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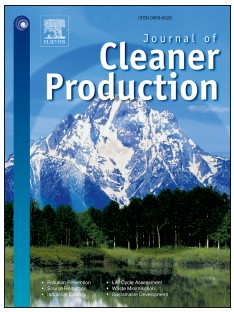

Carbon footprint of milk from sheep farming systems in northern Spain including soil carbon sequestration in grasslands

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Carbon footprint of milk from sheep farming systems in northern Spain including soil carbon sequestration in grasslands

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Abstract

The link between climate change and livestock production has made carbon footprint based on life cycle assessment a world-wide indicator to assess and communicate the amount of greenhouse gases emitted per unit of product. Nevertheless, the majority of studies have not included soil carbon sequestration in the carbon footprint calculations. Especially in grasslands, soil carbon sequestration might be a potential sink to mitigate greenhouse gas emissions in the livestock sector. However, there is no commonly accepted methodology on how to include soil carbon sequestration in carbon footprint calculations. In this study, the carbon footprint of sheep milk was estimated from 12 farms in Northern Spain. Before taken into account contribution from soil carbon sequestration in the calculation, the carbon footprint values varied from 2.0 to 5.2 kg CO_2 eq. per kg Fat and Protein Corrected Milk (FPCM). Milk from semi-intensive systems with foreign breeds kept indoors had significantly lower carbon footprint than milk from semi-extensive systems with local breeds and grazing in mountain uplands during summer. However, no difference was found in the carbon footprint of sheep milk from different systems and breeds when soil