Burning issues in biodiversity 2: fitter livestock farms from better gene banks?

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Animal gene banks are an investment for countries and research institutions as well as an asset for the livestock sector. A better knowledge of these collections is key to stimulate their use. Since information about gene bank collections is often hard to find for a breeder, the IMAGE H2020 project is developing a web portal to connect all data pertaining to gene bank collections. Unfortunately, data on gene bank collections are scarce, except for cattle. IMAGE is producing molecular data with the aim to correlate them with adaptation or specific phenotypic traits of breeds being present in gene banks, but it does not focus on phenotyping, except for semen. Cooperation between EU-funded projects on livestock is supported by the Common Dissemination Booster dedicated to fitter animal farms. This 'CDB' gathers GenTORE, FEED-A-Gene, SAPHIR, GplusE, SmartCow and IMAGE projects. This session will feature results and approaches of these projects that could be used to better document gene bank collections. The SmartCow infrastructure project is devoted to phenotyping: animals with original phenotypes would be a target for gene bank collection, and resources from gene banks could be used to produce animals from past genotypes to be compared with current ones. IMAGE is also using time series of gene bank collections to identify selection signatures in a cattle breed. GplusE developed mid-infrared milk analysis based technologies that could be used in different ways to add value to gene banks. FEED-A-GENE is identifying criteria and populations related to a better feed efficiency in pigs and chickens fed alternative feedstuffs. GenTORE will illustrate impacts of geoclimatic classes and farm type (organic or conventional) on economic resilience of dairy farms. Association between environmental variation and genetic diversity will be illustrated by IMAGE with a landscape genetics approach in sheep. Cooperation between these projects should increase our knowledge of phenotype-genotype relationships. Refined characterization of gene bank samples would improve the prediction of animal performance and enhance the complementarity between gene banking strategies and management of on-farm populations. This approach could then be disseminated in training programs of IMAGE.