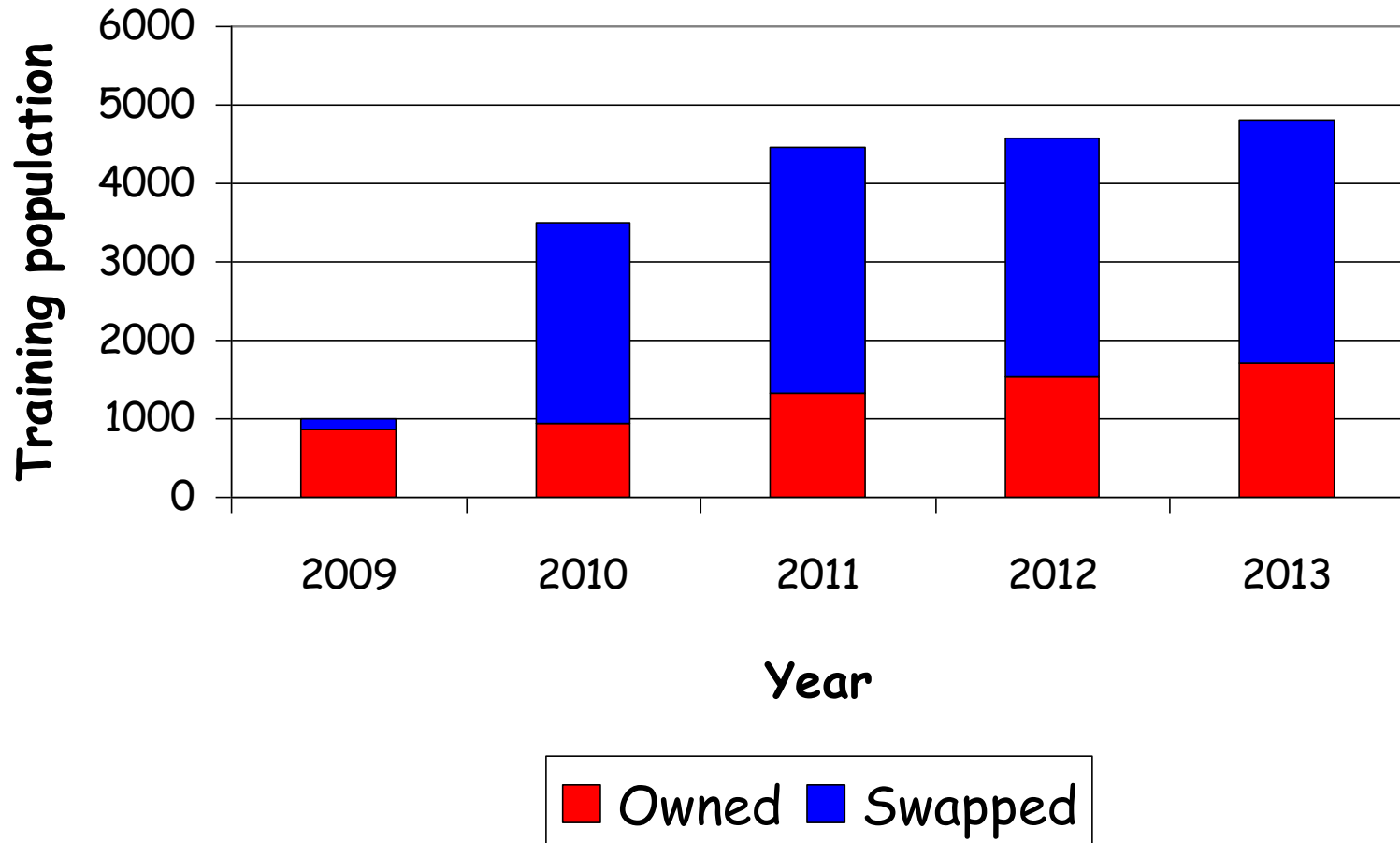
Ireland is an “open” system. Other countries nervous of collaboration.

- Farmers can genotype male calves themselves.

## Opportunity.

Work closely with those countries that have similar philosophies to ours.

