BroilerNet Factsheet S1-c1-4

Transfer of spent litter to biogas plant

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Intro to Good Practice

This Good Practice (GP) aims to improve carbon neutrality and reduce the environmental footprint of broiler farming. Carbon neutrality is the balance between emitting carbon and absorbing carbon from the atmosphere.

The surveyed farm has been feeding spent litter for 9 years to an anaerobic digester for cogeneration of electricity, thus allowing the spent litter to be valorized and reducing methane emissions in its management, storage, and agronomic use.

Transferring spent litter to a biogas plant avoids outdoor storage until agronomic use, reducing odor, greenhouse gas emissions (GHG), and also the carbon footprint in term of CO_2eq per kg of meat produced.

Awareness of environmental impacts of broiler farming and the adoption of sustainable farming practices are key drivers to mitigating the negative impact of broiler farms on the environment.

Figure 1. Biogas plant.

Background & challenges

Becoming 'climate neutral' means reducing GHG emissions as much as possible, but it also means compensating for any remaining emissions. The decomposition of organic matter in litter releases gases such as methane (CH_4) and nitrous oxide (N_2O), both potent greenhouse gases.

In addition, the presence of ammonia (NH_3) in litter can contribute to the formation of fine particulate matter (PM 2,5) and reactive gases that can affect air quality and have adverse effects on human health and the environment.

However, achieving carbon neutrality can be a complex challenge for broiler farms due to the variety of factors involved in the different stages of production.

Transfer of spent litter to biogas plant

Additional information

- An increase in the number and distribution of biogas plants would allow for great adherence to this GP and the establishment of a take-back price for spent litter (it is currently free of charge) would provide even more incentive for farms to deliver their litter to anaerobic digesters for biogas production.
- Through the establishment of a cooperative company that receives and treats poultry litter on behalf of its members, it is possible to enhance this and, at the same time and with reference to the Nitrates Directive, reduce the farm's share of nitrogen due to lack of land.

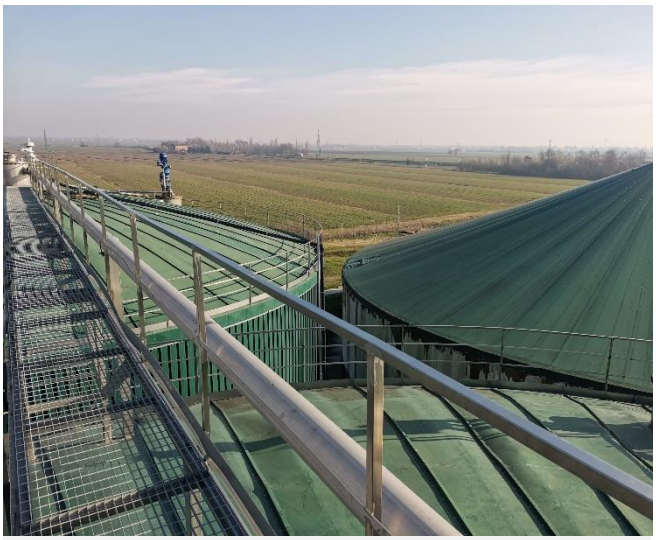

Figure 2. Biogas plant.

Benefits

One economic advantage is represented by the fact that, in the future, a minimum price will be paid for the litter by the owner of the anaerobic digester.

No additional costs are estimated for the adoption of this GP and no risk is likely to be associated with it.

Saving in the cost of managing spent litter for agronomic purposes (agricultural machinery, fuel, labor). Cost for transporting litter to the biogas plant are lower than those related to the transport to the land for agronomic spreading; economic saving of 14.000 €/year are estimated for a broiler farm producing about 600.000 broilers per year, compared to transport and spread of spent litter for agronomic use on the farmland.

Additional information

- The use of biogas plants offers numerous benefits, including the production of renewable energy, reduction of GHG emissions, and sustainable waste management, contributing overall to environmental and energy sustainability.
- Reducing GHG emissions in poultry farming is crucial for several reasons. These gases contribute to climate change and global warming, and some of them, such as methane, can contribute to the formation of tropospheric ozone, an air pollutant harmful to human health; especially for those living near intensive livestock farms.

Short video of a German energy plant making biogas from chicken spent litter and cow manure.

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