



FACT 1: Progeny from Genomic bulls are more profitable and genetically superior compared to progeny of Daughter Proven or Stock bulls

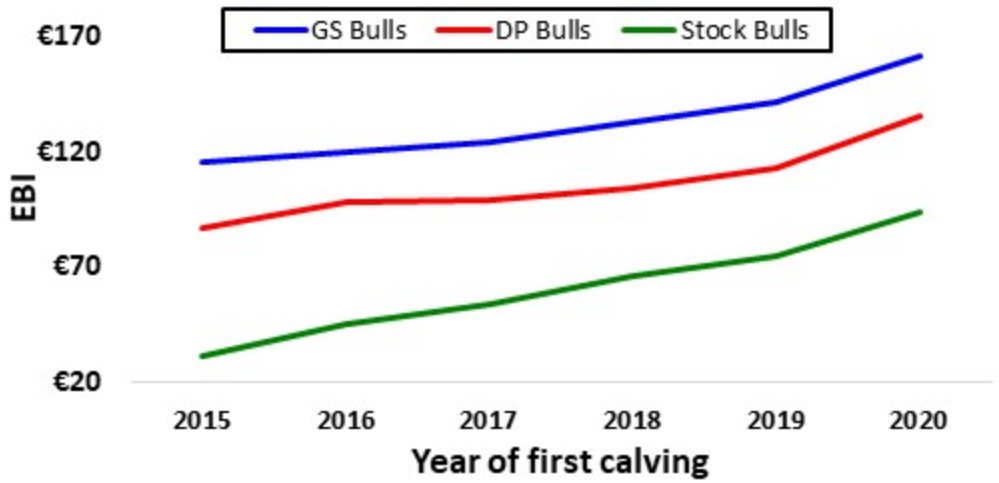


Data

- Bull categorised as genomic (GS), daughter proven (DP) or stock bull (SB)
- 10,533 herds on-farm performance 2019
- Genetic trends for each bull category at the time of insemination of dam from 2015 to 2020



Genetic Trends for first calving replacement females from Genomic, Daughter Proven and Stock Bulls



Results

On-farm performance 2019	GS	DP	SB
Number of herds	3,865	3,122	3,546
Herd EBI €	131	103	82
EBI of 2019 inseminations €	262	220	n/a
Milk yield kg/cow	5,704	5,454	5,171
Milk solids kg/cow	457	427	398
SCC ,000 c/ml	153	172	199
Milk price cents/l	35.05	34.17	33.25
Milk value €/cow	1,940	1,809	1,671
Calving interval days	379	389	395
6-wk calving rate %	74	65	62
Heifer calved at opt age %	85	68	57
Median calving date	22/02/19	01/03/19	05/03/19

Conclusions

- Progeny from GS bulls are more profitable (on-farm performance)
- Progeny from GS bulls are €30 genetically ahead of progeny of DP
- Use teams of high EBI GS bulls in your breeding program this Spring

Scientific explanation

GS bulls are on average 3 years younger compared to DP bulls which is equivalent to 3 years genetic gain





FACT 2: Breeding for low heritability traits (e.g., health and fertility) can achieve real results

Methods

- Dairy and beef calves categorized as worst, average, or best based on PTA for each trait
- On-farm records of health and fertility collected throughout animal's lifetime
- Animal's lifetime performance was compared against its PTA categorization as a calf

