

100.000 kg milk, only possible with healthy claws

# Claw Health

## Genetic correlation estimates between DFS and NLD

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# Introduction

- Claw health is an important health issue in dairy herds
- Claw disorders are affected by environmental factors and genetic factors
- Introduction of claw health index in 2010
- Focus on comparability of breeding values for claw health traits between Nordic countries and the Netherlands

# The traits

Trait abb	Trait name	Country	H <sup>2</sup> *
CLW	Claw Health	DFS	0.04
DDE	Dermatitis: Interdigital (1), digital (2)	DFS	0.05
SHE	Sole hemorrhage	DFS	0.02
SUL	Sole ulcer	DFS	0.04
WLS	White line separation, double sole	DFS	0.02
SKP	Skin Proliferation: (interdigital hyperplasia, wart)	DFS	0.06
HHE	Heel horn erosion	DFS	0.04
CSC	Cork screw claws	DFS	0.01
CLW	Claw Health – index	NLD	0.07
DD	Digital dermatitis	NLD	0.09
IDD	Interdigital dermatitis	NLD	0.10
SH	Sole hemorrhage	NLD	0.06
SU	Sole ulcer	NLD	0.10
WLD	White line disease	NLD	0.03
HYP	Interdigital hyperplasia	NLD	0.11

\*given as an average of the individual lactations.

# Statistical information – DFS

		DFS							
		CLW	DDE	SHE	SUL	WLS	SKP	HHE	CSC
<b>Total number of bulls</b>		3550	3482	3456	3486	3263	3251	3224	2453
<b>Reliability</b>	Min	41	41	40	40	40	41	40	40
	Max	99	99	99	99	99	99	99	99
	Average	70	71	65	68	63	72	68	56
<b>Daughters</b>	Min	10	10	10	10	10	10	10	10
	Max	22871	14672	14215	14581	14665	13885	10429	11878
	Average	214	154	155	157	164	160	123	174

Based on input files for MACE evaluation



# Statistical information – NLD

		NLD						
		CLW	DD	IDD	SH	SU	WLD	HYP
<b>Total number of bulls</b>		1805	1805	1805	1805	1805	1805	1805
<b>Reliability</b>	Min	52	47	48	42	42	25	42
	Max	99	99	99	99	99	99	99
	Average	77	72	73	68	70	57	69
<b>Daughters</b>	Min	10	10	10	10	10	10	10
	Max	6472	6472	6472	6472	6472	6472	6472
	Average	107	107	107	107	107	107	107

Based on input files for MACE evaluation



# Genetic correlations of comparable traits (MACE method applied)

Traits		Common bulls <sup>*2</sup>			
DFS	NLD	Genetic correlation <sup>*1</sup>	Number of bulls	Reliability DFS <sup>*3</sup>	Reliability NLD <sup>*3</sup>
CLW	CLW	0.91	338	75	87
DDE	DD	0.99	335	76	83
DDE	IDD	0.93	335	76	84
SHE	SH	1.00	323	71	82
SUL	SU	0.95	336	73	83
WLS	WLD	0.95	309	70	73
SKP	HYP	0.98	334	76	81

