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The German Angler

- a specific Red Breed goes genomics -

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Zuchtqualität mit Zukunft! RSH Rinderzucht Schleswig-Holstein eG

vit Service & Daten aus einer Quelle

The German Red Angler

Hella (Baldo) => Nougat

Milk	11,200
Fat%	4.8
Protein%	3.8

Twix (Nougat)

The German Red Angler

Lady (Eukal) => O-Lady (R David)
Mother of “Parfüm”

Madonna + 8 ET-calves

Challenge

- German Red Angler - a local population in Germany
  - 13,327 herdbook animals and 84 bulls (ADR, 2016)
- Larger German breeds (HF, SI, BS) realize a higher breeding progress due to the implementation of genomic selection
  - based on the drastic reduction of the generation interval
- High number of animals in the reference population is a requirement for genomic selection (Goddard, 2009)
- How to create a sufficiently large reference population for the Angler?
  - **Possibilities / Usefulness / Feasability / Profitability**

Which options for the Angler to exploit GS?

possible strategies:

1. own Angler reference population
   - min 2,000 reference bulls with rel. > 80% (2012 only 63 genotyped Angler bulls) / 10,000 – 20,000 recorded cows
   - not realistic in the present and even hardly in the future

2. use of the German Holstein reference population
   - 63 genotyped Angler bulls are short for a validation
   - Findings in the range of expectation r ~ 0.4 to 0.5

3. join (use) the reference population of the Scandinavian Red Dairy Cattle (RDC)

Project with Viking Genetics

- July 2015 meeting **RSH eG**, **Viking Genetics** and **vit Verden**

- Scandinavian RDC reference population
  - 12.700 cows
  - 8.200 daughter proven bulls

- 137 young female Angler candidates
- 141 Angler bulls
  - 97 bulls with reliable conventional breeding values (rel. >80 %)

- August 2015: typing of the animals by the RSH eG
- September 2015: transfer of genotypes to Viking
- December 2015: genomic breeding values from Viking

Outcome I: Viking reference population used

Correlations PI (DEU):gEBV (DFS)

63 male candidates

PI(DEU)	gEBV(DFS)	r
ZW(M-kg)	Milk_Index	0,60
ZW(F-kg)	Fat_Index	0,55
ZW(E-kg)	Prot_Index	0,53
RZM	Yield_Index	0,50
RZS	UH_Index	0,37
RZN	Long_Index	0,53
RZR	Fert_Index	0,38
RZKm	Calv_Index	0,57
RZ-EUT	EUT_Index	0,89
RZ-FUN	FUL_Index	0,70

Outcome I: Viking reference population used

Correlations PI (DEU):gEBV (DFS)

137 female candidates

PI(DEU)	gEBV(DFS)	r
ZW(M-kg)	Milk_Index	0,51
ZW(F-kg)	Fat_Index	0,53
ZW(E-kg)	Prot_Index	0,53
RZM	Yield_Index	0,53
RZS	UH_Index	0,37
RZN	Long_Index	0,53
RZR	Fert_Index	0,38
RZKm	Calv_Index	0,57

Outcome II: Viking reference population joined

Integration of the 97 daughter proven Angler bulls in Viking reference population

Correlation bulls PI (DEU):gEBV (DFS)

PI(DEU)	gEBV(DFS)	December 2015	Januar 2016
		r	r
ZW(M-kg)	Milk_Index	0,60	0,88
ZW(F-kg)	Fat_Index	0,55	0,89
ZW(E-kg)	Prot_Index	0,53	0,84
RZM	Yield_Index	0,50	0,82
RZS	UH_Index	0,37	0,84
RZN	Long_Index	0,53	0,76
RZR	Fert_Index	0,38	0,92
RZKm	Calv_Index	0,57	0,64
RZ-EUT	EUT_Index	0,89	0,89
RZ-FUN	FUL_Index	0,70	0,70