Results

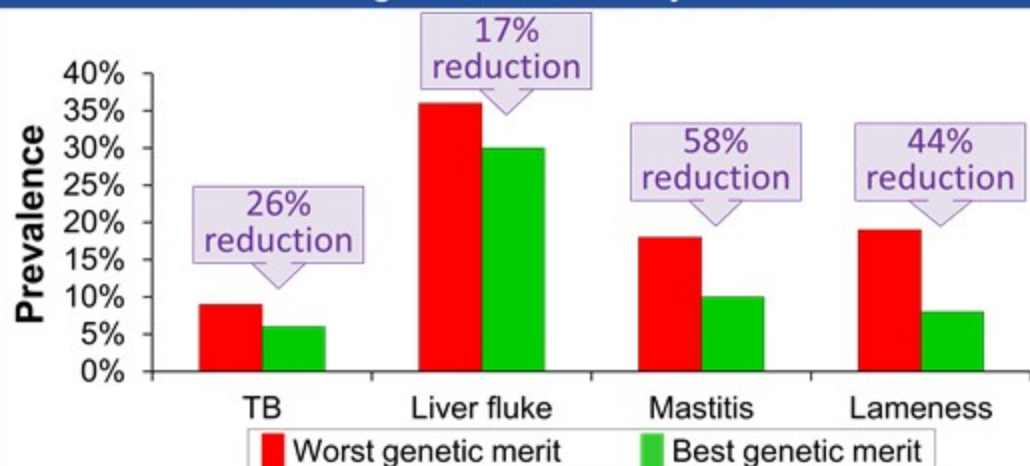
Conclusions

- Animals categorized as having the best genetic merit as calves performed consistently better than calves categorized as having the worst genetic merit for both health and fertility traits
- Heritability does not limit the rate of genetic gain achievable

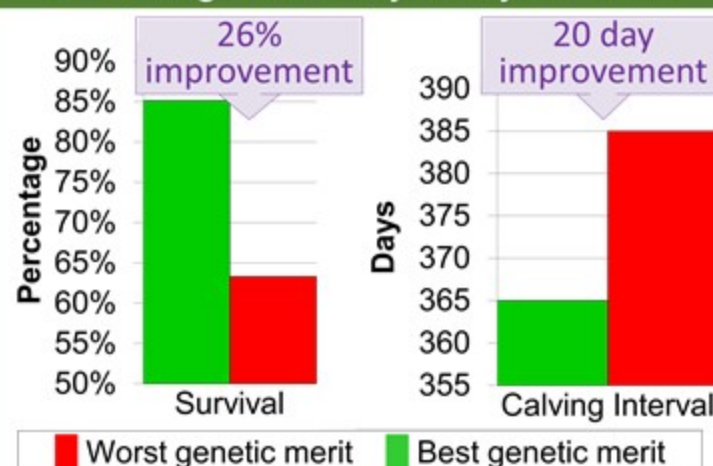
Scientific explanation

Genetic gain is not limited by low heritability traits provided ample data is available

Breeding for health really works!!!



Breeding for fertility really works!!!



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#DataDrivenFacts

HerdPlus
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FACT 3: You don't need a bigger suckler cow to produce a heavier weanling



Data

Teagasc analysis

- Suckler cows born in 2012 and 2013
- Replacement Index star-rating from 2013 used