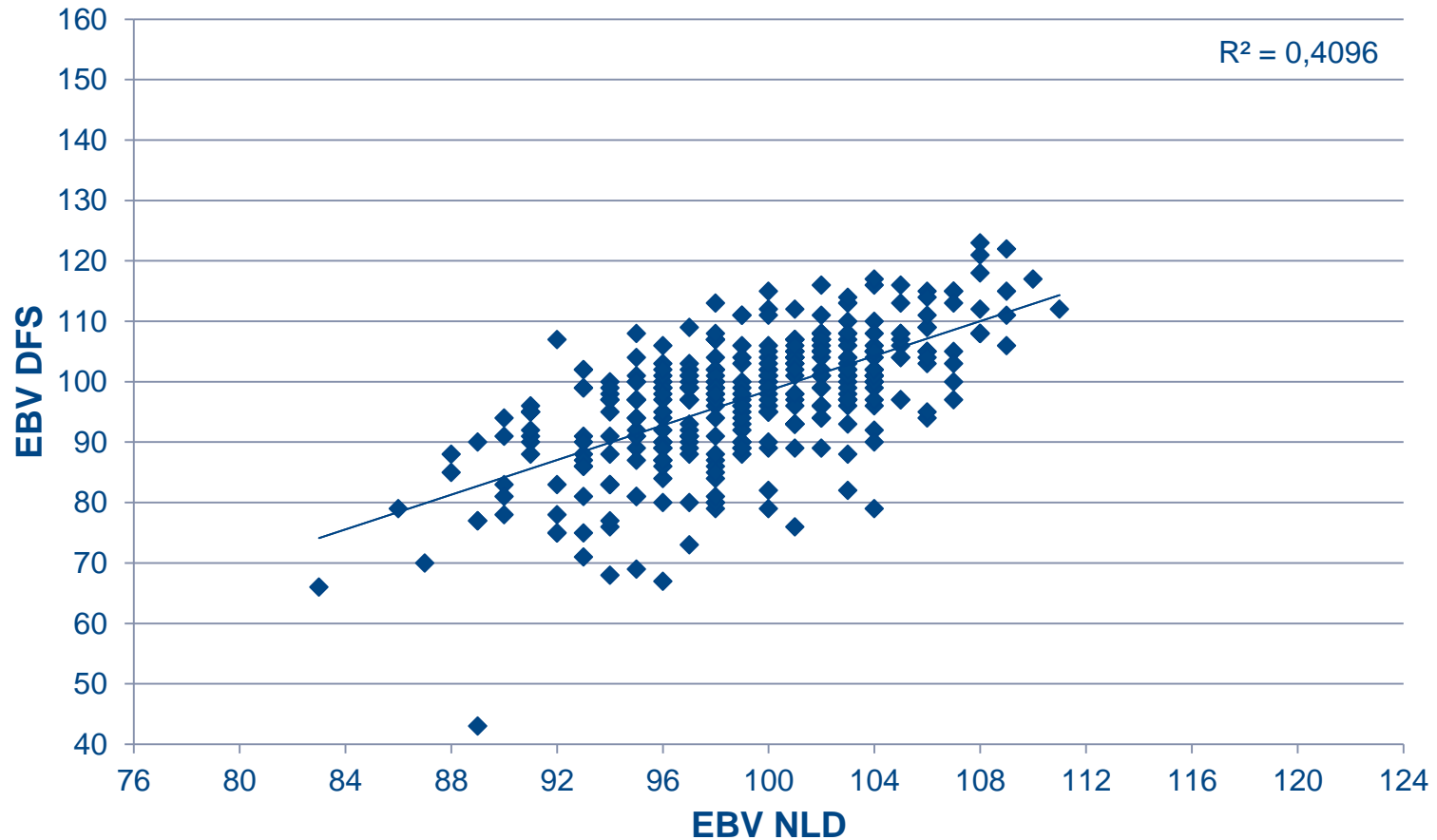
\*1 Correlations are estimated bivariate

