

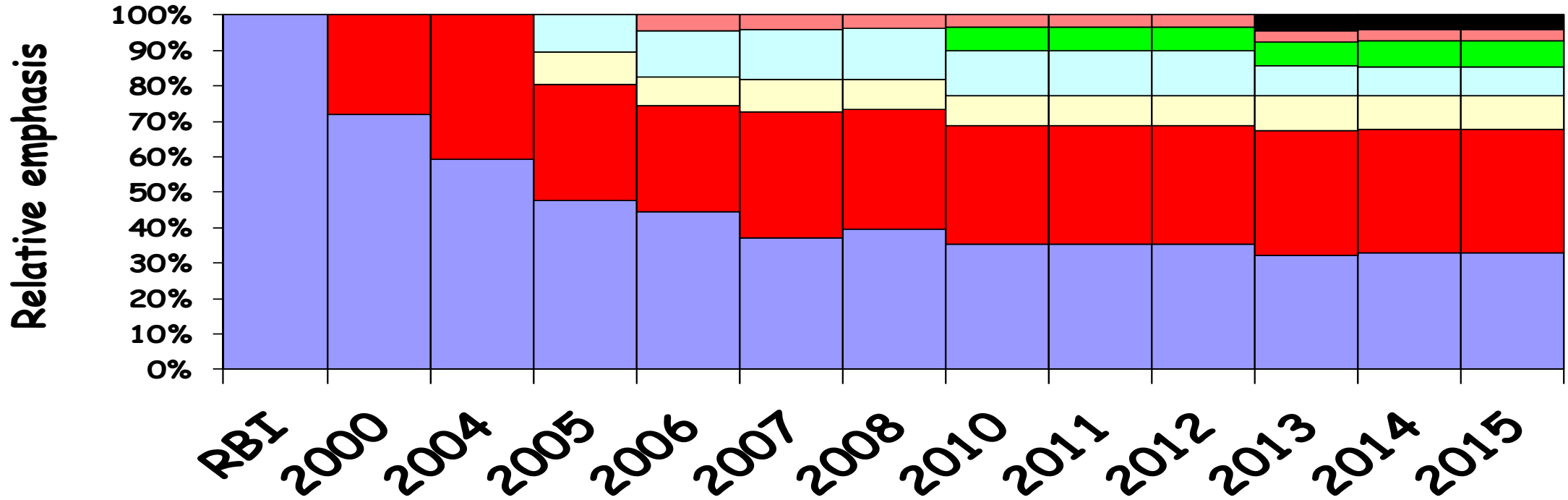
Comparative performance of Holstein-Friesian dairy cows of contrasting Economic Breeding Index

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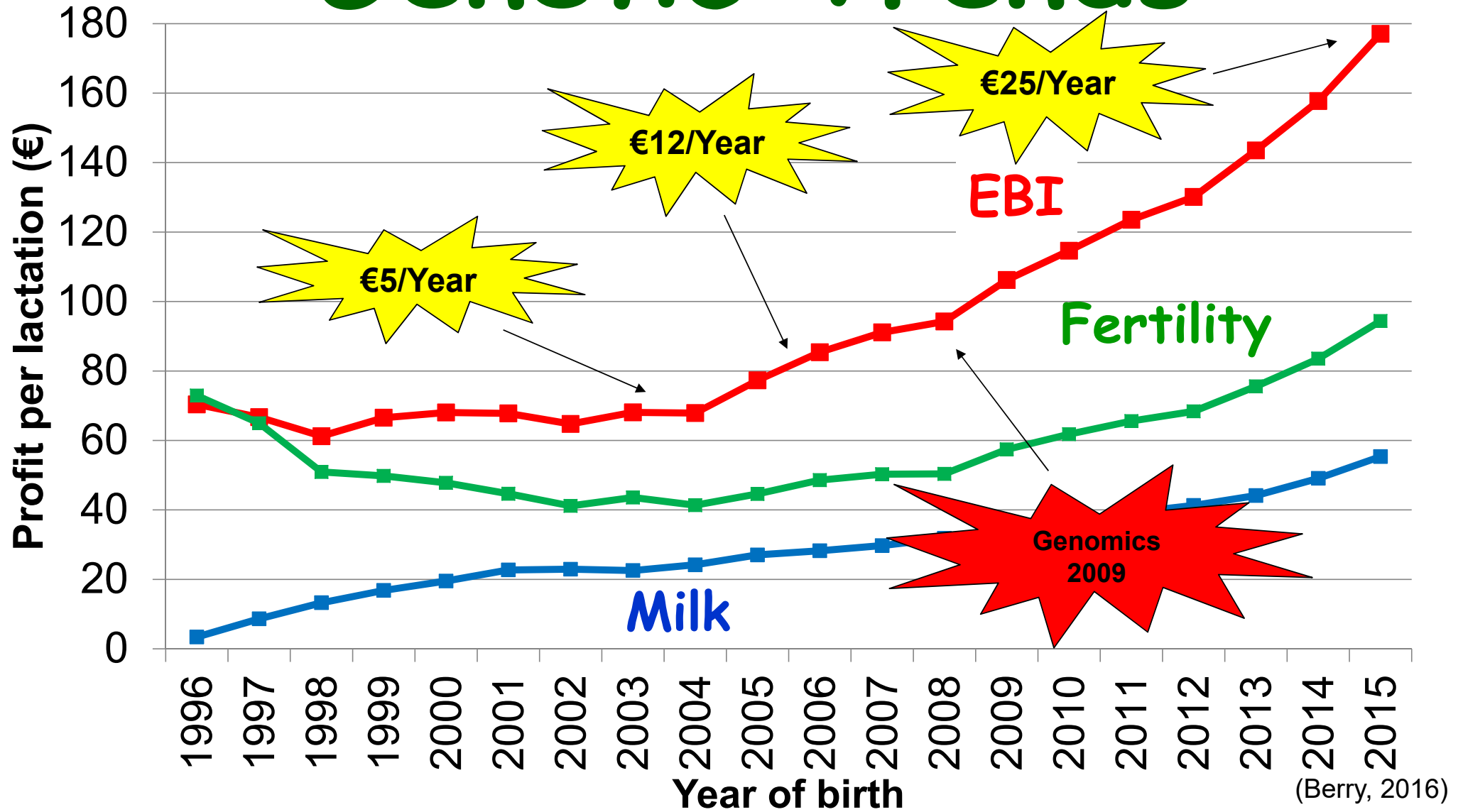
Evolution of the EBI