# The benefits of a few beers....!

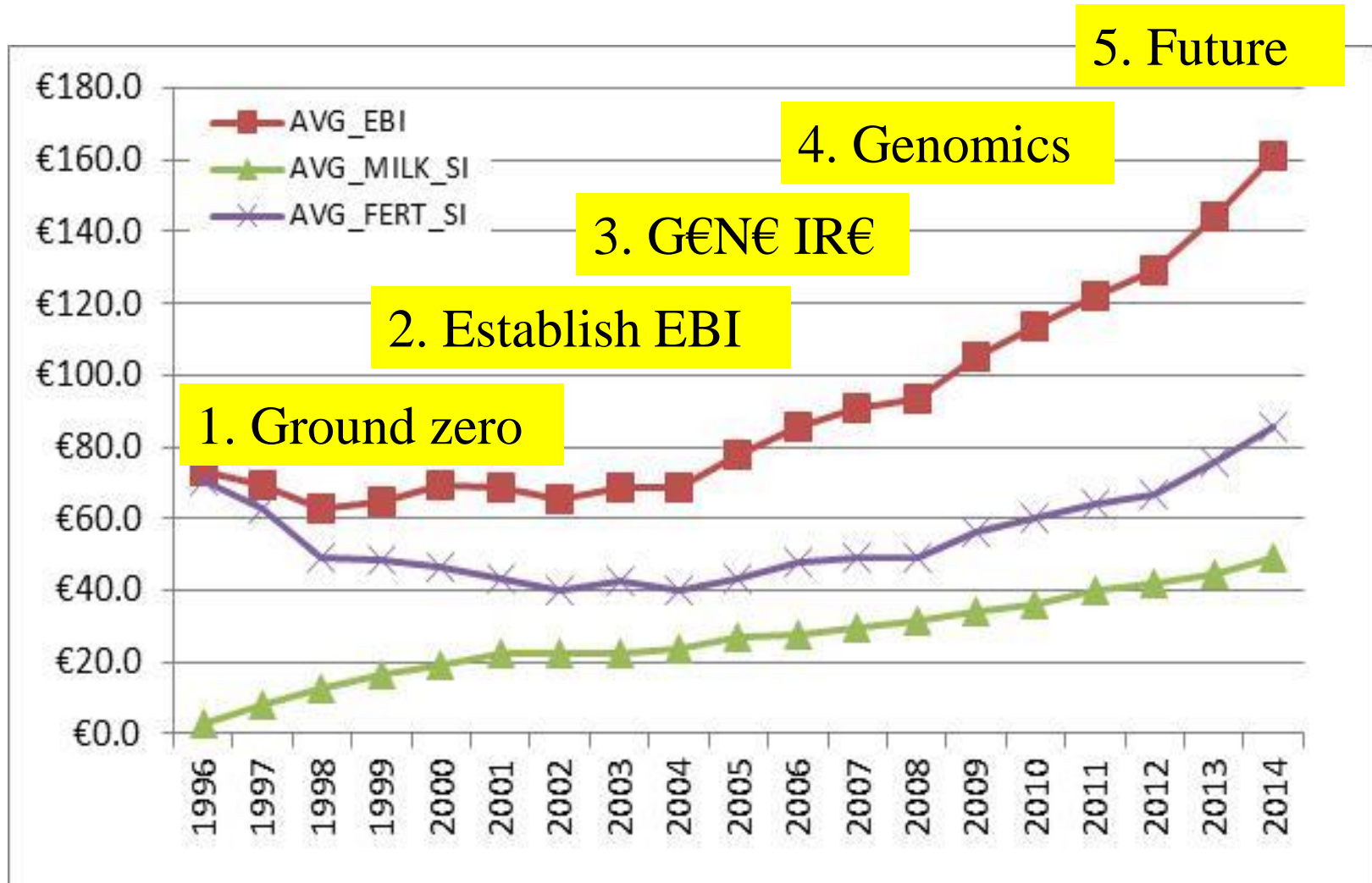


# The benefits of co-opetition.

- Ireland is now genotyping 5–10 times more candidate males than other countries (“co-opetition”).
  - Ireland = 10k for 1.1m cows (~1%)
  - Eurogenomics = 30k for 14.3m cows (~0.2%)
  - NZ = 5k for 5m cows (~0.1%).
- Impact on; (i) farmer return (for calf) and (ii) long term genetic gain.