Outcome II: Viking reference population joined

Integration of the 97 daughter proven Angler bulls

Correlations for 137 female candidates PI (DEU):gEBV (DFS)

PI(DEU)	gEBV(DFS)	December 2015	Januar 2016
		r	r
ZW(M-kg)	Milk_Index	0,51	0,58
ZW(F-kg)	Fat_Index	0,53	0,58
ZW(E-kg)	Prot_Index	0,53	0,59
RZM	Yield_Index	0,53	0,59
RZS	UH_Index	0,37	0,45
RZN	Long_Index	0,53	0,59
RZR	Fert_Index	0,38	0,47
RZKm	Calv_Index	0,57	0,57

Example of stayability

Comparison of genomic breeding values on DEU basis for the young bull "Sevillo"

Month	RZG_c	RZM_c	RZS_c	RZN_c	RZR_c
April 2016	136	120	111	113	109
August 2016	130	118	105	111	107
September 2016	131	120	106	111	108

Discussion

Genomic estimation

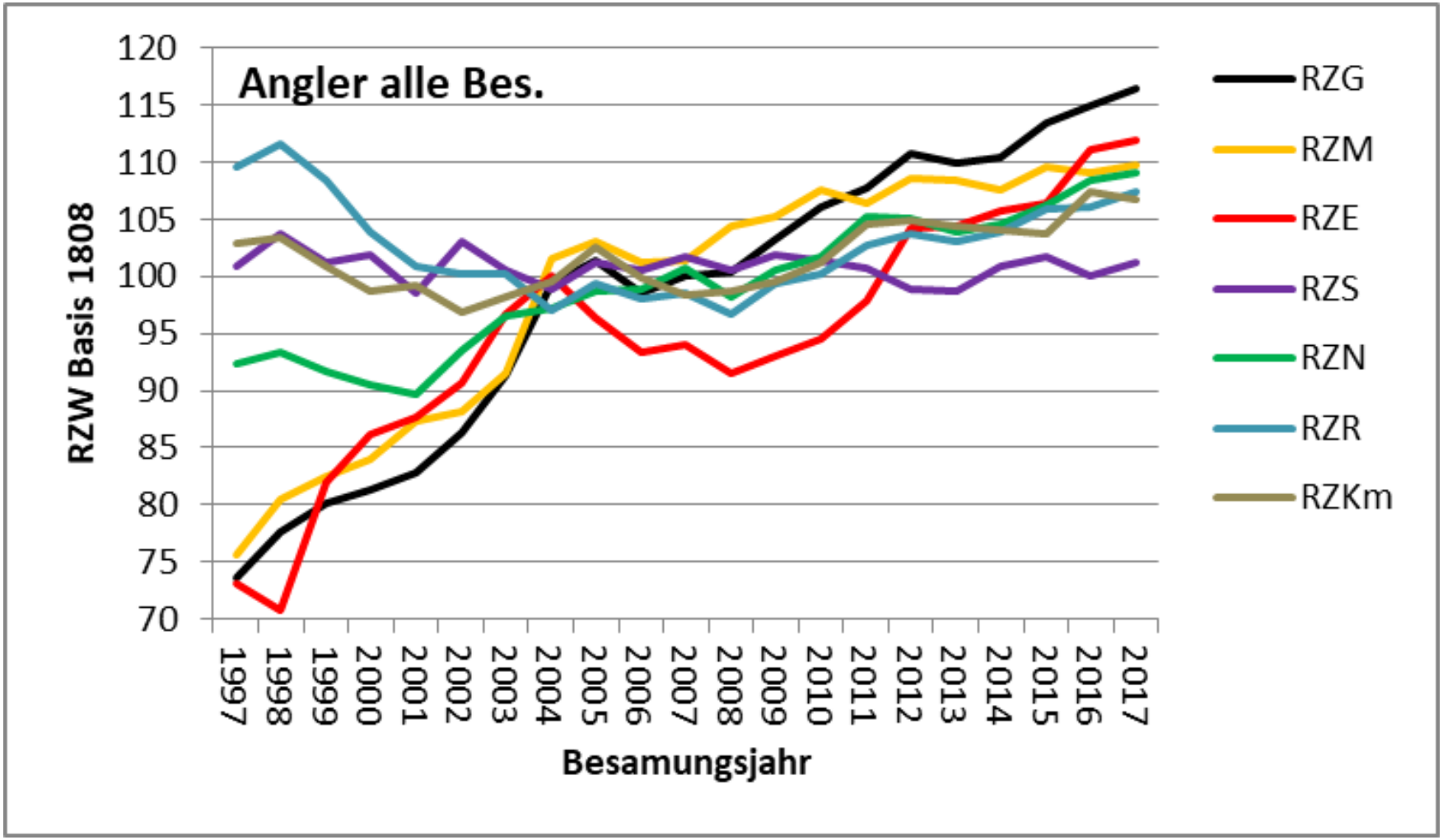
- Scandinavian and German breeding value estimation methods are officially recognized by the EU
- rel. > 0.50 in the production traits (M-kg, F-kg, E-kg) for breeding bulls
- production traits (Scandinavia): rel. = 0.69
- production traits (Germany): rel. = $0.69 * 0.90^2 =$ **0.56**

