



The German Riding Pony: a genealogical study and a genetic analysis



K. Schöpke and H. H. Swalve

Session 5, Paper 12
Abstract no.14468

63rd Annual Meeting of the European Association for Animal Production
Bratislava – Slovakia, August 27th – 31st, 2012

Recent situation

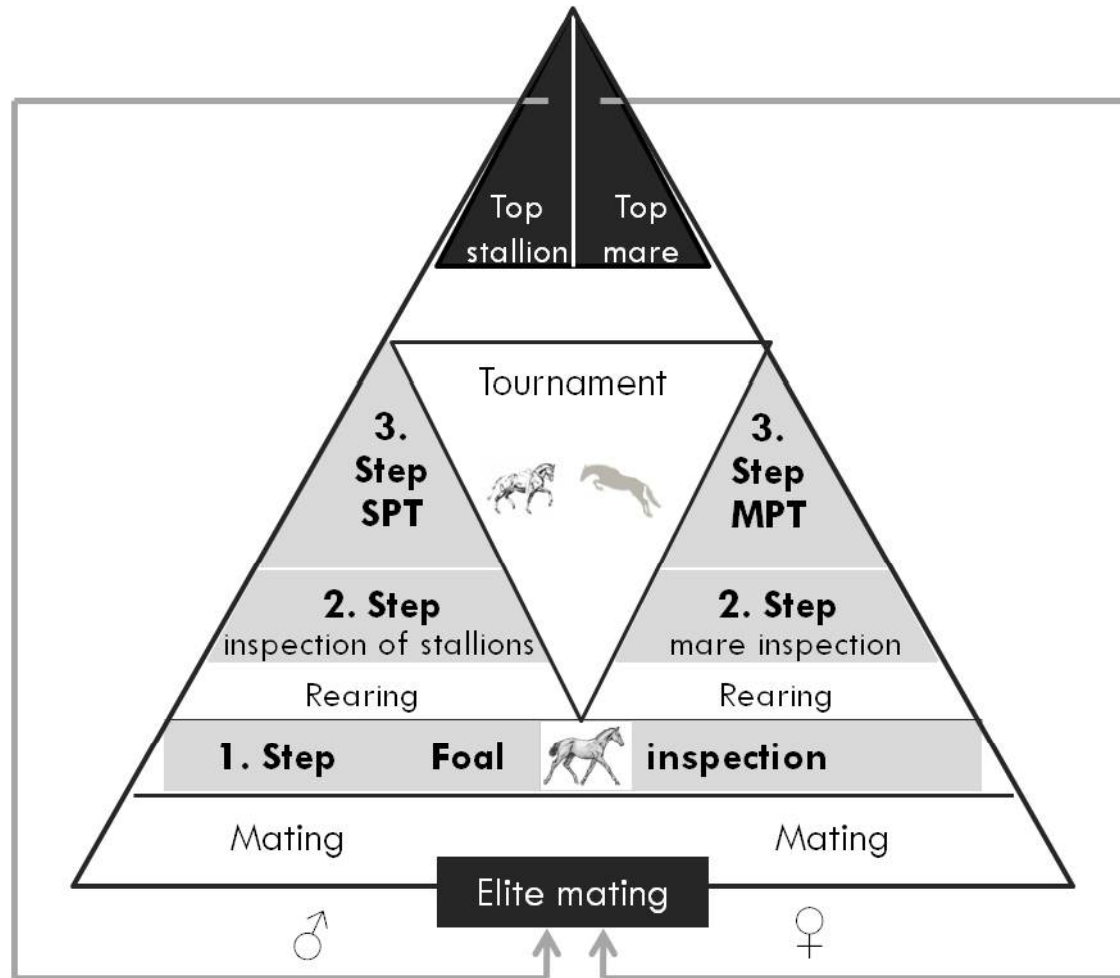
Formation as a breed: since 1972

Breeding stock: ~800 stallions + 5,500 mares (2011)