# 5. The Future.



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## Challenges

New traits, not yet accounted for.

## Opportunity.

# 5. The Future.

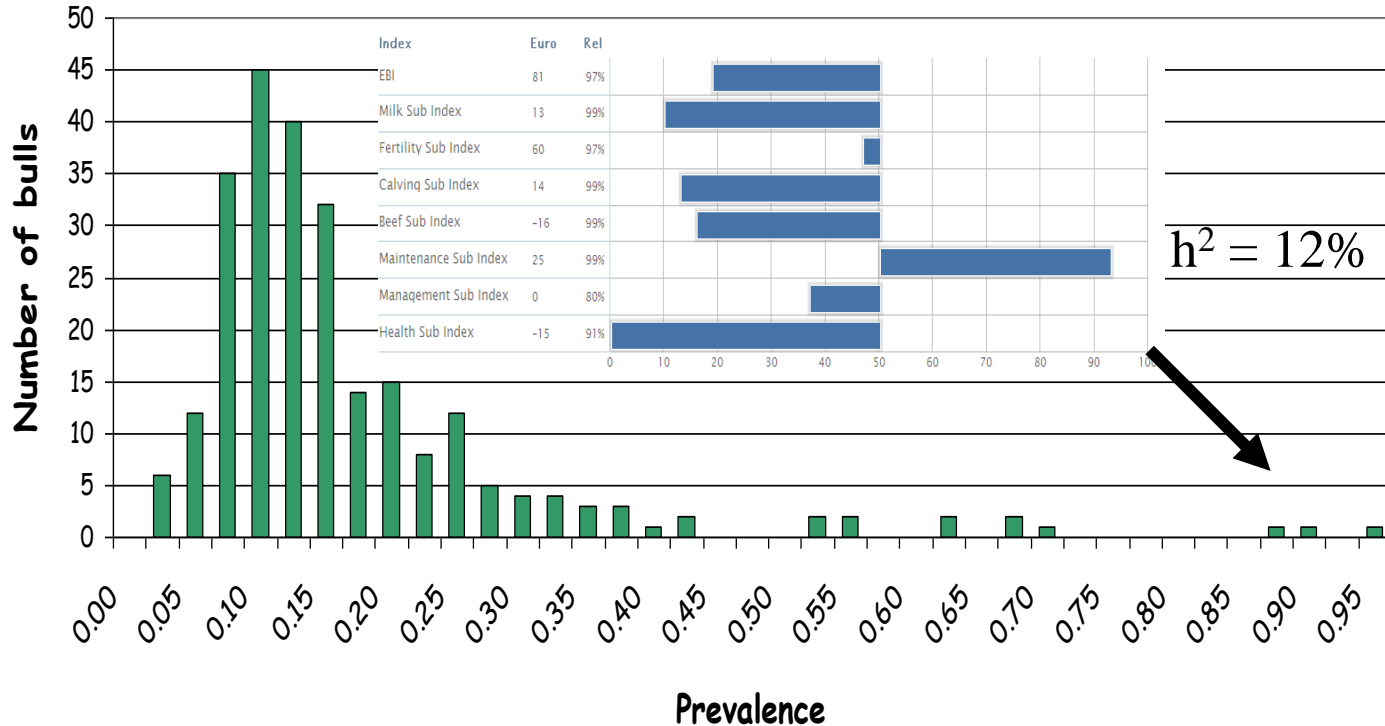
## Challenges

New traits, not yet accounted for.

## Opportunity.

Even greater integration & recording.

# Breeding more resilient animals.



- Some AI sires had >60% of daughters getting TB.
- Same principle for other health & disease traits (fluke, johnne's, IBR, BVD, mastitis, lameness, fertility... -> new health & disease sub-index.

# Summary.

- The Irish dairy industry is poised for growth. Genetics a key part of strategy.
- Establishing a common purpose/central database + the “right cow” have been the key drivers.
  - Australia have started process -> database.
- ICBF, AI, MRO's, HB, Teagasc, milk processors & DAFM working in unison (1+1 = more than 2). Tomorrows talk!