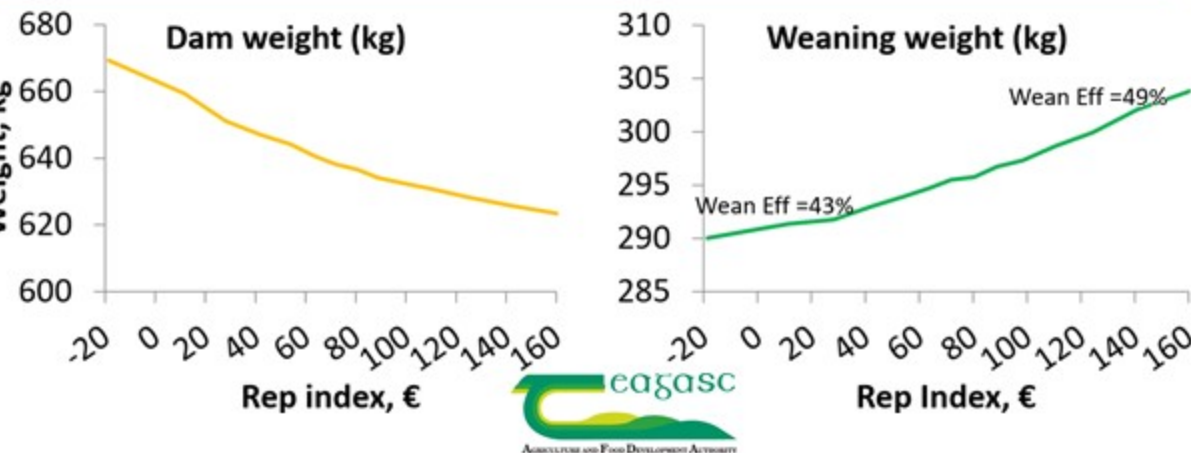
BEEP analysis

- Weights on cow and calf pairings in 2019 extracted from ICBF database

Did the 5-star animals go on to perform better?

Results

Cow and calf weight based on cow Replacement Index



2019 Beef Environmental Efficiency Pilot (BEEP) Weight Data

Rep Index Star Rating	No. Cows	Avg. Rep Index	Avg. Cow Weight (kg)	Calf 200-day Weight (kg)	Cow/Calf Weaning %
5	76171	127	628	300	47.8
4	52827	93	633	297	46.9
3	40867	76	637	296	46.4
2	36532	58	642	294	45.8
1	31939	28	652	292	44.8
Difference 1-5		99	-24	8	3

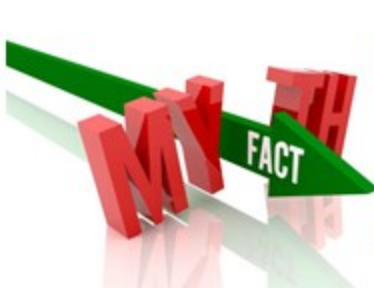
Conclusions

- Increasing cow Replacement Index € value
 - ✓ Increases calf weaning weight (200-day weight)
 - ✓ Maintains cow liveweight (approx. 620kg)

Scientific explanation

Euro-Star Replacement Index identifies the most efficient suckler cows





FACT 4: Proofs for bulls do change as they accumulate more data (i.e. as their reliability increases)



Data

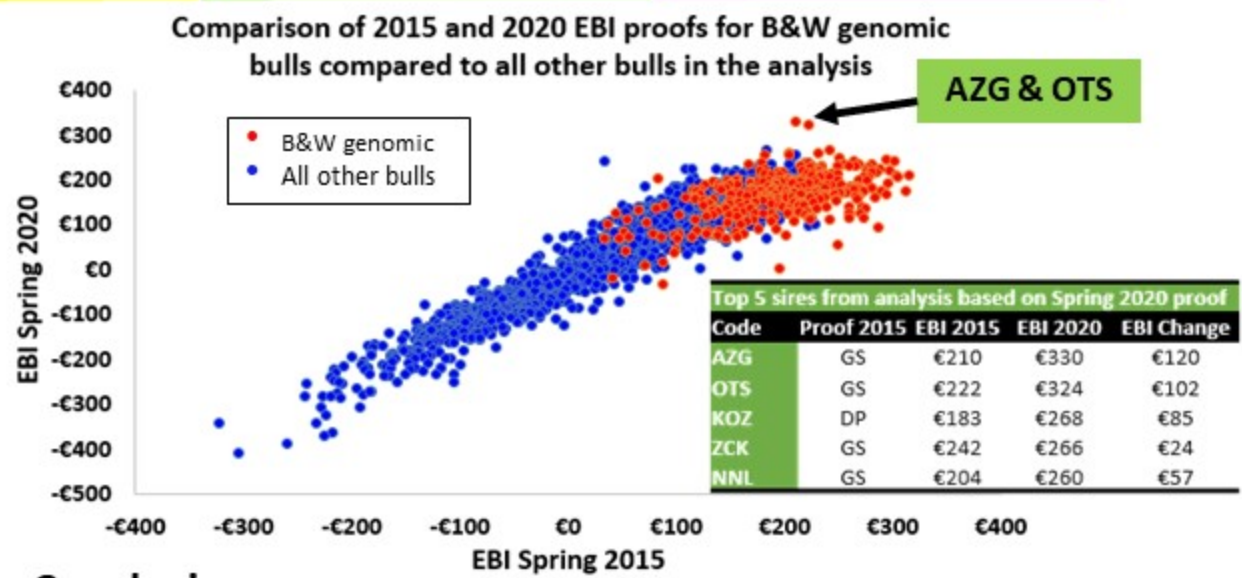
- 1,901 AI dairy sires EBI proofs from Spring 2015 (808k daughter records)
- Subsequent EBI proofs from Spring 2020 (1.32m daughter records)

