

International horse breeding – where are we heading

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The role of the horse – in the past and today

- Pulling power (agriculture, logging, transportation, military use)
- Carrying people or load (travelling, military, express)
- Meat, milk, skin
- Racing and sports disciplines
- Hobby, tourism, leisure
- Horse assistant therapy
- Animal and nature diversity

Breeding aims in the course of the time; towards goal-directed breeding

- Conformation (long traditions in horse breeding)
- Performance (pulling, carrying, sport disciplines)
- Health, soundness
- Temper/character, rideability, easiness to handle

The horse of today

- Athletic horses; race horses, trotters, riding horses, Icelandic horses and other gaited horses
- Performance according to the discipline; speed, movements, jumping capacity, temper, gaits/movements
- differentiation of disciplines in riding horses in breeding evaluation (dressage, show jumping, three day event ...)

- Soundness, health and longevity have risen to be more and more important in all breeds
 - horses are expensive animals
 - breaking and training are expensive
 - veterinary costs are high
 - locomotion problems and lameness are the most common reasons for short careers and culling

- lot of heritable diseases and weaknesses
- how to measure/record health traits:
- 7-11 % of the variations in soundness of trotters and riding horses can be explained by conformation (e.g. Magnusson & Thafvelin, 1989; Holmström & Philipsson, 1993)

- Precocity (early starters) is favoured; different aims among breeders and owners (and breeds/disciplines)
 - early starting produces longer careers and better economy of horse keeping
- Horses are kept more or less professionally

The future horse – “New horse economy”

- New uses of horses: therapy, tourism, leisure, pasturing/keeping diversity, companion
- Most horses are owned and used by people with smaller skills; lack of horsemanship and natural animal-human relationship
- Already today, only 5 % of riding horses are sold to competition purposes; only 1 % to professional riders

- Thus, what will be the most important markets of the horses?
- And what will be the most important aims of horse breeding?
- Important to put more weight on the character/temper of the horse; horses should be easy to handle (not too reactive and sensitive); heritabilities 0.07-0.27 (e.g. Wallin et al., 2003; Suontama et al. 2012; Mantovani et al., 2010)

- To avoid bad character, stereotypes and behavior problems (having genetic background, e.g. Hemman et al. 2014).
- Same time also good health as a breeding goal is getting more weight: orthopedic status (h^2 0.06-0.14 Wallin et al., 2003; Jönsson et al., 2013) , insect bite sensitivity (0.05-0.14 Schurink et al., 2010; Grandinson et al., 2006); body condition score (0.37-0.44 Schurink et al., 2010; Mantovani et al., 2010)

- As a modern tool, *genomic selection* will be applied in health breeding
 - regarding traits of low heritability, genomic information can provide a tool for well-founded selection decisions early in life (Haberland et al., 2012)
- ... and *nutrigenomics* can find altering feeds to help horses with genetic diseases

- Some horse owners may also want to put more weight on aesthetic traits and colour and markings (value of the horse)

France: Scenarios of horse sector

(Jez et al. 2013)

- Everyone on horseback (1)
- The high society horse (2)
- The civic horse (3)
- The companion horse (4)

1. Everyone on horseback

- Horses are used for recreative activities
- Strong segmentaion between leasure activities/sports/racing
- Breeding of horses on grassland areas in rural areas
- Population +++

2. The high society horse

- Specialization in high-performing sports/racing horses
- The horse is a sign of distinction
- Less horse activities on rural areas
- Population - - -

3. The civic horse

- The horse encourages social contacts and plays role in community building
- Horses are bred and used for different and specific uses
- Activities are strongly developed on projects, local cultures
- Preservation of local breeds, use of horses for various purposes
- Population +

4. The companion horse

- emotional relationship comes first
- Breeding based on "personal feelings" driven e.g. by aesthetic characters, temperament etc.
- Horses distributed to rural and peri-urban areas
- Preservation of breeds
- Population -

Result:

- Horse economy that focuses on horse sports/racing and breeding of sport horses leads to increased number of horses (smaller population size), decreased the horse industry and the impact of horse sector in the society (Scenario 2)
- Horse economy that contributes new horse economy and multipurpose use of horses leads to increased horse industry and increased impact of horse sector in the society

Horse breeding is global – are we ready

- Horse breeding is international and global, because markets are global
- This means global and common aims and goals
- But are horse breeders aware of this?
- There are still lot of national stud books and evaluation systems of “the global breeds”

- Breeding evaluation should be common and based on common rules and aims
- What about native/national breeds: responsibility of breeding; avoiding of inbreeding in small populations; health and soundness in close breeding of relatives (crossbreeding?)