



IRISH CATTLE BREEDING FEDERATION

Practical Aspects of Implementing Genomic Selection in Ireland

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Herd Recording Managers Workshop
12-14 May 2009 – Porec, Croatia.

Practical Aspects

Organisations & people to:

- provide data needed for the research
- do the research
- implement the findings

Irish Cattle Breeding Federation Society Limited (ICBF)

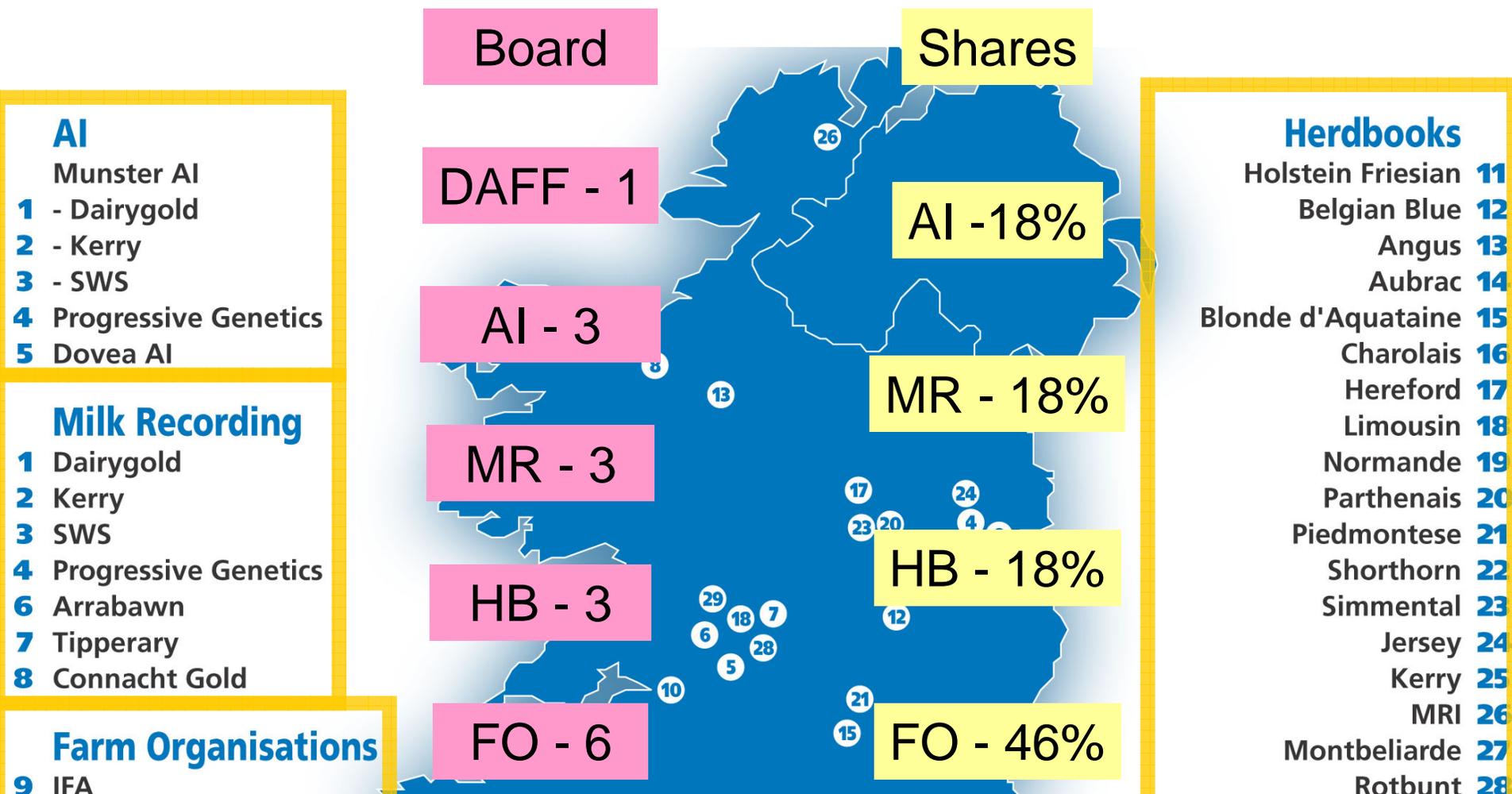
- *Established with interim Board in 1997*
- *Commenced operations in 1998*
- *Current structure in 2000*
- *Mission: achieving the greatest possible genetic improvement in the national cattle herd - Dairy and Beef*

