The analysis of livestock behaviour to concomitantly improve health and performance

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Selective breeding for high performance has negative repercussions on functional traits but such consequences remain lowly quantified. In pig and rabbit populations, the recording of health and welfare traits is limited. So, few genetic correlations between performance and health have been estimated. With the development of new technology, the automatic and standardised recording of livestock behaviour at large scale could be accessible in the future. Therefore, we investigate the possibility to use sensors in an extended period of time to detect perturbations in animal behaviour as an indicator of health and eventually welfare problems. This can be done by analysing changes in activity patterns at the individual or population level, by comparing several records of the same individual spaced or by comparing activity patterns between individuals at one point in time so as to identify patterns that deviate from the normal pattern. We use different sensors to record sow postural activity and assess associations with identified health problems This approach should enable us to establish connections between behaviour, sow health and piglet survival. In addition, a large concern on reducing the prevalence of tail-biting leads us to consider breeding against this damaging behaviour with use of a genetic strategy. We also quantified changes in maternal and progeny behaviour in response to the genetic improvement of maternal traits in both pig and rabbit species. Associations with progeny survival and growth were analysed. Insights into the genetic determinism of resilience that is related to animal capacity of adaptation to the diversity of systems of production are also considered as a mean for improved breeding.