\*2 Common bulls = bulls with proofs in both countries

\*3 Average reliability of the common bulls

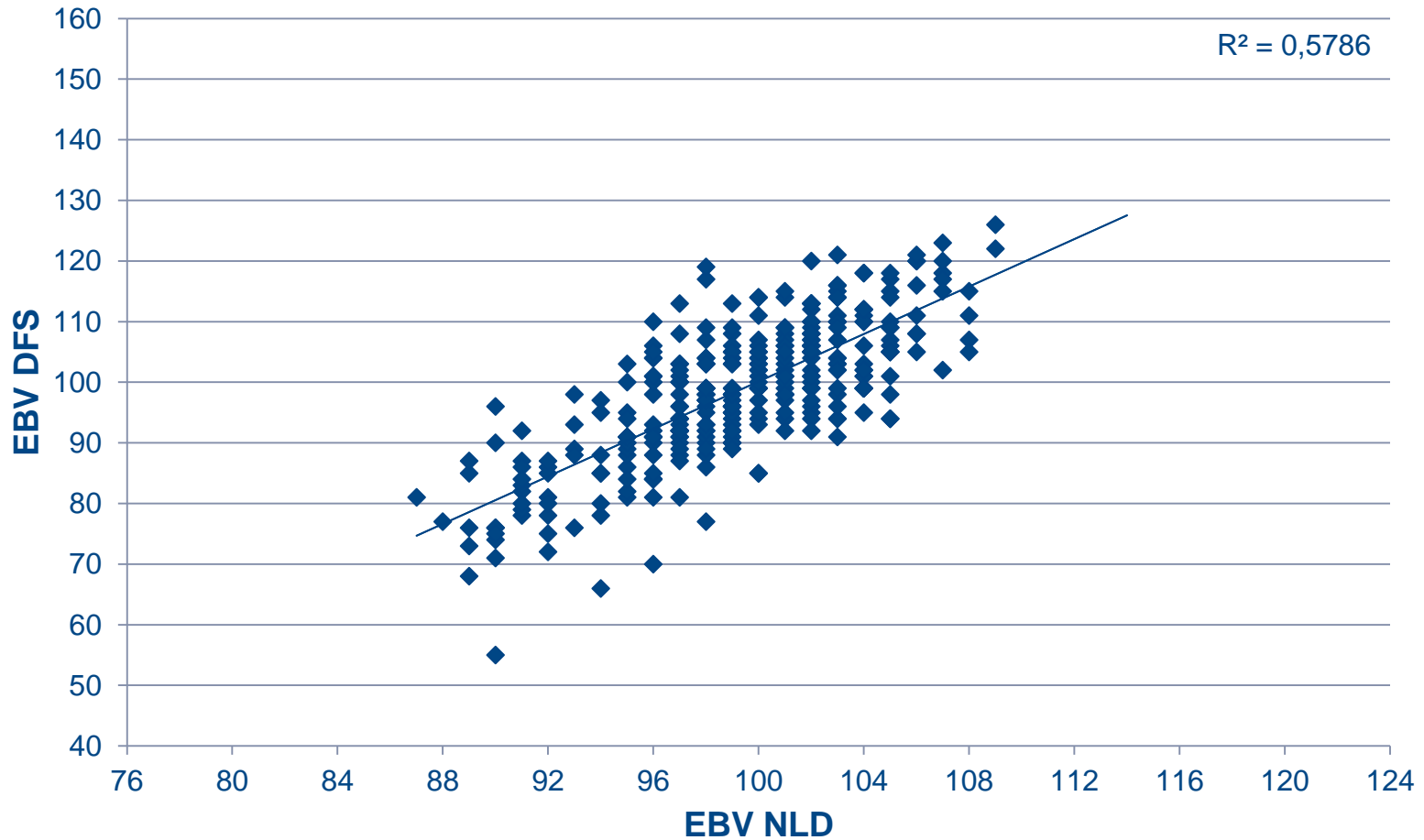
# Correlation NLDCLW – DFSCCLW

Based on national EBVs