Results

Comparison of proofs (Spring 2015 versus Spring 2020) for dairy AI sires

Sire Details		Spring 2015		Spring 2020		Change in EBI		
Category	Count	EBI	Rel %	EBI	Rel %	Average	Max ↑	Max ↓
Black & White breed								
Daughter proven IRE	1135	€18	86	€8	90	-€10	€85	-€143
Daughter proven INT	209	€58	68	€62	89	€3	€94	-€127
Genomic proof IRE	303	€195	53	€165	90	-€30	€120	-€194
Jersey Breed								
Daughter proven IRE	83	€131	84	€135	93	€3	€56	-€54
Daughter proven INT	43	€158	55	€141	89	-€18	€54	-€124
Red Breed								
Daughter proven IRE	64	€68	84	€64	90	-€4	€75	-€118
Daughter proven INT	28	€87	61	€74	86	-€13	€63	-€93

- Proof can **rise or fall** as new data accumulates
 - Genomic bulls went from 0 milking daughters in 2015 to over 281,000 milking daughter records in 2020
- Movement in **all proof types** (e.g. genomic, daughter proven)
- Genomic bulls still have the **highest average EBI** of all groups for 2015 and 2020



Conclusions

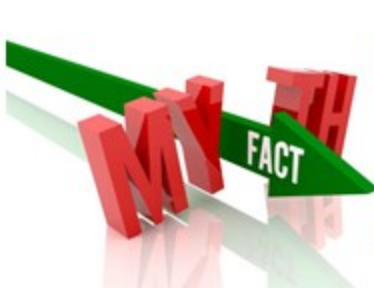
- Genomic bulls dominate the top of the list even after 5 years of initial proof (e.g. 16 of top 20 bulls in 2020 were genomic in 2015)
- Use teams of high EBI genomic bulls equally

Scientific explanation

Genomic bull proofs **do move more**, as expected, due to lower initial reliability (e.g. no daughter records)

Genomic bulls have higher EBI & are more profitable – *MythBuster#1*





FACT 5: Selecting on EBI, rather than breed, is more beneficial for the future performance of the herd

