

GLOBAL WARMING POTENTIAL AND MITIGATION SCENARIOS WITH MANURE TREATMENT IN SWINE FARMS FROM SANTA CATARINA, BRAZIL

Rodrigo da Silveira Nicoloso*

**Embrapa Suínos e Aves - Brazil
rodrigo.nicoloso@embrapa.br*

Abstract: The Brazilian Low Carbon Agriculture (LCA) Plan promotes biodigestion and composting to mitigate 6.9 Tg CO₂e yr⁻¹ by 2020 or ~30% of the global warming potential (GWP) of animal manure as estimated for 2016 in the 2020's Brazilian GHG National Inventory. Here we present an inventory of GHG emissions and mitigation scenarios from manure management in swine farms from the State of Santa Catarina, which accounts for ~31% of Brazilian production. We collected the geolocation, number and category of housed animals and manure management technology used in all swine farms (n=8,380) licensed for operation by the Environmental Institute of Santa Catarina (IMA-SC). Manure production and excretion of volatile solid and nitrogen were calculated using regional standards. Methane (CH₄) and direct and indirect nitrous oxide (N₂O) emissions were calculated using default Tier 2 IPCC factors. The GWP of swine farms was 2.85 Tg CO₂e yr⁻¹ Statewide. Composting and biodigestion were used for manure treatment in 135 (1.61%) and 120 (1.43%) farms, respectively, decreasing GWP by 5.3% in comparison with a business as usual (BAU) scenario with manure stored in anaerobic lagoons (3.02 Tg CO₂e). The adoption of biodigestion for manure treatment in all large (n=506) and medium to large (n=3,049) swine farms could mitigate GWP by 23% and 59% in comparison with BAU. Further efforts should be employed to promote manure treatment to cope with the objectives of the LCA Plan.

Keywords: Biodigestion, composting, greenhouse gases, inventory, methane, nitrous oxide, soil.



Video presentation