BANK of IRELAND

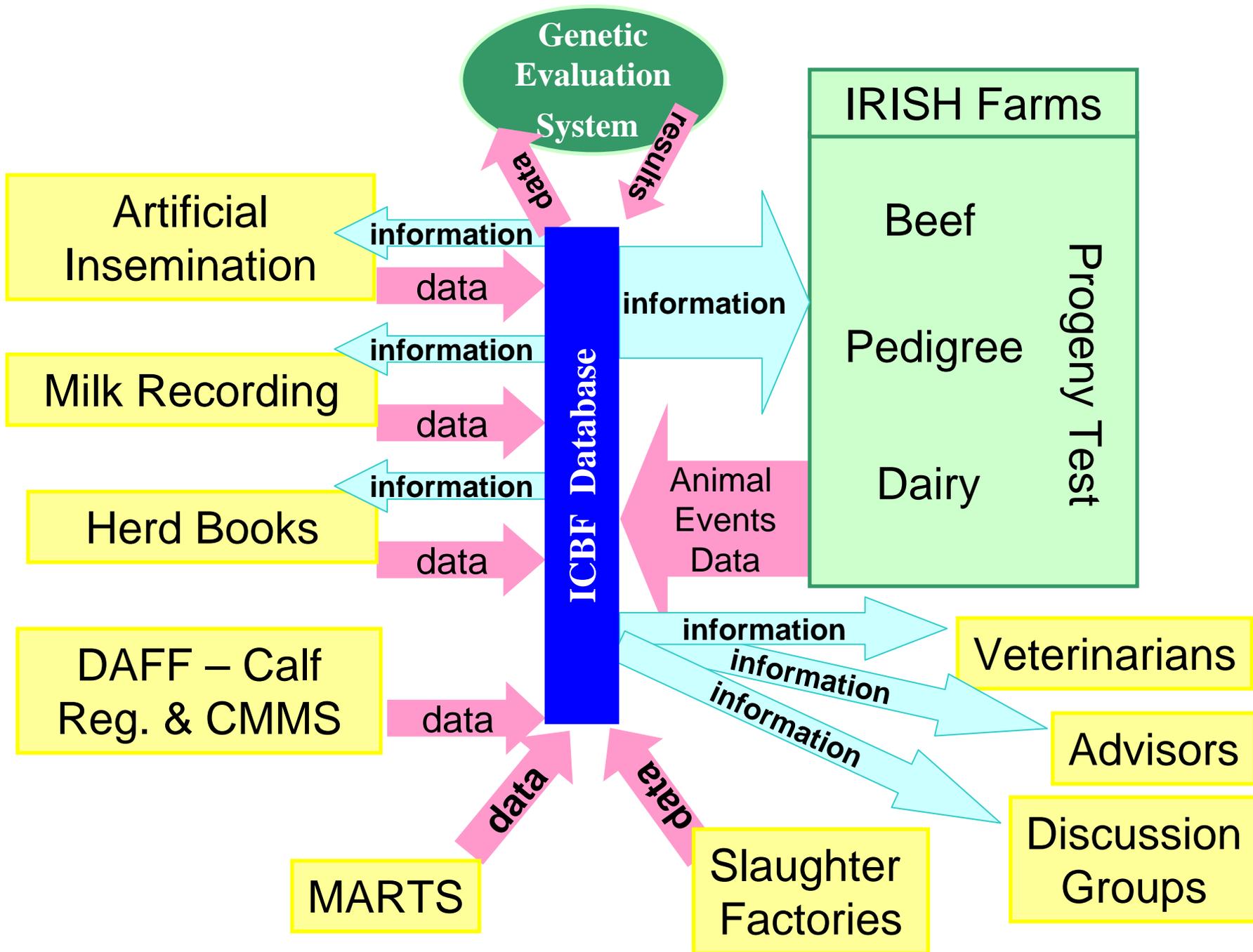


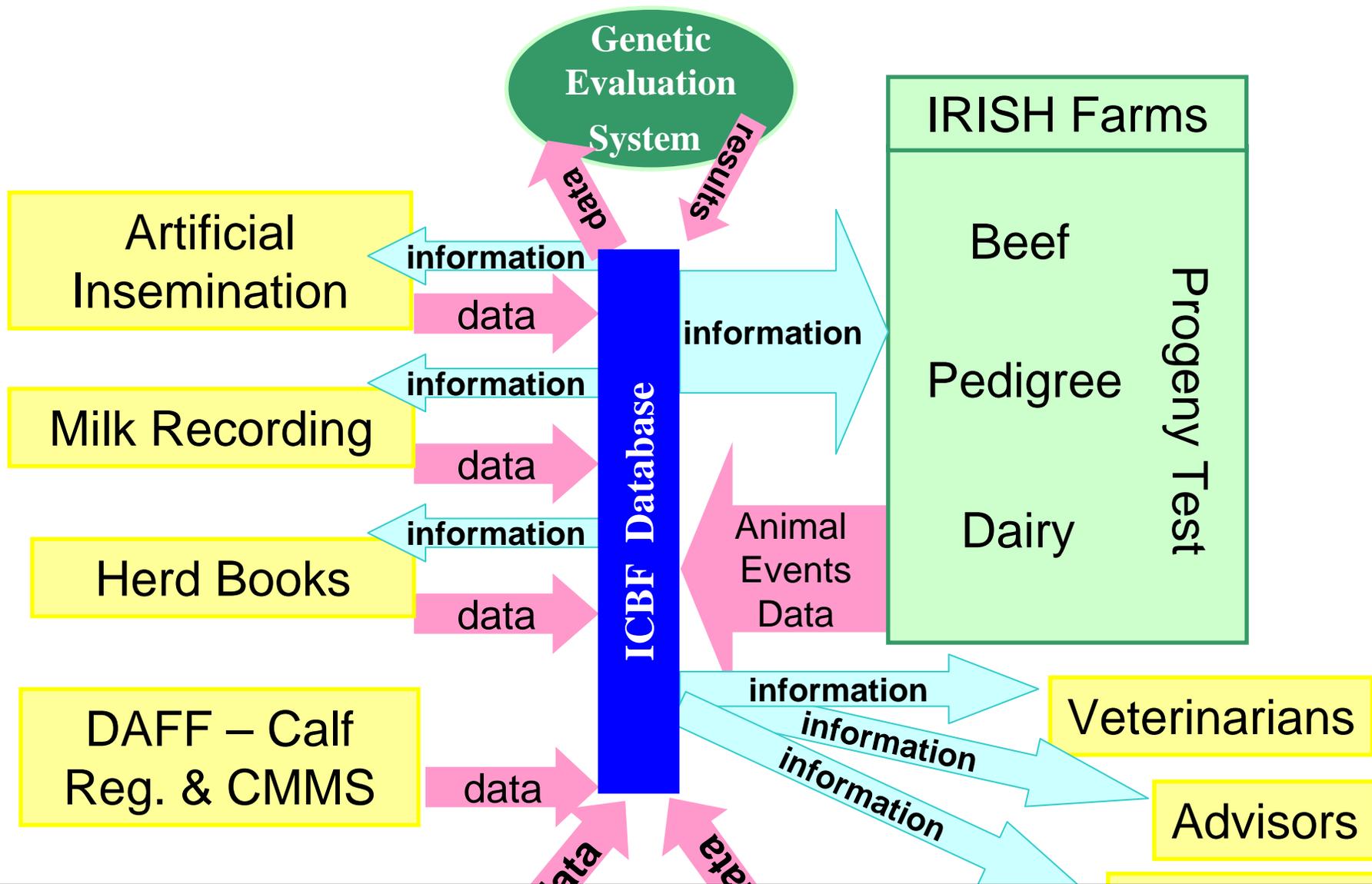
1. Organisation and people focused on delivering genetic improvement.

MEMBERS, BOARD & SHARES - ICBF



2. Stakeholders in cattle breeding control decision making.





