

Phenotypic Correlations between Enteric Methane Emissions and Feeding Behaviour Traits in Beef Cattle

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Background

Animal breeding for methane mitigation offers the unique potential to make cumulative and permanent improvements, setting it apart from nutritional or management strategies that require ongoing investment. Internationally multiple phenotypes for enteric methane emissions have been defined, however the complexity of the relationship between methane and feed intake and ultimately animal performance, has meant there has been little consensus on which methane definition should be used in breeding goals.

Aims

Previous enteric methane research focused on traditional methane metrics like yield, intensity and residual emissions, leaving a gap in understanding how alternative traits, such as feeding behaviour, impact methane emissions. This study will determine the phenotypic relationship between feeding behaviour traits with enteric methane emissions in growing beef cattle.

Future Research Plans

Phenotypic data on >1000 beef cattle between 2018 and 2023 as part of the ICBF progeny performance testing will be available for analysis. Available phenotypes include methane emissions measures, feed intake, liveweight measurements, ultrasound muscle measures, and carcass performance. Feeding behaviour records including eating time per day, number of eating events, and event feed intake are also available. Phenotypic and genetic correlations will be estimated among all traits using bivariate animal linear mixed models.

Proposed Significance to the Field of Research

The reduction of methane emissions whilst also improving animal feed efficiency is essential to improve the sustainability of livestock production systems. Further understanding the genetic control of methane and its relationship with performance measures is necessary to facilitate its inclusion in the national breeding goal.