Genetic relationship between young bulls' feed intake and GHG emissions measured on cows' heat tolerance measures in Italian Holstein cows.

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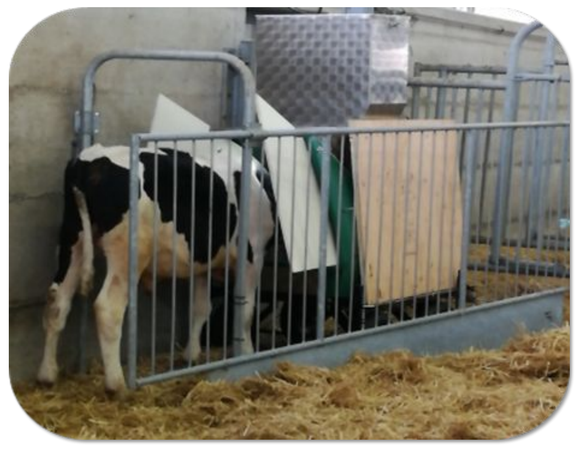
Aim

Aim of this study was to analyze the relationship between breeding values for feed efficiency and greenhouse gas (GHG) emissions and breeding values for heat tolerance (IHT) in young Italian Holstein bulls.



Material and Methods

Feed intake measures were obtained using the Roughage Intake Control system (RIC; Hokofarm Group, Marknesse, The Netherlands) while GHG emission traits were derived from measures taken using the GreenFeed (C-Lock Inc., Rapid City, SD, USA).
Phenotypic data was provided for on 218 Holstein bulls between the age of 171 and 541 days. All bulls were genotyped using various SNP chips resulting in 69,127 SNP after imputation.
The Italian Heat Tolerance Index (IHT) for daily milk production was estimated using a 'genotype by environment' approach and the temperature-humidity index (THI) considered the interaction with the animal. A single-trait repeatability linear animal model, considering a pre-estimated heritability of 0,16,was used.

Results

Results showed a weak relationship between IHT and CO_2 emissions (-0.17) and **CH_4 emissions** (**-0.05**). Results showed a negligible relationship between IHT and **feed intake** measures, with all correlations being **close to zero**.
Results will have to be confirmed with the estimation of genetic parameters, i.e. assembling a dataset that would allow the estimation of the genetic correlation between feed efficiency and GHG emissions traits measured on the bulls and heat tolerance measured on their half-sisters.