Breeding program: pure-breeding in an open population



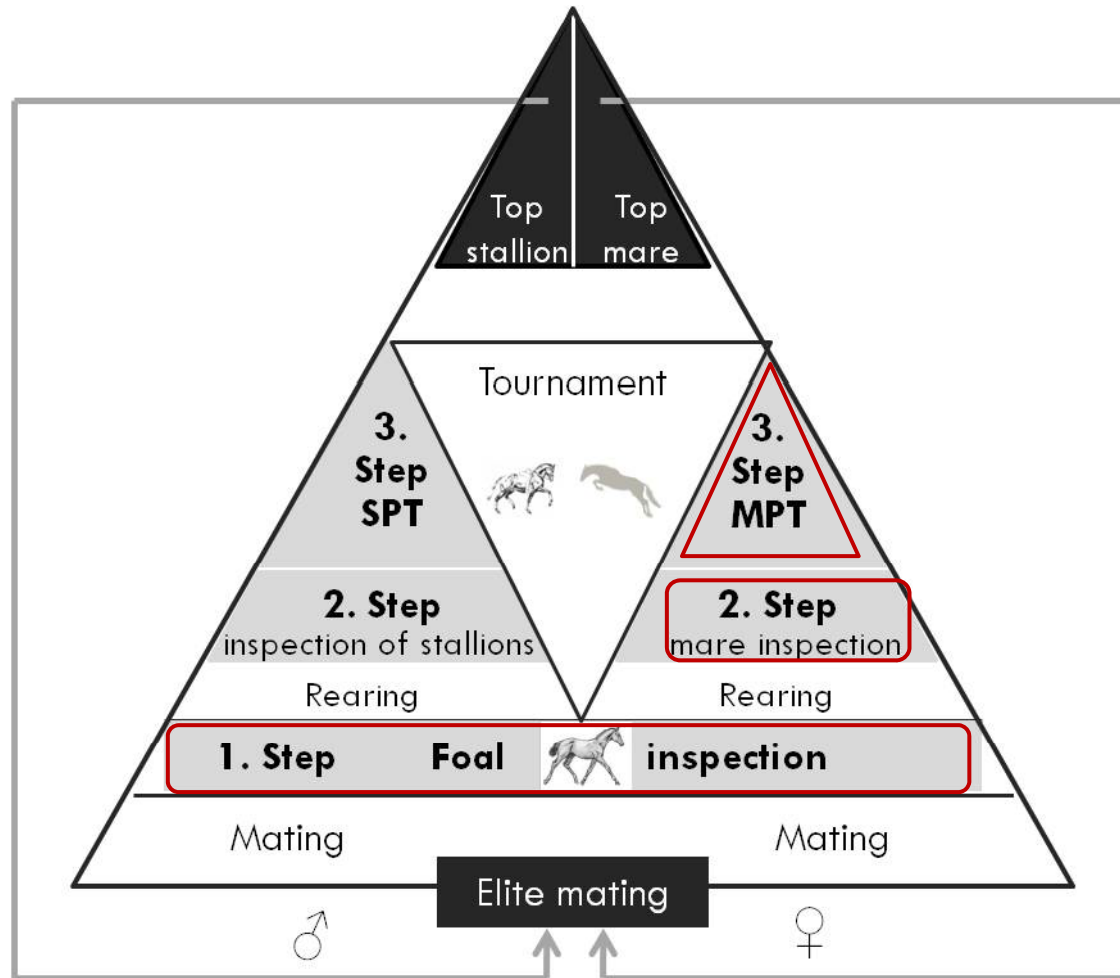
Selection procedure



SPT=performance test of stallions

MPT=mare performance test

Selection procedure



SPT=performance test of stallions

MPT=mare performance test

Material



Foal inspection

N = 2,680

Traits: 3

1990 - 2010



Mare inspection

N = 1,927

Traits: 7 (+6)

1990 - 2010



Mare performance test

N = 236

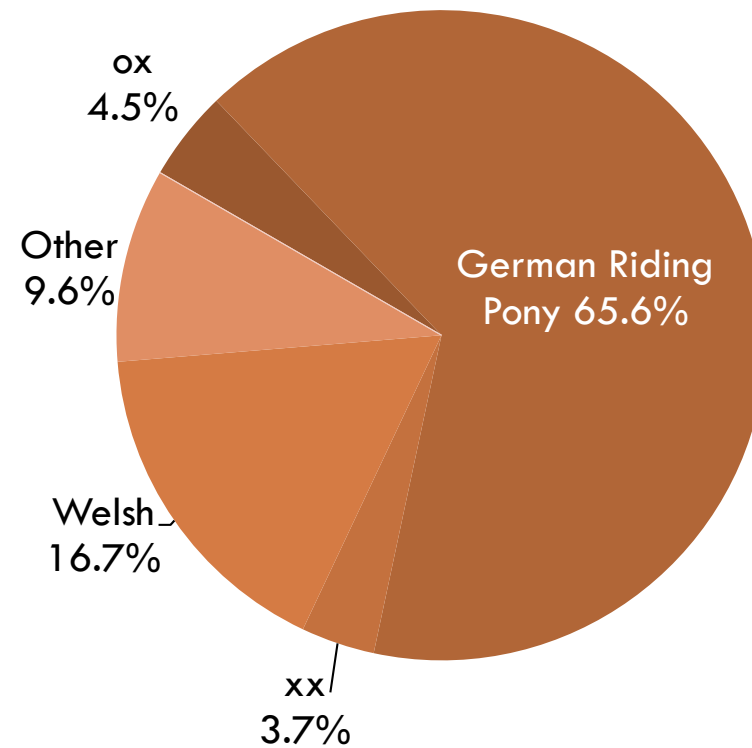
Traits: 5

1994 - 2010

- Animals with performance records: 4,092
- Pedigree totaling: 12,638

Genealogy

Origin of the Sires (1st generation of all ponies with performance records)



N=3,165

Genealogy II

Origin of ancestors from 3rd generation

(for all ponies registered as „active breeding ponies“ for 2011)