The given legal requirements are fulfilled!

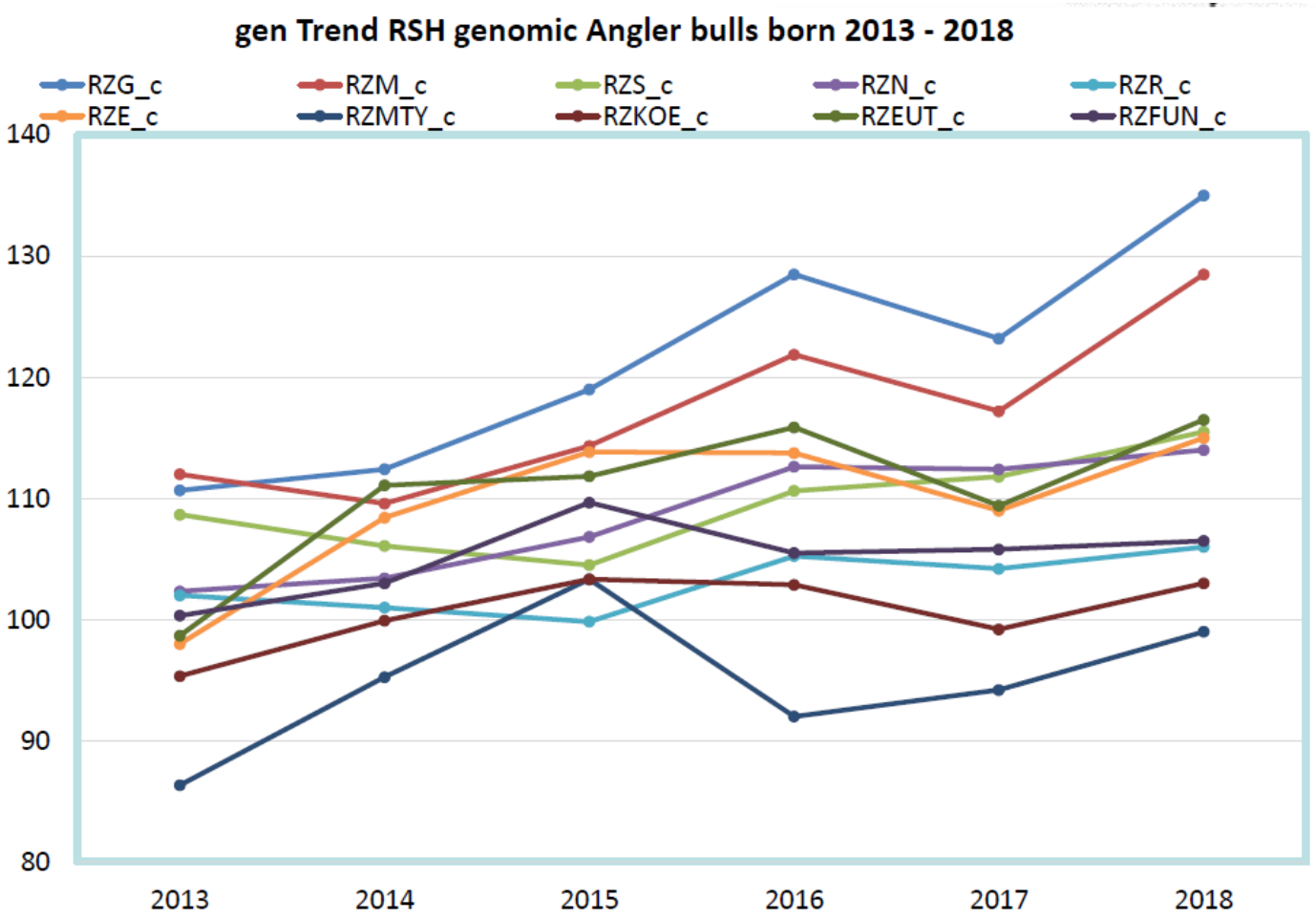
Actual bulls conventional – genomic (2018)

