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Influence of carbon fixation on the mitigation of greenhouse gas emissions from livestock activities in Italy and the achievement of carbon neutrality

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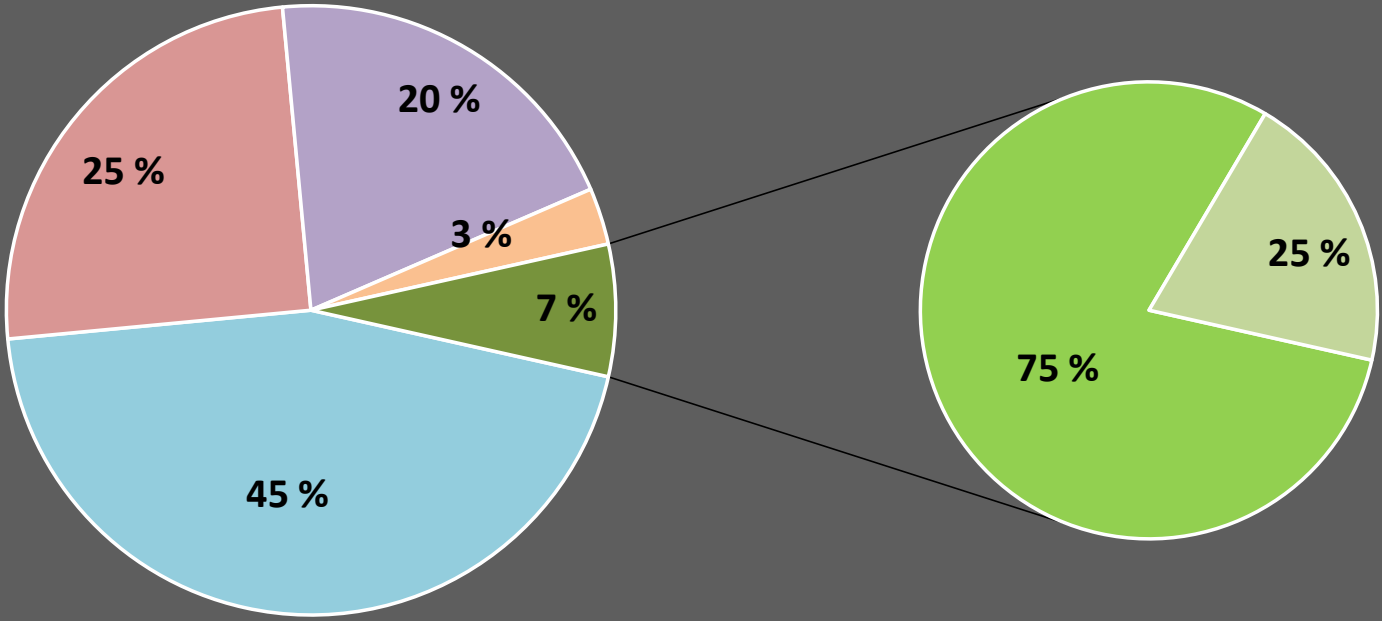
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World emissions by sector, ISPRA 2019



- Energy production
- Transportation
- Industrial processes
- Waste
- Livestock
- Agriculture

CO₂ emissions due to manure in all the different phases of management in Italy in 2018

	Manure storage (t CO ₂ eq)	Manure spreading (t CO ₂ eq)	Manure left to pasture (t CO ₂ eq)	Tot. CO ₂ eq (t)
Cattle	2.684.183	1.431.753	1.240.064	5.356.000
Buffaloes	208.204	83.229	0	291.433
Sheep	71.736	96.848	655.702	824.286
Goats	4.447	4.956	118.931	128.334
Pigs	1.559.966	473.512	0	2.033.478
Poultry	641.128	806.472	28.080	1.475.680
			Tot.	10.109.211

In Italy in 2018 the management of farmed animal manure produced approximately 10.100.000 tons of carbon dioxide equivalent

Table - 2. Rumen emissions of CH₄, transformed into CO₂eq and CO₂ emitted with the respiration of ruminants and non-ruminants reared in Italy in 2018

	Heads standard adults	Rumenary CH₄ (t)	CH₄ converted into CO₂ eq (t)	Exhaled CO₂ (t)
Total cattle	4.424.002	446.583	10.717.982	16.730.213
Total buffaloes	380.157	22.044	529.046	1.437.638
Totale sheep	897.395	57.724	1.385.364	3.393.671
Totale goats	123.282	4.961	119.062	466.214
Tot. ruminants	5.824.836	531.312	12.751.454	22.027.735
Totale suini	5.763.277	-	-	5.216.919
Totale avicoli	148.349.000	-	-	10.845.795
		Tot.	12.751.454	38.090.449

Ruminants reared in Italy in 2018 emitted methane rumen corresponding to about 12.700.000 tons of carbon dioxide equivalent and about 38.000.000 tons of exhaled carbon dioxide

