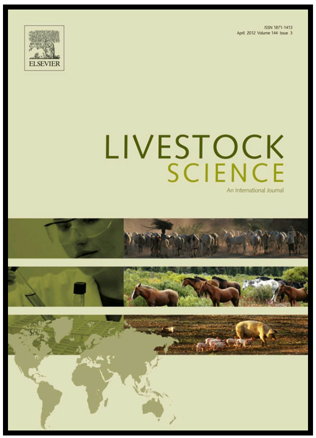

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Impact of breed on the rumen microbial community composition and methane emission of Holstein Friesian and Belgian Blue heifers

Thijs De Mulder[a*], Nico Peiren[a], Leen Vandaele[a], Tom Ruttink[b], Sam De Campeneere[a], Tom Van de Wiele[c], Karen Goossens[a]

[a]Flanders Research Institute for Agriculture, Fisheries and Food (ILVO), Animal Science Unit, Scheldeweg 68, 9090 Melle, Belgium.

[b]Flanders Research Institute for Agriculture, Fisheries and Food (ILVO), Plant Science Unit, Caritasstraat 39, 9090 Melle, Belgium.

[c]Center for Microbial Ecology and Technology (CMET), Ghent University, Coupure Links 653, 9000 Ghent, Belgium.

*Corresponding author: Thijs De Mulder , ILVO – Animal Science Unit, Scheldeweg 68, 9090 Melle, Belgium. Phone: +32 9 272 26 64. E-mail: thijs.demulder@ilvo.vlaanderen.be

Abstract

Intensive dairy and beef cattle farming contribute significantly to the emissions of greenhouse gases from Belgian agriculture. Two main breeds dominate the Belgian cattle livestock; Holstein-Friesian (HF) dairy cattle and double-muscled Belgian Blue (DMBB) beef cattle. The aim of our study was to quantify and compare methane emissions of both breeds under conditions of equal diet composition, environment and physiological stage (using heifers of the same age). The methanogen and bacterial communities were thoroughly investigated using metabarcoding to correlate taxonomic compositions with breed and methane emission levels. HF heifers had significantly higher absolute enteric methane emissions as compared to DMBB heifers. Methane production was positively correlated to the dry matter intake (DMI). Due to the