3. Phenotypes needed to research genomic selection.

Research

- TEAGASC

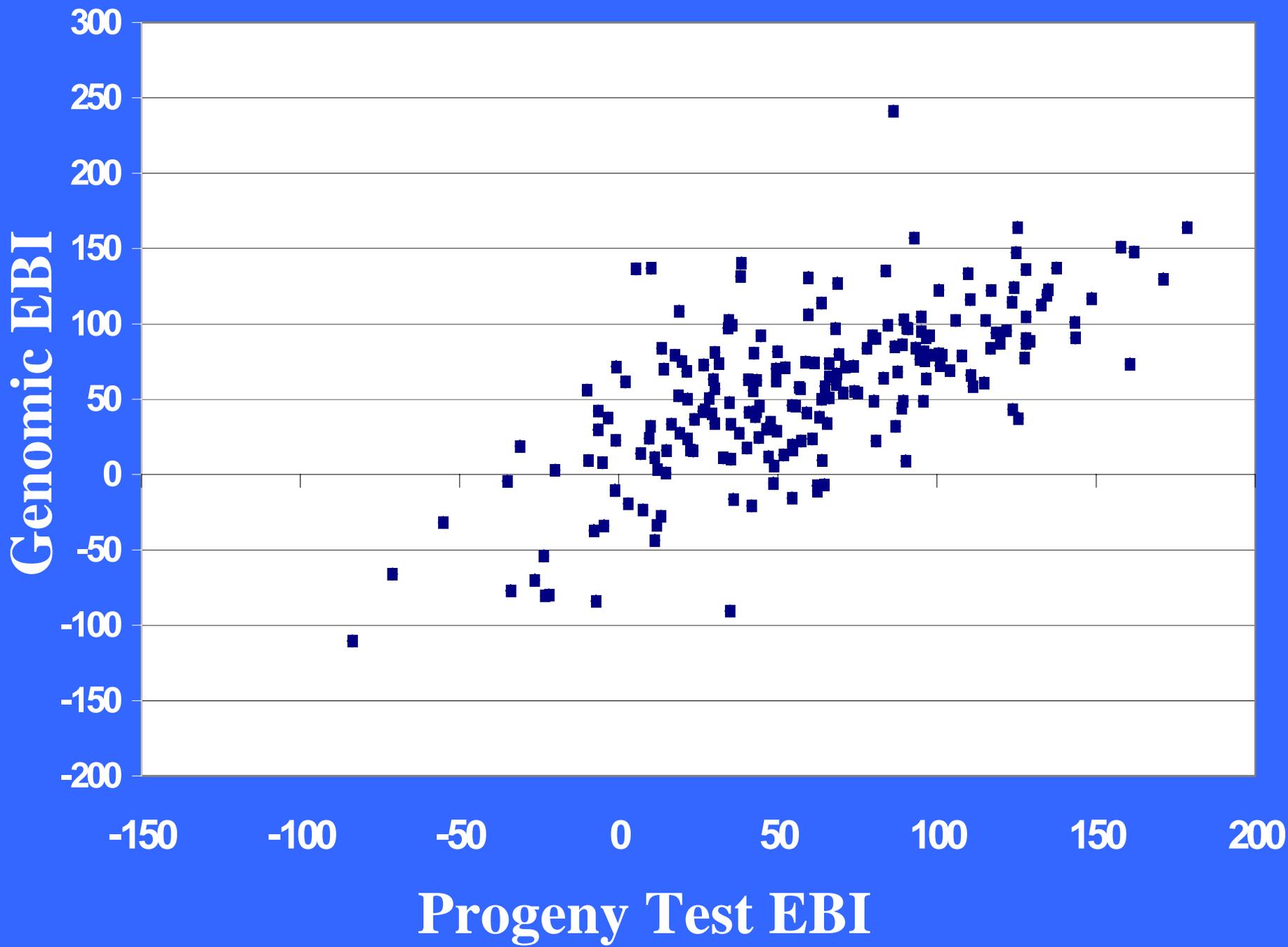
- State research body
- Committed to genetic research
- Committed to developing scientists
- Collaborates closely with ICBF
- Collaborates with international leaders
- Funding for genotyping of 1,200 bulls