Name	V_Name	RZG	RZG_c		RZM	RZM_c		RZS	RZS_c		RZN	RZN_c		RZE	RZE_c	
Piet	R David	124	119	+5	128	122	+6	94	96	-2	102	105	-3	106	105	+1
Nacet	R Facet	124	116	+8	110	105	+5	115	111	+4	116	107	+9	114	115	-1
Punkt	R Fastrup	123	117	+6	120	115	+5	100	98	+2	106	107	-1	113	109	+4
Ilex	R Bahama	122	115	+7	121	117	+4	94	94	+0	101	99	+2	122	112	+10
Nougat	A Linne	122	114	+8	114	114	+0	87	88	-1	111	103	+8	130	109	+21
Pelle	R Degn	122	125	-3	117	125	-8	109	103	+6	104	106	-2	112	112	+0
VR Fergus		121	123	-2	114	121	-7	124	118	+6	115	116	-1	97	98	-1
Post	R Degn	117	119	-2	126	122	+4	70	95	-25	95	99	-4	107	114	-7
Kandy	R Bahama	117	113	+4	125	123	+2	101	99	+2	98	96	+2	96	97	-1
Orraryd	Backgard	117	109	+8	119	112	+7	90	100	-10	100	98	+2	98	101	-3
Owe	A Linne	114	119	-5	120	119	+1	73	89	-16	94	100	-6	112	115	-3
Pirello	R David	113	111	+2	109	109	+0	104	102	+2	104	106	-2	115	102	+13
Ladykiller	R David	113	126	-13	100	114	-14	108	112	-4	113	117	-4	104	110	-6
Impalu	R Ascona	112	108	+4	118	112	+6	88	96	-8	100	101	-1	108	109	-1
Haithabu	R Ascona	112	106	+6	102	97	+5	106	106	+0	112	104	+8	115	114	+1
R Facet	Jerry	112	115	-3	100	101	-1	116	113	+3	107	112	-5	113	112	+1
R Hornslet	R Back	97	104	-7	112	123	-11	110	91	+19	94	97	-3	45	76	-31
R Hasard	R Broendum	93	111	-18	99	113	-14	92	116	-24	96	103	-7	88	96	-8
Mittelwerte	130 Bullen	115	115		114	115		99	102		104	104		105	106	

Angler - genetic trend (conventional)



Angler - genetic trend (genomic)



Conclusion

- Mutual benefit through cooperation
- Logistics and organizational effort needed
- Consideration of costs and benefits

Cooperation is very important for the future and the preservation of the Angler breed!

Thank you for your attention!