Economic Breeding Index - EBI

Sub-index	Trait	Weight	Emphasis	Emphasis
Production	Milk (kg)	-0.09	11%	
	Fat (kg)	1.04	3%	33%
	Protein (kg)	6.64	19%	
Fertility	Calving interval (d)	-12.43	24%	
	Survival (%)	12.01	11%	35%
Calving	Calving difficulty dir (%)	-3.52	3%	
	Calving difficulty mat (%)	-1.73	1%	9%
	Gestation (d)	-7.50	4%	
Maintenance	Calf mortality (%)	-2.58	1%	
	Cow (kg)	-1.65	7%	7%
Beef	Carcase weight (kg)	1.38	5%	
	Carcase conformation (units)	10.32	2%	
	Carcase fat (units)	-11.71	1%	9%
Health	Cull cow (kg)	0.15	1%	
	Lameness (%)	-54.26	0.6%	
	Mastitis (%)	-77.10	1%	3%
Management	SCC (Log _e)	-43.49	2%	
	Milking duration (seconds)	0.25	2%	
	Temperament (units)	-33.69	2%	4%

Genetic Trends



(Berry, 2016)

Objective



Objective



- Production
- BCS
- Liveweight
- Fertility

Materials and Methods

- 2013-2015
- 2 x 3 factorial arrangement
- 2 Genotypes
 - 90 Elite (270 records)
 - 45 NatAv (135 records)
- 3 Pasture-based treatments
- 6 individual farmlets



Profile of Elite Cows 2013-2015

Variable	N	Mean	Min	Max
EBI	152	249	185	337
Milk SI		69	26	133
Fertility %		142	82	207
Milk t		78	-325	440
Fat kg		12.5	-3	25
Protein kg		9.8	-3	19
Calving Interval		-7.8	-12	-4
Survival		3.7	1	6

Top 1%

Genetic Diversity
40 Sires
83 Maternal grandsires

Profile of National Average Cows 2013-2015

Variable	N	Mean	Min	Max
EBI	77	133	84	184
Milk SI		49	11	84
Fertility SI		65	19	116
Milk kg		166	-147	525
Fat kg		9.3	1	18
Protein kg		8.2	-1	15
Calving Interval		-4.0	-7	0
Survival		1.2	-1	3


Contrasting Feeding Treatments

Variable	Low Grass Allowance	Control	High Conc
SR (cows/ha)	2.75	2.75	2.75
Residual (cm)	3.5-4	4.5-5	4.5-5
Concentrate (kg)	300	300	1200
N (kg/ha)	250	250	250

Statistical Analyses

- Milk Production, BCS, Liveweight and continuous fertility variables analysed - PROC MIXED in SAS
 - Adjusted for
 - Genetic group
 - Feeding treatment
 - Genetic group x Feeding treatment
 - Parity
 - Calving date
- Binary fertility traits analysed - PROC GENMOD in SAS

Results



**No $G \times E$
interaction
observed**

Performance 2013-2015



	Elite	(SE)	NatAv	(SE)	Sig
Milk yield (kg)	5499	(34.54)	5704	(44.86)	<0.001
Fat (g/kg)	44.3	(0.13)	41.6	(0.17)	<0.001
Protein (g/kg)	37.5	(0.05)	35.8	(0.06)	<0.001
Fat yield (kg)	242	(1.40)	237	(1.81)	<0.01
Protein yield (kg)	206	(1.21)	205	(1.58)	NS
Milk value (€; 30c/l)	1891	(10.60)	1862	(13.78)	<0.05
Liveweight (kg)	490	(1.27)	498	(1.65)	<0.001

Fertility Performance

2013-2015



	Elite	(SE)	NatAv	(SE)	Sig
Submission rate (%)	91	-	83	-	<0.01
Pregnancy rate first service (%)	58	-	49	-	P = .07
Pregnancy rate 6 weeks (%)	70	-	58	-	<0.02
Pregnancy rate 12 weeks (%)	90	-	81	-	<0.008
Body Condition Score	2.94	(0.01)	2.76	(0.01)	<0.001

Conclusion

- EBI € € €
- Clear differences
- In line with prediction
- More fertile cows
- More productive cows



Thanks

Questions?