# Correlation NLDDD\_ – DFSDDE

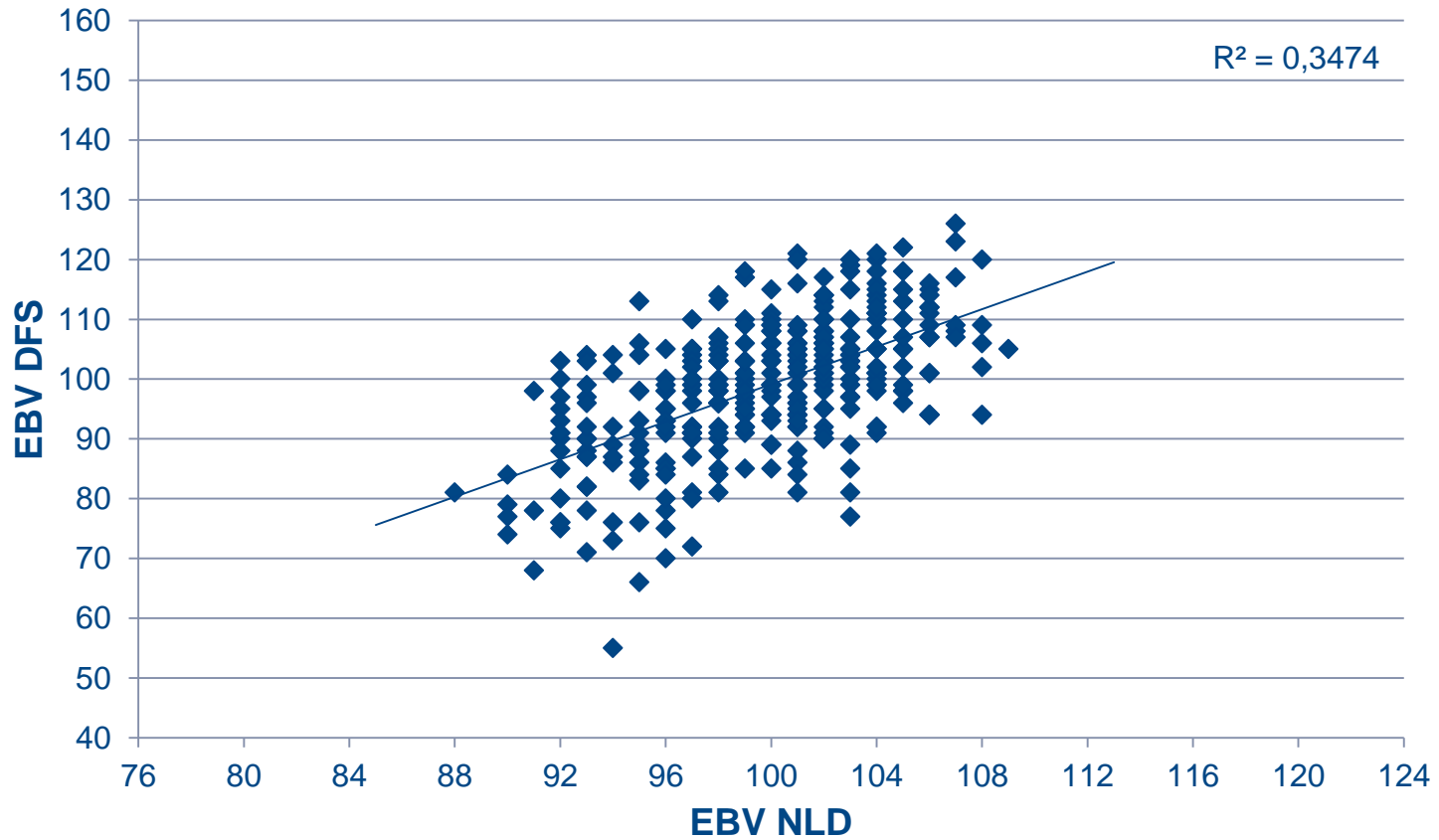
Based on national EBVs





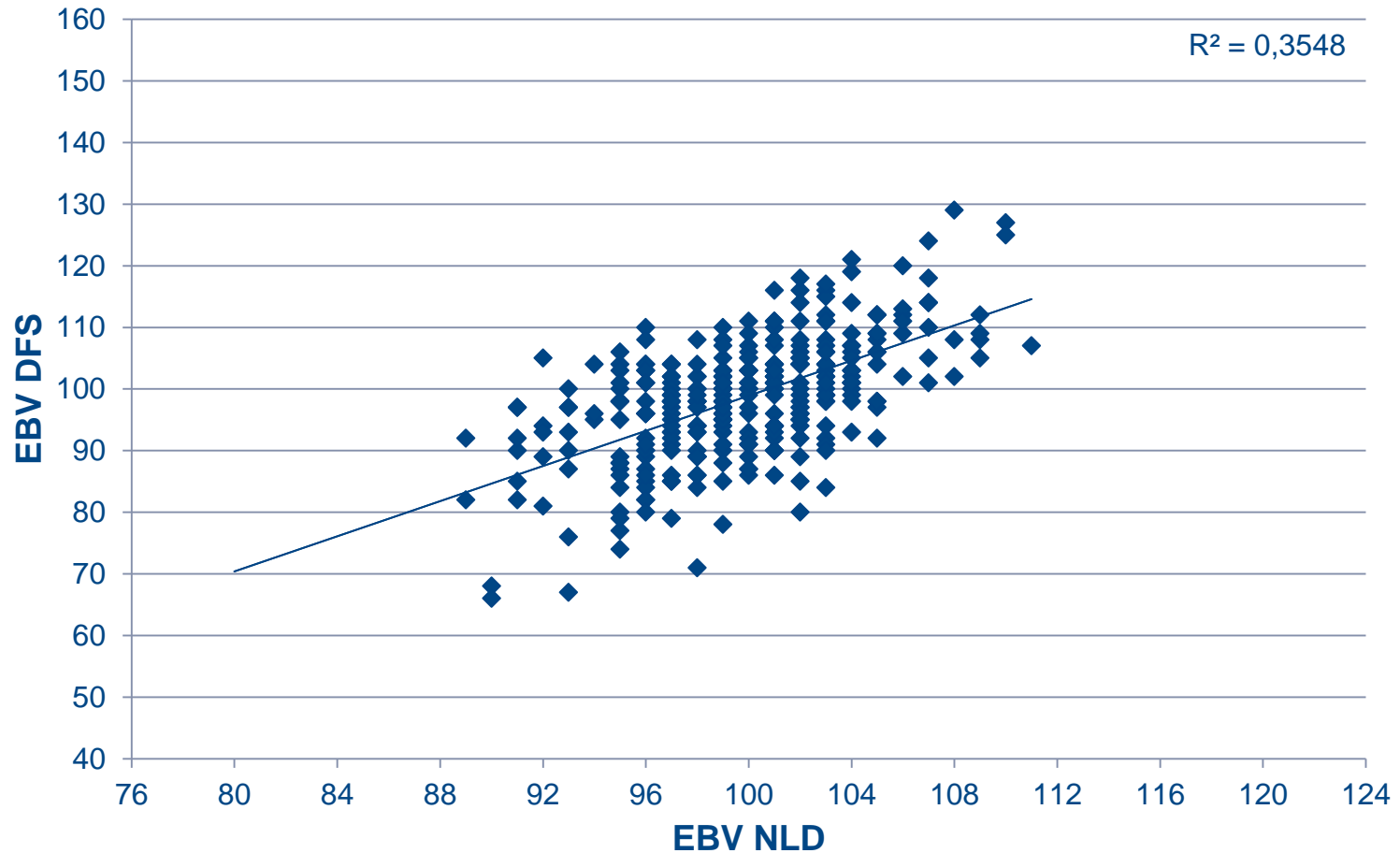