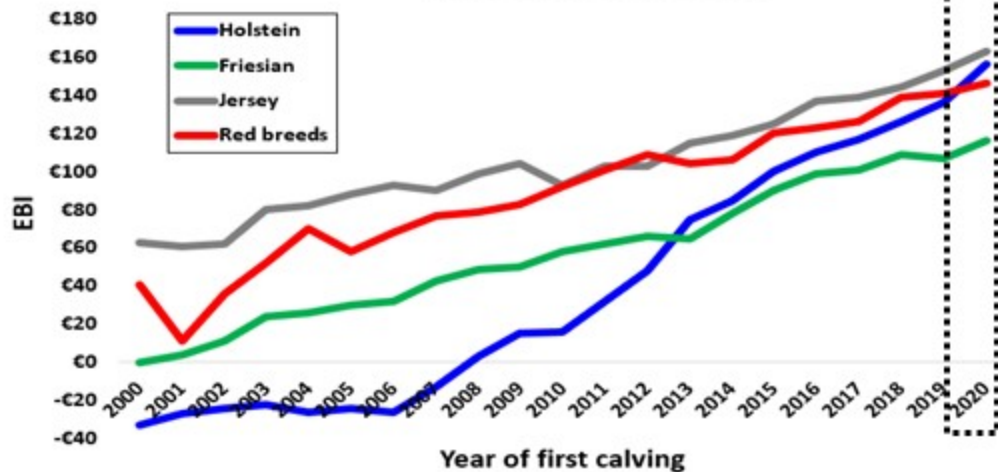


Data

- Dairy female genetic merit from 2001 to present
- 2019 co-op performance reports for spring calving, sire recorded, large herds (150 to 300 cows) with similar EBI

Results

Genetic Trends for dairy females, by year of first calving and by main breed of sire



- G€N€ IRELAND program is delivering for all breeds
→ increased genetic merit year on year
- Holstein have the fastest rate of genetic gain: €14/yr since 2010
→ double that of current highest genetic merit breed Jersey
- Holstein & Jersey genetic merit in 2020 on par for the first time

On-farm performance 2019	Black & White	Jersey crossbred
Number of herds	113	90
Herd EBI	€155	€161
EBI of 2019 inseminations	€273	€249
Milk yield kg/cow	5,937	5,013
Milk solids kg/cow	502	457
SCC ,000 c/ml	140	155
Milk price cents/l	35.7	38.4
Milk value €/cow	€2,120	€1,918
Calving interval days	374	376
6-wk calving rate %	82	84
Heifer calved at opt age %	96	96
Median calving date	17-Feb	22-Feb

- High EBI Black & White herds had similar fertility performance and better milk solids compared to high EBI crossbred herds
- Genetic merit delivering real on-farm performance – select on high EBI

Conclusion

Focus on EBI, not breeds, when selecting dairy AI bulls for use on your herd

Scientific explanation

Previous choices on breed for increased performance however genetic merit is on par for both Black and White and Jersey breeds

→ choose high EBI



FACT 6: Animal “quality” is not deteriorating in suckler bred animals



Data

- Slaughter data from steers slaughtered between 2015-2019
- Born in BDGP herds
- Comparison on
 - Age at slaughter
 - Carcass weight
 - Carcass Conformation

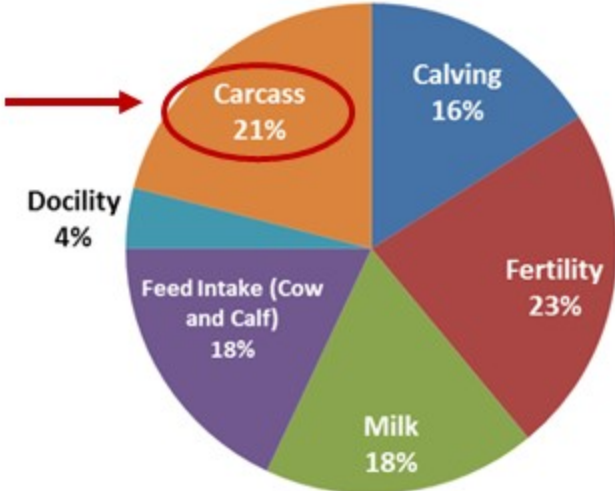


Results

Steer carcass performance 2015-2019*					
Year Slaughtered	2015	2016	2017	2018	2019
Number Animals	170,765	169,566	176,441	163,243	134,127
Age at Slaughter (days)	874	853	848	862	874
Carcass Weight (kg)	392	390	390	389	398
Carcass Conformation	R=	R=	R=	R=	R=

Make-up Euro-Star Replacement Index

- Aims for balanced beef animals (maternal + terminal)
- Improving suckler cow traits – milk and fertility.
- Improving carcass efficiencies – higher weights at younger ages



Conclusions

- Carcass performance of suckler animals is improving
 - Carcass weight has increased (6kg)
 - Carcass conformation has remained the same (R=)

Scientific explanation

Euro-Star Replacement Index is intended to breed balanced suckler cows – delivering on maternal and terminal traits.



