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The effect of animal forage type and nutrient composition on methane mitigation: systematic review and meta-analysis protocol

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Abstract

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Background: Several studies employing the effect of animal forage types and nutrient composition on the production of methane have reported heterogeneous outcomes, necessitating a systematic review to provide an exhaustive summary of current evidence.

Objective: The objective of this review is to pool out the available evidence on the effect of animal forage type and nutrient composition on methane production in the case of tropical animal forage.

Methods: Searches will be conducted in Science-Direct, Medline/PubMed, Scopus, Google Scholar, and Cochrane Library databases for relevant studies published through April 2024. Studies on the effects of forage types and nutrient composition on the production of methane in the case of tropical forage will be included. The outcome of interest is the amount of methane produced per type of forage that has been explored by experimental studies. The included studies will be critically appraised by independent reviewers. The extracted data will include details about the interventions, populations, study methods, and outcomes of significance to the review question. Effect sizes will be expressed as either odds ratios or standardised mean differences, and their 95 % confidence intervals will be calculated for analysis. Subgroup analysis will be conducted on both the type of animal forage and the types of animals in the intervention.

Discussion: This review and meta-analysis will systematically explore and integrate the evidence available on the effect of animal forage and nutrient composition on the level of methane production. In this review, information about the potential impact of methane on the global climate will be gathered and summarised. The findings of the review will be utilised for future studies to mitigate methane emissions and climate change. It helps animal nutrition professionals understand the importance of animal forage and nutrient composition in mitigating methane emissions.

Keywords: Animal, Emission, forage, Methane

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