# Correlation NLDIDD – DFSDDE

Based on national EBVs



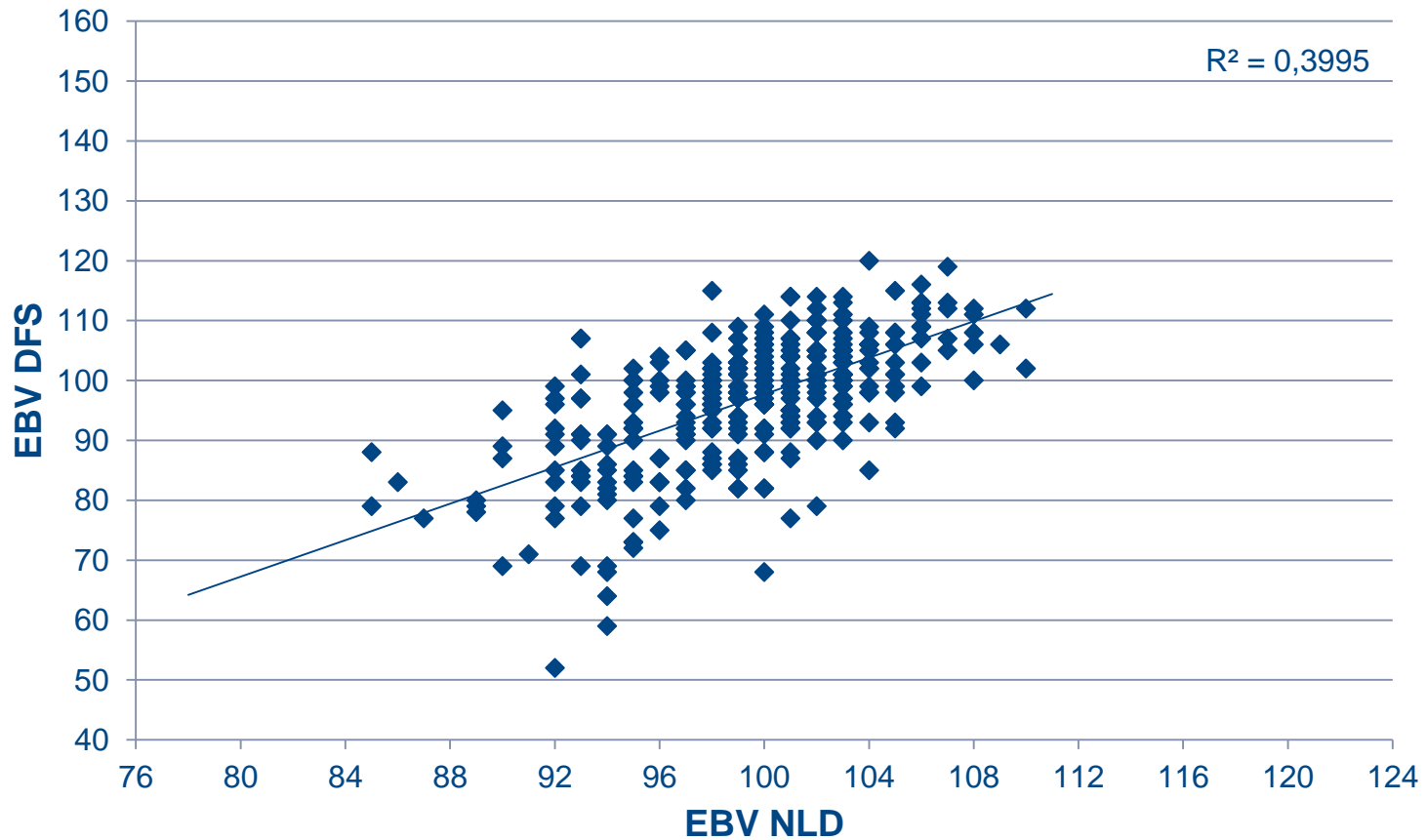
# Correlation NLDSH\_ – DFSSHE

Based on national EBVs



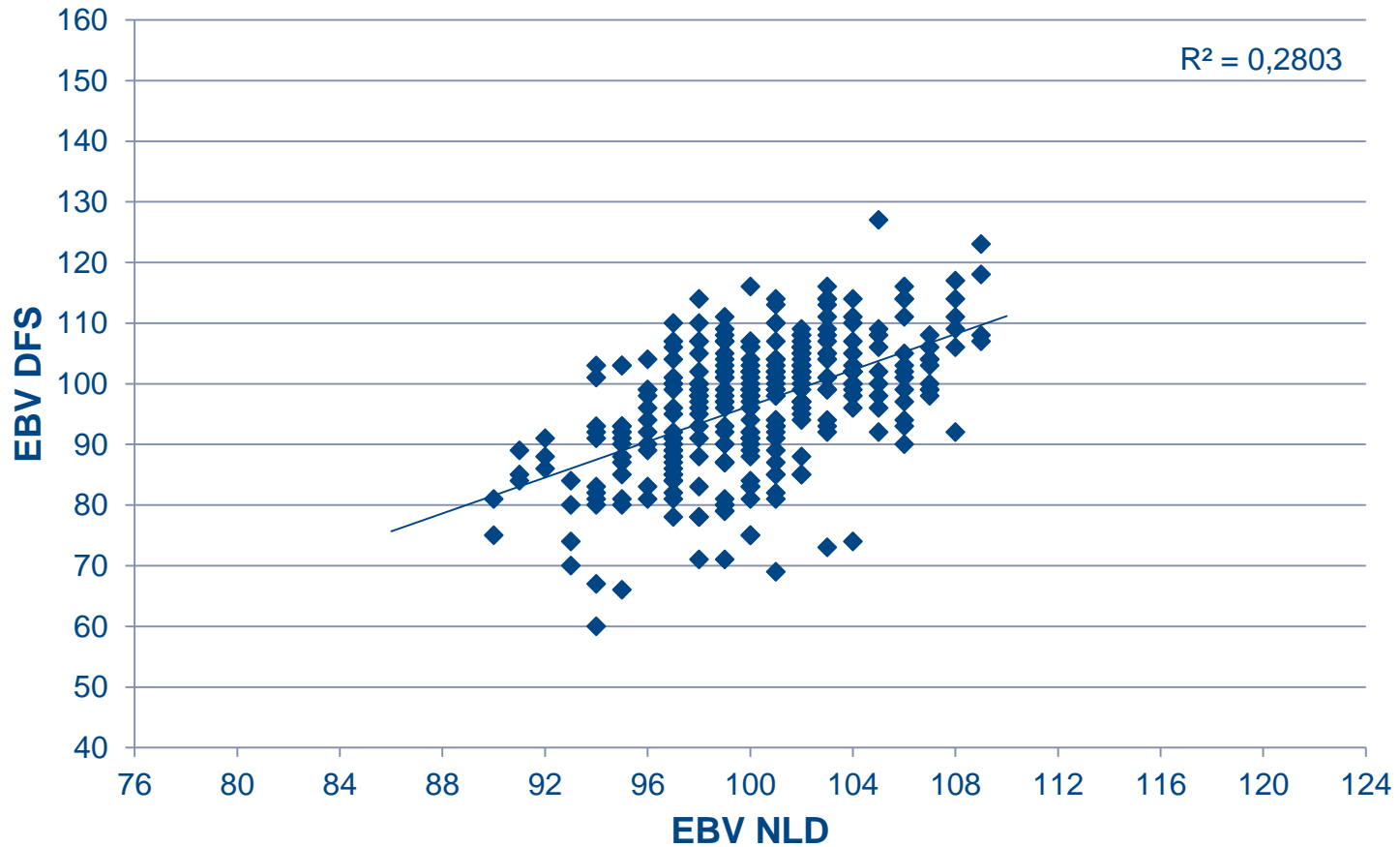
