Smarter

SMAll RuminanTs breeding for Efficiency and Resilience

Smarter H2020 project (2018-2022)

Objective: study how genetic selection can help to increase resilience and efficiency (R&E) in small ruminants (sheep and goats) in their rearing environments, across a range of diverse environments and production systems,
and make their raising more sustainable.

Resilience and efficiency traits studied in Smarter

Resilience: health and welfare, disease resistance, longevity, fertility, lamb vigor, survival, robustness

Efficiency: food efficiency, resource allocation, microbiota, gas emissions

Tradeoff between R&E traits

Main goals

- To identify new traits to select for R&E, and low-cost predictors of these traits
- To develop new methods to select R&E suitable for on-farm implementation
- To share genetic and genomic information among countries for more efficient breeding programs, and impulse international cooperation in evaluation of small ruminants
- To define R&E selection objectives taking account of the diversity of breeds, systems and environments
- To advise on the benefits of breeding for improved R&E at the farm level

Expected outcomes

- Reducing the environmental impact of the farming systems
- Improving their socioeconomic sustainability and the eco-system services they provide
- Increasing resilience of livestock production while securing productivity
- Providing predictors of R&E suitable for on farm implementation
- Using resilience as lever to improve animal health and reduce drug-use
- Generating across-country genetic and genomic evaluations by pooling genomic data and creating new shared reference populations in sheep and goat
- Creating an international initiative to facilitate international evaluations in small ruminants
- Promoting diversity-rich livestock breeding and underutilized breeds
- Adapting breeding schemes to the different farming types
- Estimating the costs and benefits of the new selection strategies at farm level
- Training academics, breeders and farmers with the new tools generated by Smarter
- Exploring how better adaptation to local conditions improves animal wellbeing

Key facts and impact

- Multi-actor initiative, **13 countries, 27 partners** (50% academic / 50% non-academic)
- **46 breeds, 40 breeding bodies, 5,000 farmers**
- **1,5 million** sheep and goats (20% of EU's livestock and impact on 70%)
- Stakeholder partners adopting the **tools and solutions** developed
- Massive use of shared data: **500,000 phenotyped / 70,000 genotyped animals** on common standards
- **Non-European partners/stakeholders**: China, Canada, USA, Uruguay, Australia and New Zealand
- **Smarter** received €7 mln funding for 4 years from the EU Horizon 2020 R&I program

Smarter partners

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Consortium and contacts

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