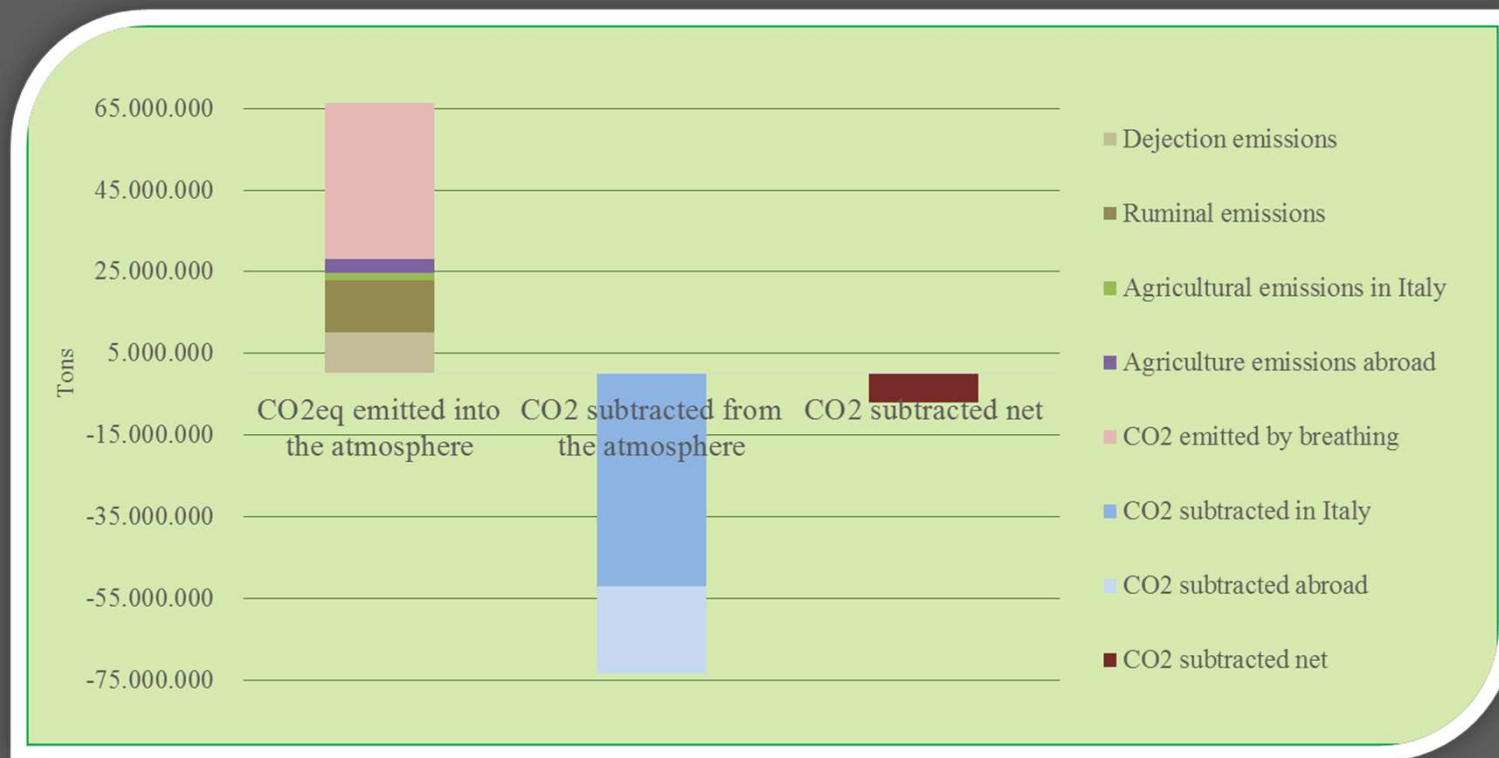


* Overall, all the plants grown to feed animals reared in Italy help to remove approximately 73.000.000 t of carbon dioxide from the atmosphere.

* All the processes and practices involved for the cultivation of the same plants involve an emission of about 6.000.000 tons of carbon dioxide equivalent

* Net of emissions, plants grown for livestock feed have a positive greenhouse gas balance of approximately 67.000.000 tons of carbon dioxide subtracted

Net, the subtracted CO2 is about **10%** more than the total emissions



In conclusion:

- * From the results that emerged, it can be stated that animal husbandry, excluding activities from the stable onwards, such as the transport and processing of products such as meat and milk, does not contribute to increasing GHG emissions into the atmosphere, but decreases them, by approximately 10%.
- * Biogenic carbon goes through a cycle while fossil carbon is unidirectional, from bottom to top in the air. The carbon dioxide produced by fossil fuels is a reserve gas, which means that it accumulates in the atmosphere and is not part of a cycle.
- * This type of balance should therefore be considered in all methods of calculating the carbon footprint for products of animal origin. In this way, the environmental impacts of products of animal origin would be more correct.

Grazie per l'attenzione

The complete work:

<https://academic.oup.com/tas/article/5/3/txab042/6159336?login=false#>

Translational Animal Science, Volume 5, Issue 3, July 2021