# Correlation NLDSU\_ – DFSSUL

Based on national EBVs



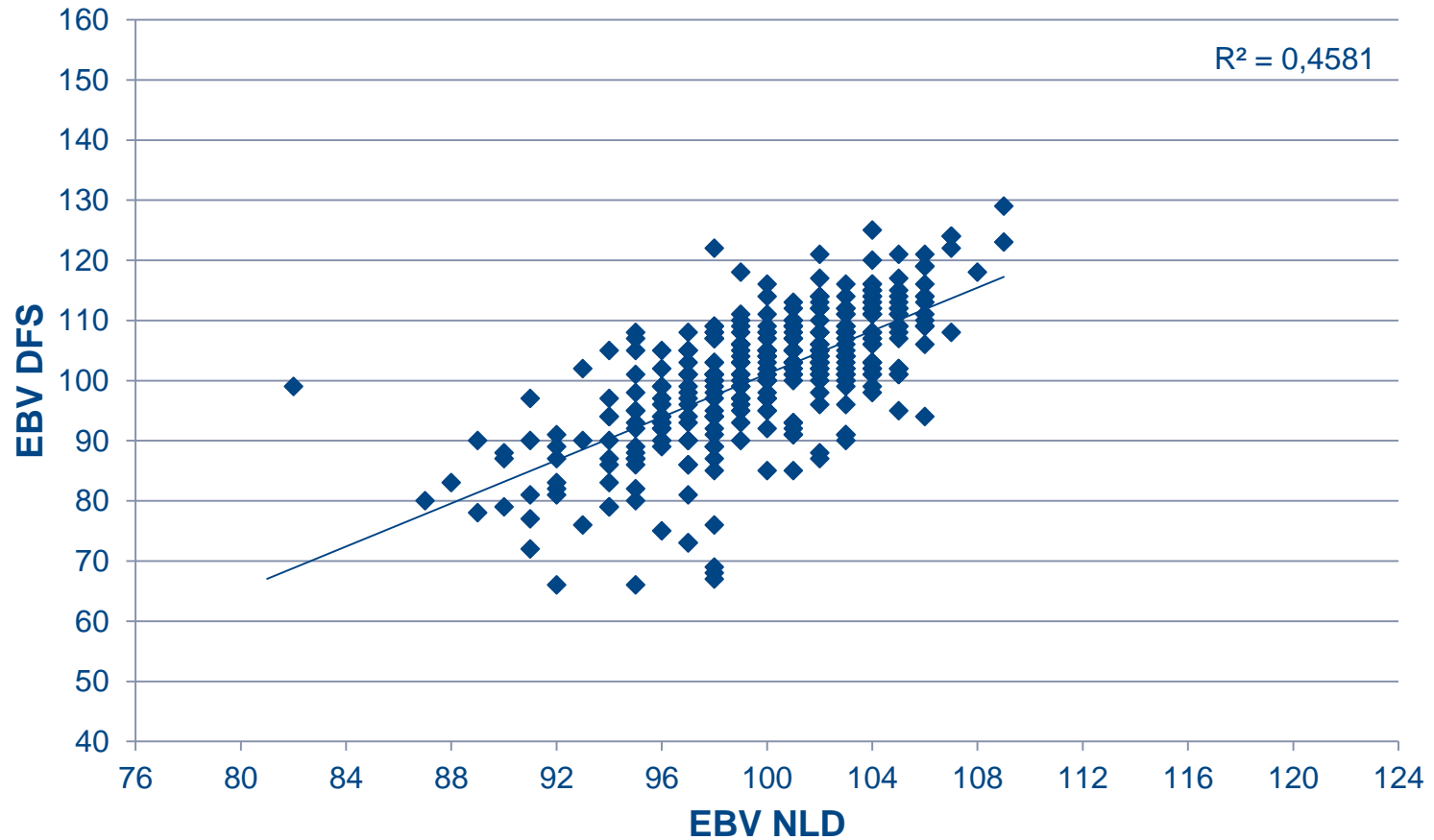
# Correlation NLDWLD – DFSWLS

Based on national EBVs



# Correlation NLDHYP – DFSSKP

Based on national EBVs



# Conclusion

- Estimates of Genetic correlation between NLD and DFS for claw health traits are very high (>90%)
- Simple backwards calculation based on reliabilities, correlations between EBVs for common bulls indicates genetic correlations at about 80% - still very positive
- This study shows potential possibilities to make conversions between countries