4. Research partner with skills, funds, & motivation.

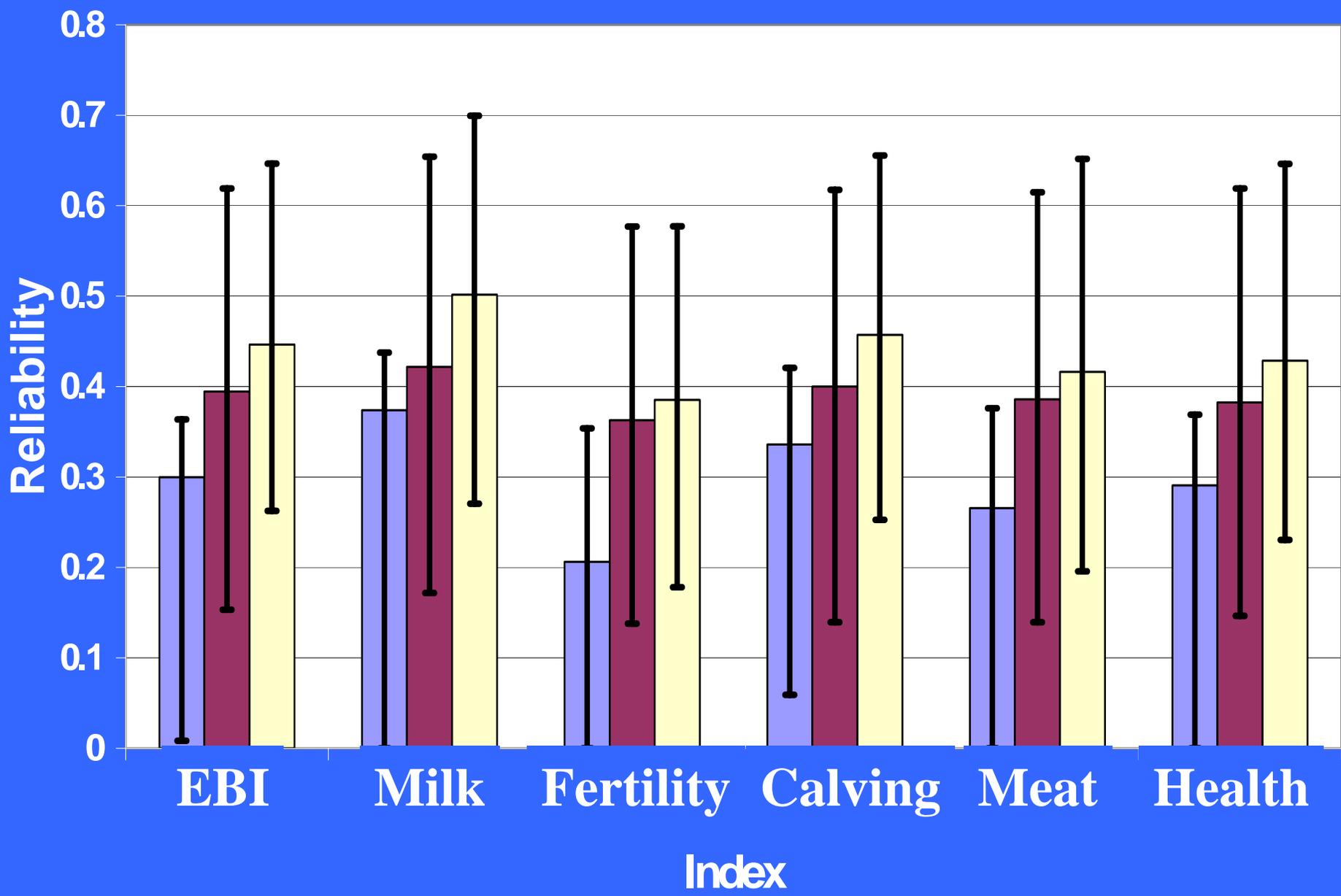
Research – Genomic Selection

- DNA from 1,200 HF bulls with Irish progeny tests results
- Genotyped with 54K SNP Chip
- Results correlated with progeny test results
- Gave 15% increase in reliability (over ancestry only information)

