# REVIEW OF ZOOTECHNICAL PARAMETERS USED IN THE MANAGEMENT OF GHG EMISSIONS AND ATMOSPHERIC POLLUTANTS ASSOCIATED WITH BEEF CATTLE FARM

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***Abstract***

*Beef cattle production represents an important source of food security, but at the same time a major source of greenhouse gases (GHG) and atmospheric pollutants, primarily methane ($CH_4$) from enteric fermentation, nitrous oxide ($N_2O$) from manure management and soils, and ammonia ($NH_3$) as a precursor of secondary particulate matter. Accurate quantification and mitigation of these emissions require a comprehensive evaluation of zootechnical parameters that directly influence emission factors and farm-level inventories. This review examines core parameters including dry matter intake, feed conversion ratio, average daily gain, reproductive performance, and herd structure, as well as manure output and management practices. The analysis highlights the variability induced by breed-specific characteristics, production systems, nutritional strategies, microclimate parameters and discusses methodological approaches used for integrating zootechnical indicators into emission models and prognosis frameworks. Current evidence emphasizes the critical role of standardized data collection and harmonized modeling protocols in reducing uncertainties in emission estimates. Strengthening the linkage between zootechnical performance metrics and environmental impact assessment is essential for the development of science-based mitigation practices and for supporting policy frameworks targeting sustainable beef cattle production.*

***Key words:*** *GHG emissions, beef cattle, atmospheric pollutants*