Genealogical class		Rel. frequency of stallions	Rel. frequency of broodmares
87.5-100 %	Riding Pony	19.5	9.5
50-75%	Riding Pony	36.6	36.9
≥ 50 %	Welsh Pony	14.6	12.8
≥ 50 %	Arabian	2.4	5.3
≥ 50 %	Thoroughbred	9.8	2.0
≥ 50 %	Other breed	2.5	13.9
no breed ≥ 50 %		14.6	19.6

47.4%



Genetic parameters for foal inspection traits

$$y_{ijk} = \mu_i + place * year_j + b(age) + animal_k + e_{ijk}$$

Estimates of heritability (on diagonal), genetic correlations (above diagonal) and phenotypic correlations (below diagonal) for foal inspection traits

Trait	Type	Conformation	Gait
Type	0.61 (0.04)	0.78	0.75
Conformation	0.12	0.16 (0.03)	0.71
Gait	0.18	0.07	0.31 (0.04)

N=2,666



Estimates of heritability for broodmare inspection traits

$$y_{ijkl} = \mu_i + place*year_j + age_k + animal_l + e_{ijkl}$$

Trait	N	h^2	s. e. h^2
Breed and sex type	1,822	0.67	0.05
Conformation	1,329	0.70	0.08
Head	1,822	0.59	0.05
Neck	1,821	0.50	0.05
Saddle position	1,822	0.40	0.05
Frame	1,822	0.23	0.05
Forelegs	1,330	0.26	0.08
Hindlegs	1,330	0.18	0.07
Correctness of gaits	1,822	0.12	0.05
Walk	1,081	0.39	0.08
Trot	1,346	0.48	0.07

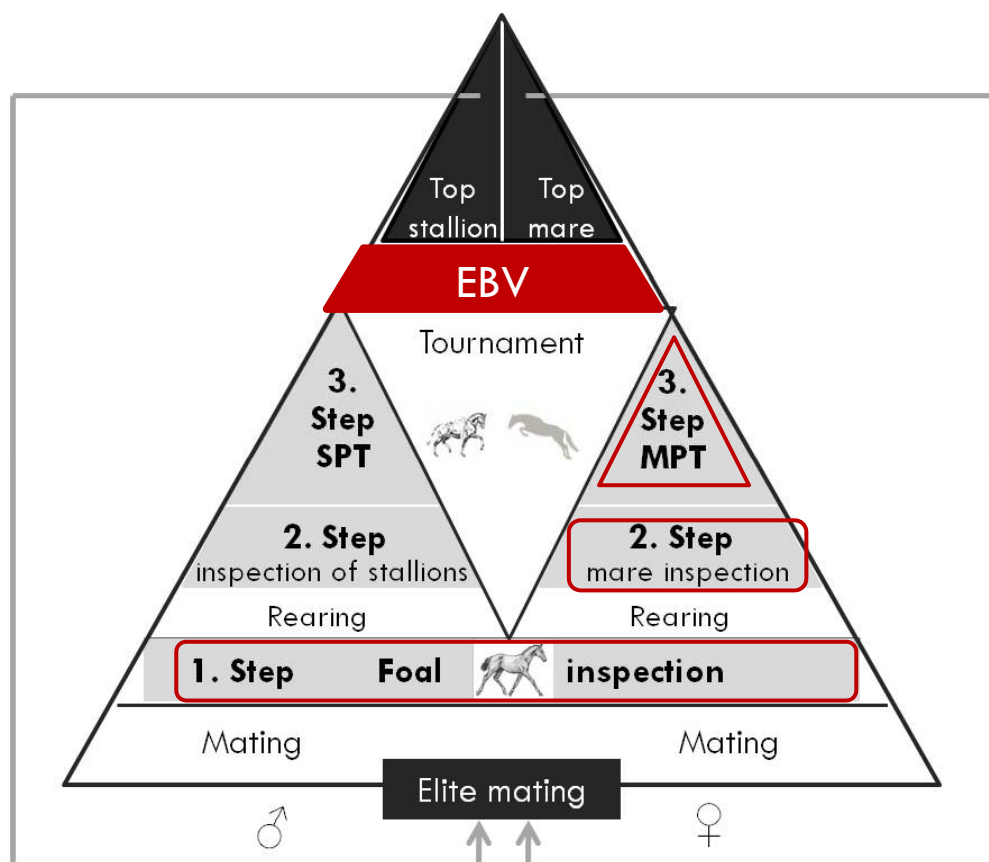
Summary

- Collection of performance data is analogous to German warmblood horses
- Population structure is typical for horse breed
- Majority: 50-75% Riding Pony genes
Welsh genes also have impact
- Genetic parameters are partly similar to those from warmblood populations



Review of extended sample

Conclusions



- Transfer of knowledge and experience from Warmblood
 - Use of existing synergies
 - Estimation of breeding values would be possible
- ➔ Improved exploiting of the full genetic potential
- ➔ Increasing genetic gain



Thank you for your attention!



K. Schöpke and H. H. Swalve

Session 5, Paper 12
Abstract no.14468

e-mail: kati.schoepke@landw.uni-halle.de
Theodor-Lieser-Str. 11, 06120 Halle/ Saale, Germany