5. Research established the benefit of genomic selection.



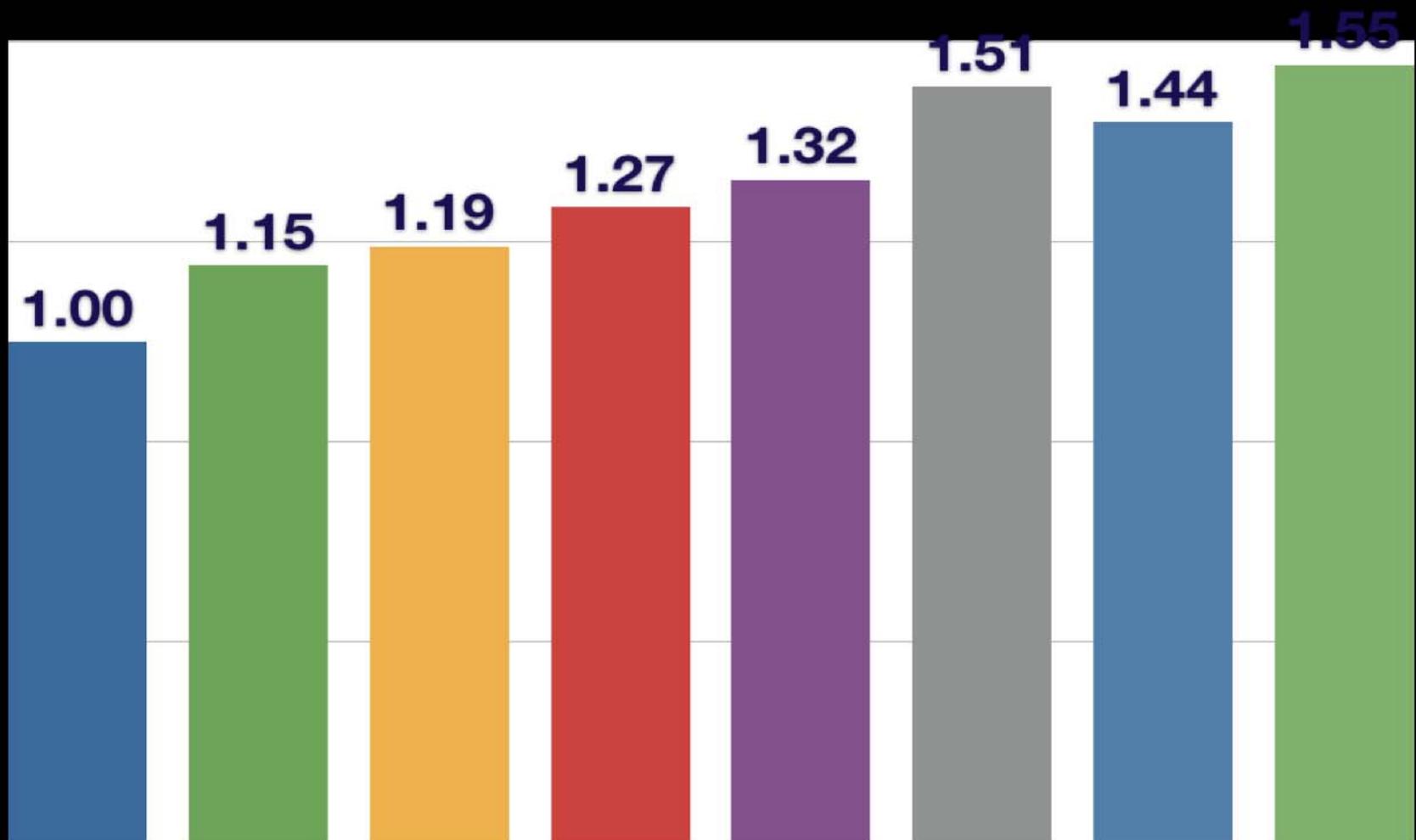
Parent average Genomic Blended

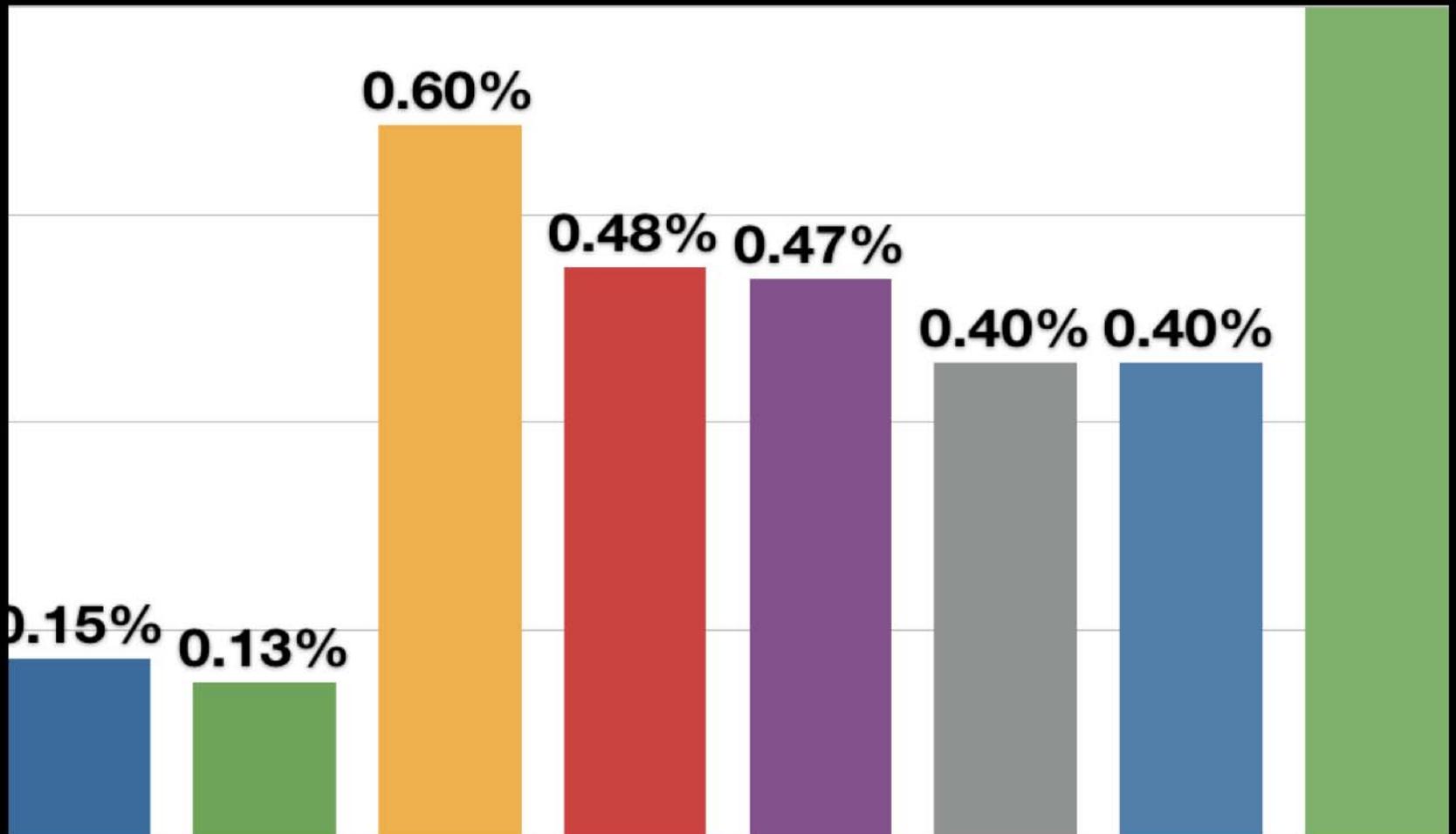


Research – Breeding Scheme Implications

- What is the impact of genetic evaluations on young bulls being 15% more reliable than ancestry only information?
- ICBF commissioned research – Theo Meuwissen – breeding scheme implications.

6. Contracted a researcher to find the answer to breeding scheme implications question.







Research Results – Optimal Design for Ireland

- Genotype 500 young bulls/year.
- Progeny test best 100 of these with 100 milk recorded daughters.
- Use best bulls (proven & genomically selected) to breed dairy replacements.
- Extra genetic gain, increased inbreeding, & lower cost.

Research Results

- Genotype 500 young bulls/year.
- Progeny test best 100 of these with 100 milk recorded daughters.
- Use best bulls (proven & genomically selected) to breed dairy replacements.

Extra genetic gain increased

7. Research identifies the optimal breeding scheme design for Ireland.

Key Decisions

- Progeny test – reduce incentives (cost saving).
- Use GS bulls for breeding herd replacements.
- Modify communications to farmers to accommodate GS.

8. Translate breeding scheme research into operational detail.



Key Messages to Farmer

- Genomics is a technology for increasing the rate of genetic improvement.
- The best of the GS bulls should be considered for breeding herd replacements.
- Use GS bulls in teams to reduce risk.

