Comments received on Methodology for the Reduction of Enteric Methane Emissions from Ruminants through the Use of 100% Natural Feed Supplement

This comment was received via email by the VCS.

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Chapter	Text Passage	Comment
Title	The reduction of enteric methane emissions from ruminants through the use of 100% natural feed supplement	Not all of the animals in *Table 5* are ruminants. This is confusing and in addition the fermentation process is different for each group of animals. Therefore, the *enteric emission reduction factor* might be different and should be measured for each group of animals.
2	This methodology focuses on application of natural plant-based feed supplements, which along with inhibiting methanogenesis, may also have advantageous effects on rumen bacteria, thereby improving fermentation in the rumen.	The chemical process of the methanogenesis requires energy. With a reduced methanogenesis, the animals have more energy at their disposal, which in many cases leads to an increase in milk yield or meat production. Therefore, not only the direct inhibition shall be accountable but also these side-effects if the change can be traced back (shall be part of an in-vivo study) to the application of the feed supplement.
4	1. Livestock producers must feed their animals a natural feed supplement which reduces enteric CH4 emissions by direct inhibition of methanogens in the rumen.	
4	2a. The active ingredients of the feed supplement must be 100% natural plant-based and non-GMO.	The exclusion of non-GMO makes sense. But we suggest to add *nature-identical* ingredients (they are the chemical equivalent of natural ingredients, but chemically synthesized rather than being extracted from source materials) to the list. Otherwise, we will have two identical Methodologies for the same cause in the near future.
4	2d. The application of the feed supplement must demonstrate a minimum enteric CH4 reduction factor of 17% to ensure substantial impact.	There is no scientific reason to have such an arbitrary default value and a substantial impact can be achieved with a 5% reduction as well. It is more important that in addition to the VCS Standard guidelines (4.1.7 and 4.5.6), the effect or the reduction factor has been proven not only by an in-vitro but also by an **in-vivo** study according to *EFSA Guidelines* (or similar) for animal trials and that the results are published in a peer-reviewed paper.

5	Feed supplements that inhibit rumen methanogenesis cannot influence the ratio of enteric methane emissions in exhaled air compared to methane emissions in extracted feces due to the ruminants' physiology.	Reference? The substrate, which has not been converted into methane during digestion, can theoretically lead to increased methane emissions during subsequent manure storage (especially when stored in liquid form) (e.g. Külling et al., 2002). Møller et al. (2014) were able to show that the addition of certain supplements reduces methane emissions from digestion, but at the same time increases the potential for methane emissions from manure management.
8	Emission Reduction Calculation	A scientific measured (in-vivo, according to e.g. EFSA Guidelines and Peer-Reviewed) default *enteric emission reduction factor* needs to be available. Otherwise, the scientific evidence is not given. Based on that, we suggest to simplify the decision tree: Option 1: Performing direct enteric methane measurements to estimate the production per animal group per day. Option 2: Calculation of Baseline Emission according to the newest applicable National Greenhouse Gas Inventory (Tier 1 to 3) for all animal groups. If accurate on-site data for *GE (Gross Energy Intake)* and / or *Ym (Conversion factor)* is available, they can be used instead of the default values used in the *National Greenhouse Gas Inventory* (Option 1).
8	Option 1 calculates the enteric emission factor for each animal group by performing direct enteric methane measurements to estimate the production per animal group per day (enteric emissions production factor). The enteric emissions production factor for each animal group measured by the chosen technology must be available at each validation and verification.	There is some additional information in the Annex, but more specifications on the level of detail is needed. Such as: - time duration of the measurements (to avoid e.g. diurnal, postprandial or seasonal fluctuations) - sample size (how many animals of each group) - 3rd party verification or even a publication should be considered
8	Option 3 is only suitable for animal species listed in Table 6	Wrong Reference. It is *Table 5*.
8	Enteric CH4 emissions factor for each animal in the group j during the monitoring period (country or regional specific factors or Table 6), (kg CH4 head-1 day-1)	
8	Table 5	According to *Equation 4*, the data in *Table 5* has to be converted into values per day. How is this conversion done? If divided by constant (365 days), then seasonal fluctuation is neglected. This is problematic if not a complete year is monitored.
	Table 5	Not all of the animals in *Table 5* are ruminants. The idea of the Methodology is to reduce CH4 emissions from ruminants. *Table 5* should be adapted.


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