Session 4.1: Climate Change Mitigation Strategies.

S04.O-01

THE SPANISH STRATEGY TO REDUCE METHANE EMISSIONS THROUGH BREEDING IN DAIRY CATTLE

Oscar Gonzalez-Recio[1], Javier López-Paredes[2], Aser García-Rodríguez[3].

[1]INIA, Madrid, Spain; [2]CONAFE, Valdemoro, Spain; [3]NEIKER, Arkaute, Spain.

Food security and food availability have increased in the last decades thanks to more efficient agriculture and livestock sectors, and we are able to feed an exponentially growing human population and their pets. This growth encompassed an increase in greenhouse gas emissions from agriculture, in particular from enteric methane. It was easy to check that the turning point of the increase in methane emissions from livestock matches with the growth in human population around mid-20th Century[i]. However, it comes with a counterpart in greenhouse gas (GHG) emissions. In global terms, agriculture and livestock contribute with 4-17% of total anthropogenic GHG, except in Asia, where they represent 44%. Among these GHG, methane is an important gas with a warming potential between 28-34 times that of carbon dioxide (CO2) over a 100-years period, but with a short-life in the atmosphere between 12-20 years. Therefore, reducing methane emission is an efficient strategy to reduce climate warming in the short term.
Therefore, although the global contribution of livestock is not large, there is interest on reducing global GHG emission from livestock sector to contribute to a more sustainable food production system. Spain has been recording individual methane production since 2018. The recording was first implemented within a research project framework. In 2020, the Spanish Holstein Association took the lead, and methane has been routinely recorded with NIR detectors in commercial farms with automatic milking systems. This has provided millions of individual measurements of methane that were processed to extract 9,098 weekly averages from 2,772 cows. These data allowed to estimate heritability (0.12-0.20) and genetic correlations with productive, conformation and efficiency traits, as well as with the microbiota composition.
Official genomic breeding values are expected to be officially released this year to fully implement genomic selection for a more sustainable dairy cattle with lower methane emissions.