Development of genomic tools for horses and their potential impact on the equine sector

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Genomic selection and other services relying on genomic data are of major interest for horse breeding. Similar to other livestock species with rather long generation intervals and larger number of challenging breeding goal traits, time intervals between definition of new traits, routine implementation and effects becoming visible in the population used to be long in the horse. At young age, when major decisions are made, reliable information on important breeding goal traits is usually sparse in the traditional system, so wider availability of genomic tools implies enormous potential for improved decision making in breeding and management. Driven by the general technological development, costs per genotype and individual genetic markers have decreased substantially, which has facilitated initiatives for strengthening the genomic tool set for horses. However, challenges remain regarding assembly of large enough amounts of high-quality phenotypic plus genotypic data to, for example, set up reliable genomic evaluation systems. Internationality of horse breeding, genetic similarities within breed groups and reasonably overlapping breeding goals enable the equine sector to collaborate on different levels. In connection with developing a new genome-wide single nucleotide polymorphism (SNP) genotyping array, partnerships across practice and science have already proved of value. Worldwide mostly unrestricted accessibility and support of a wide range of applications for breed management, support of selection decisions and research have become crucial quality criteria of genomic tools also for horses, helping to exploit obvious advantages of collaborative over individual activities. The already achieved level of development of genomic tools for horses allows interested studbooks to benefit from openness towards joining forces, e.g. for powerful infrastructure and optimum usage of data, and exchange on how to use the new technologies and genomically enhanced routines in their breeding programs. Structural changes imply that freeing resources while providing strong services to fulfill expectations of breeders, owners, and riders may continue to increase in importance for long-term success of organizations. Through motivating more international and interdisciplinary collaboration in equine practice and science, the impact of easier access to genomic tools for horses can therefore be strong and positive.