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Climate Neutral Farms

ClieNFarms EIP-AGRI Practice Abstracts

Double-purpose feeding strategy, by using local oilseeds by-products in order to mitigate GHG small ruminants' diets while gaining side-advantages

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Increasing the proportion of dietary lipids has been reported to decrease the GHG emissions in ruminants (Alvarez-Hess et al, 2019; Vargas et al 2020). On the other hand, this feeding strategy is more specific to high productive animals, with high energy requirements and is less used within low-input production systems.

A common feed resource in some areas are the cakes resulting from the mechanical extraction of oils from various oilseeds, which contains various amounts of residual lipids, depending on the efficiency of the mechanical extraction. On the other hand, the farmers are reluctant using this feed resource, especially in case of minor oilseeds, which may contain active substances / plant secondary metabolites that can influence rumen metabolism of the milk production. On the other hand, addition of certain lipids in the diets is known to have the potential of altering the milk fatty acids profile.

Also, such feed resources are available on the feedstuffs market or can be cultivated by the farmers themselves. Situations where the oil processors retain the oils and deliver the cakes back to the farmers are not uncommon.

In this context there is a potential of promoting the use of oilseed cakes as a tool to reduce GHG emissions, based on the following drivers:

- they are available locally;
- they can replace a part of the dietary starch, thus compensating partly for their higher costs
- they have the capacity to induce beneficial changes in milk composition, which is a base for the production of premium dairy products (which can be valorised in case of short-chain production systems).

The solution has to be tested in order to demonstrate the effects on the milk composition and the fact that the additional costs implied by the new feeding strategy can be recovered. It is a matter of optimisation between costs, GHG mitigation and targeted changes in fatty acids composition. A potential barrier is the rumen biohydrogenation of the unsaturated fatty acids and the less known side-effects of the use of minor oilseeds. Also, a too high proportion of dietary fats may impair the rumen fermentations.

Application may lead to a reduction of GHG emissions from rumen with 10-15% (Patra, 2014).



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