ICBF Active Bull List



ICBF Active Bull List

Conf. Interval

> 35%

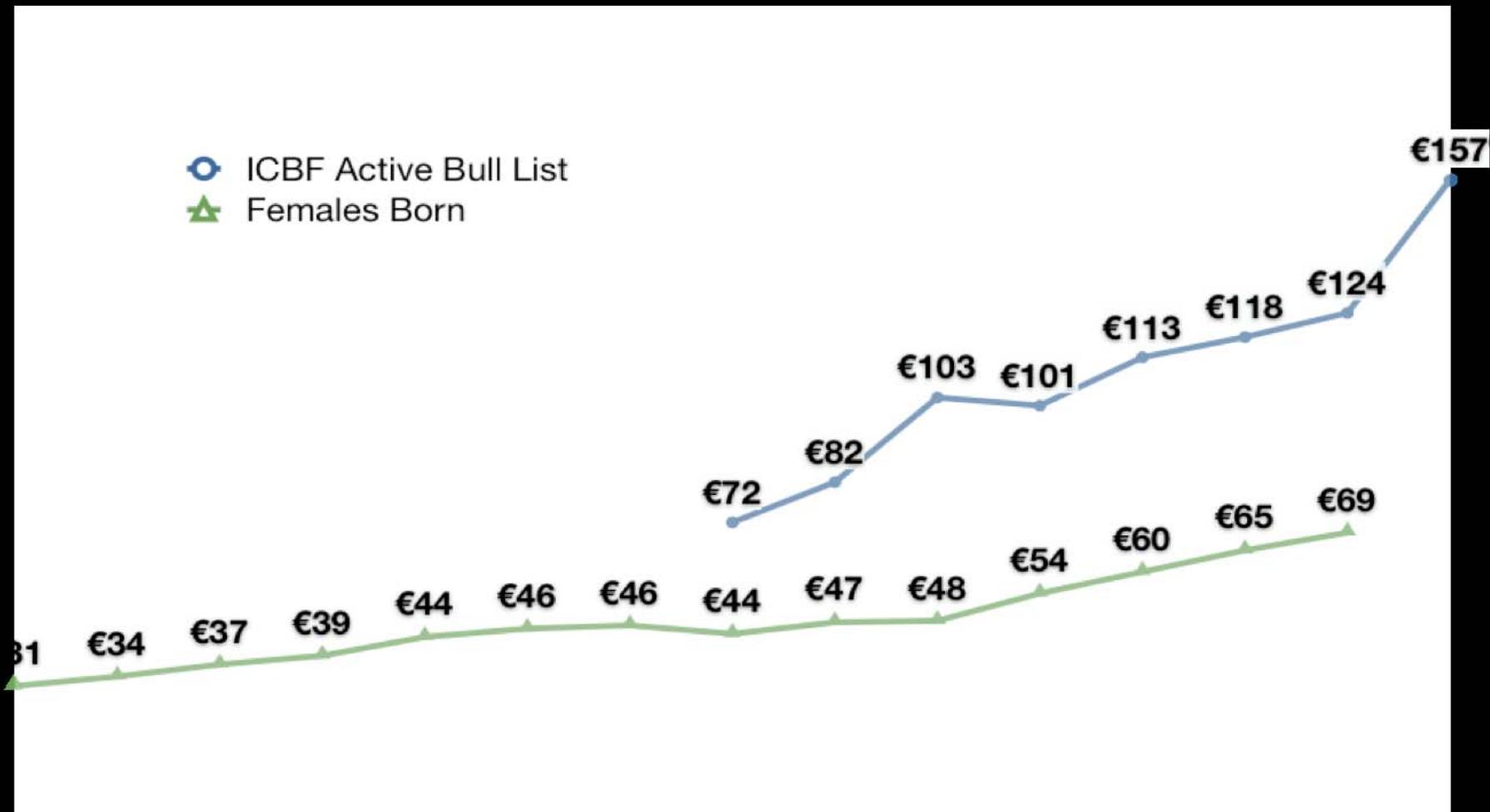
Bull Details			EBI Proof Details			
Rk	Code	Name of Bull	Rel	Range	Proof	
1	OJI	O-BEE MANFRED JUSTICE			DP-IRL	€
2	RXO	RAMOS	4%	+/-€60	DP-INT	
3	HTH	HAZAEEL LIGHT DETECTOR S2F	3%	+/-€89	GS	
4	OLG	BALLIVOR OLYMPIC GOLD ET			GS	€
5	BYJ	BALLYDEHOB JUSTICE	3%	+/-€81	GS	
6	HZL	HILLSDALE LIONEL	RUU 91	€188 57%	+/-€77	GS
7	RXR	MONAMORE ROMERO ET			GS	
8	GIO	GIBOR			DP-INT	