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*all steers born in BDGP herds



FACT 7: Calving beef heifers down at 2 years of age rather than 3 years of age is more profitable

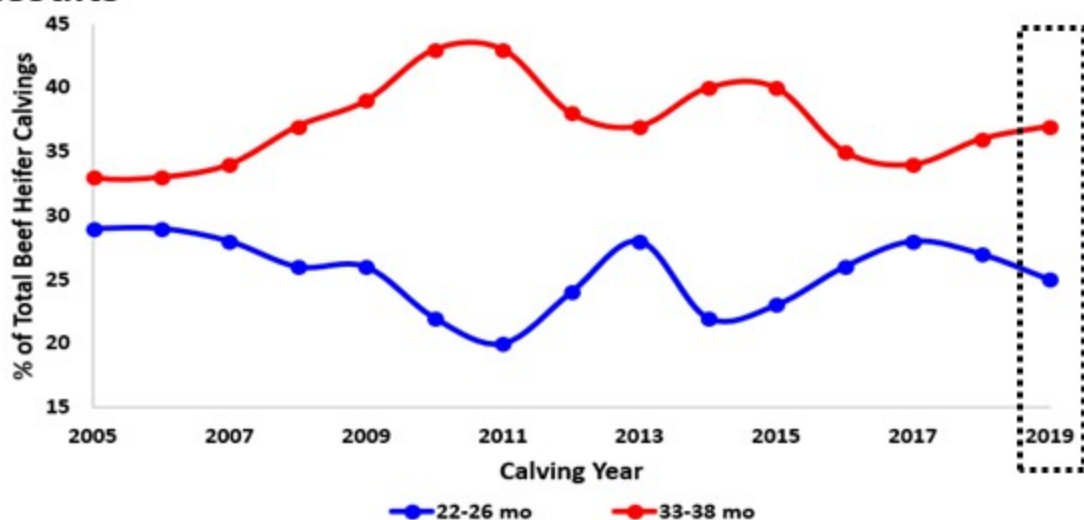


Data

- Trend analysis based on age at first calving (AFC) records over 15 years for beef heifers
- 2015 year of first calving heifers used to assess impact of AFC on traits of economic importance

Results

Trends in Age at First calving in Beef Heifers



- The **highest proportion** of heifers calve at 3 years old in all years
- The proportion of heifers calving at 2 years has **declined** from 29% in 2005 to 23% in 2019

Table 1: Calving and fertility performance for age at first calving groups in 2015

AFC (months)	No. of cows	Calf mortality in parity 1	Difficult calving parity 1	Calved a second time	Calvings to date	Calving interval all parities	% of cows still alive
22-26	27,388	3%	8%	83%	4.62	398 days	36%
33-38	36,435	2%	5%	85%	4.65	410 days	36%

Table 2: BEEP weight and current life-time carcass performance for Table 1 heifer groups

AFC (months)	No. cows with progeny carcass	Progeny weaning weight	Average cow live weight	Progeny total carcass weight	Progeny total carcass price
22-26	24,468	288 kg	708 kg	1075 kg	€4,231
33-38	32,646	283 kg	692 kg	1070 kg	€4,209

- Heifers calving at 2-years-old can rear progeny just as well as a 3-year-old

Preliminary analysis from Teagasc suggest that the additional year to rear a heifer;

- Costs the farmer an extra **€353**
- Emits an additional **8% green house gases**



Scientific explanation

- ✓ Heifers calving at 2 year of age cost less to rear, emit less emissions and can be as productive as a 3-year-old first calver