

Animal Husbandry does not Contribute to Increasing Greenhouse Gases in the Atmosphere

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Short Communication

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INTRODUCTION

Description of the topic and of the work carried out

The study evaluated the amount of CO₂ produced by animals and the equivalent resulting from rumen methane together with that fixed in the plants used to feed farm animals. Statistical data revealed the quantity of fodder (ISTAT) and cereals (ASSALZOO), produced in our country and abroad, used in Italy^[1,2]. The emissions due to respiration and those relating to rumen fermentation and manure of all heads of species reared in Italy, their

management and spreading, including manure released by grazing animals were quantified. The carbon dioxide (CO₂) fixed by the main crops of zootechnical interest was then calculated, through the "Calvin-Benson cycle", which was subtracted from the atmosphere.

From the quantity produced by forages and cereals, the vegetative biomass was traced through the various harvest indices, also calculating the hypogean part left on the ground as crop residue. In addition, the emissions that come from the cultivation of plant species for soil processing, the production of fertilizers and pesticides, electricity, fuels and the operation of machines were taken into account.

From the processing carried out, it emerges that in Italy the CO₂ fixed by plants, produced both in Italy and abroad, destined for animal feed is about 10% higher than the equivalent emitted by farmed animals and zootechnical activities related. It follows that, contrary to what many media claim, farmed animals contribute to reducing CO₂ in the atmosphere.

From the results that emerged, it can be stated that animal husbandry in Italy, excluding activities related to the transport and processing of products such as meat and milk, does not contribute to the increase of greenhouse gas emissions into the atmosphere, but decreases them, even if only slightly because the balance between the quantities of CO₂eq produced by livestock and those fixed in the forage used for their feeding is clearly (+10%) in favor of the latter. If feed for livestock is not imported, it would be enough to increase the area used for growing alfalfa by 2.6 times to equal the equivalent of CO₂ produced by farms and those fixed in forage.

The contribution was enriched by the examination of a medium-sized company (150 dairy cows) which showed that the sum of CO₂ stored by forage produced in Italy and abroad provides a value 6% higher than that produced by zootechnical activity.

From the processed data, it emerges, therefore, that in Italy the CO₂ fixed and subtracted from the atmosphere by forage crops grown and imported to feed farmed animals, neutralizes the sum of CO₂eq emitted for agricultural processing, rumen fermentation and the management of manure. Livestock activities, without taking into account the transport and secondary processing of milk, meat, etc. it can be considered balanced and therefore its influence should be appropriately corrected in the evaluation of greenhouse gas emissions. The result obtained is net of all emissions which include agricultural processes and those relating to the production of fertilizers and pesticides, electricity, fuel and the operation of machinery. In this way it was possible to calculate the net contribution thanks to the subtraction of carbon dioxide from forage and cereal crops in the livestock sector.

Scientific interest of the results obtained and innovativeness of the article

The results obtained are all the more interesting if we consider that the half-life of carbon dioxide is greater than that of methane and nitrous oxide. Consequently, to mitigate the greenhouse effect it is more efficient in terms of timeliness, especially if it is admitted that the CO₂ produced by different sources (coal and oil) lasts longer in the atmosphere than methane and that produced by industrial sources. It is not recycled but is added to that already present in the atmosphere. The results of this study are in agreement with that of Chiriaco and Valentini, which show that the agricultural sector, on the one hand, generates greenhouse gas emissions which, however, can be reabsorbed, especially with appropriate sustainable management systems, thanks to the activity of photosynthesis

and soil biodiversity which represent an important carbon sink that allows to reach carbon neutrality^[3]. All other sectors (energy, construction, transport) can undertake to reduce their emissions and gradually reduce them to zero, but they do not have the ability to remove the excess CO₂ already present in the atmosphere. In fact, literature defines these gases as “stock gases” because they always add up. Methane has a shorter life span: about 10 years. This means that after a decade it is gone. A process is activated and this really makes methane very different from other gases - that destroys methane, called hydroxy-oxidation. At the rate at which it is emitted, it is destroyed. This makes methane very different from other gases^[4-6].

CONCLUSION

Application effects and possible further development of the work carried out

We believe that this type of balance should be considered in all methods of calculating the carbon footprint of agricultural and animal products. In this way, the environmental impacts, in terms of carbon footprint, of these products would be more truthful. This method of calculation applied, could dispel many false myths and give transparency to consumers especially on the sustainability of products of animal origin.

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