Daughter Proven In Ireland

Genomically Selected

Daughter Proven International





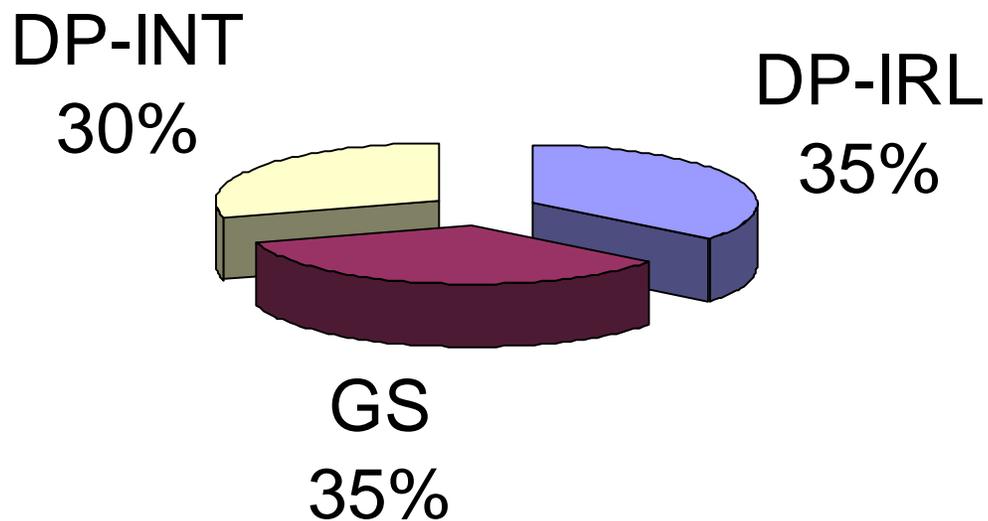
Communication with farmers

- National farming press – full page each week for 16 weeks covering breeding season.
- Letter and fact sheet to 12,000 dairy herds.
- Website – www.icbf.com
- Staff and Advisors

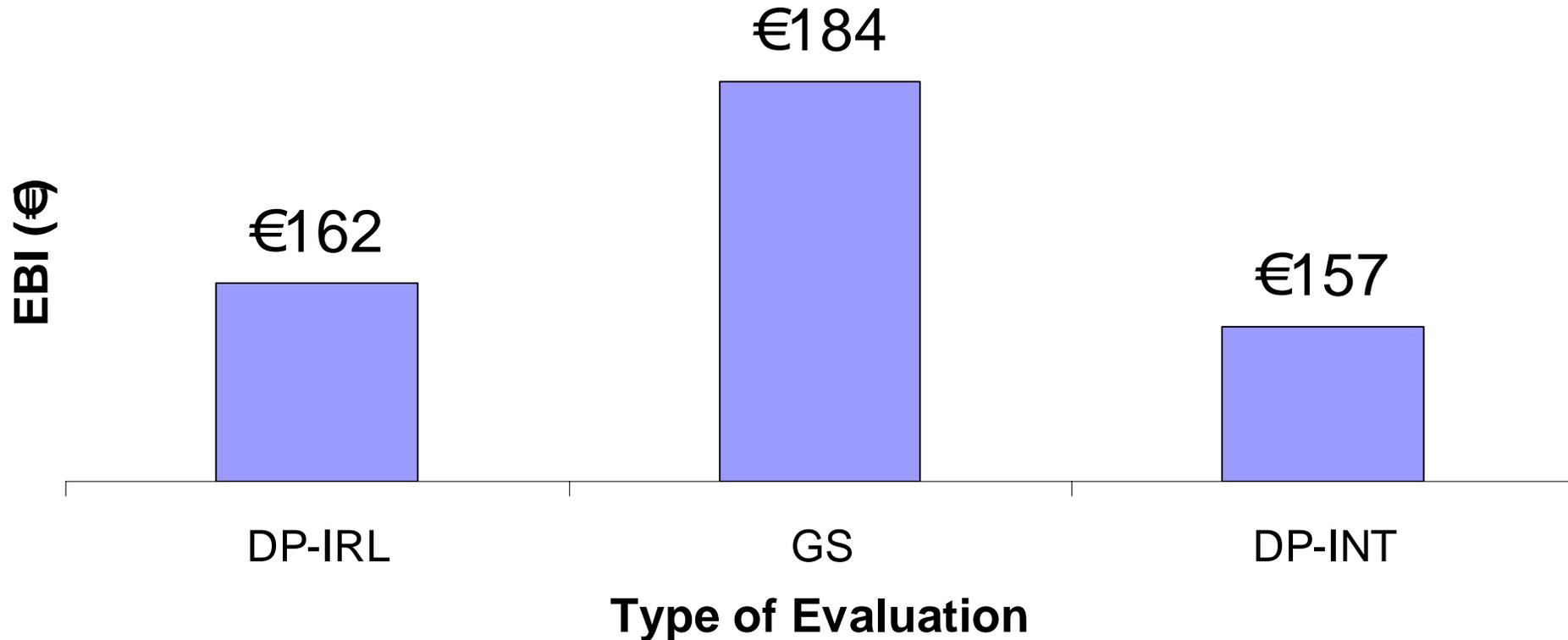
9. Communicate.



Breakdown of (64,000) recorded inseminations in March & April 2009 by bull proof type.



Avg EBI of recorded inseminations March & April 2009



10. Monitor Progress

Future Priorities

- Streamline genotyping
- Streamline genetic evaluation process
- Expand training population through collaboration – more bulls & breeds – key role for Interbull
- Research beef – 500K SNP chip, across breeds, seeking collaborators

11. Invest in future developments.



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- 3. Phenotypes needed to research genomic selection.**
- 4. Research partner with skills, funds, & motivation.**
- 5. Research established the benefit of genomic selection.**
- 6. Contracted a researcher to find the answer to breeding scheme implications question.**
- 7. Research identifies the optimal breeding scheme design for Ireland.**
- 8. Translate breeding scheme research into operational detail.**
- 9. Communicate.**
- 10. Monitor Progress**
- 11. Invest in future developments.**

Acknowledgements



QuickTime™ and a decompressor are needed to see this picture.

