NITRIFICATION POTENTIAL AND N_2O EMISSIONS ASSESSMENT FROM PROCESSED SLURRY UNDER CONTROLLED CONDITIONS.

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INTRODUCTION

Nitrification process in soil is involved in N cycling influencing the extent to which N can be lost from soil. As a potential N loss pathway, nitrification process and nitrifying microorganisms can be affected by N input derived through different amendments.

Objective

Characterize N_2O emissions and potential of soil nitrification following application of four types of organic fertilizers to grassland.

MATERIALS and METHODS

Application of 100 kg N ha^{-1}

- Cattle slurry
- Liquid fraction
- Solid fraction
- Compost

Climatic chamber (21°C)

Grassland
- Depth 7.5 cm
- Average of water content 26.7%

8 day

Nitrification potential (*Drury et al.*, 2008)

N_2O emissions (*Merino et al.*, 2020)

RESULTS

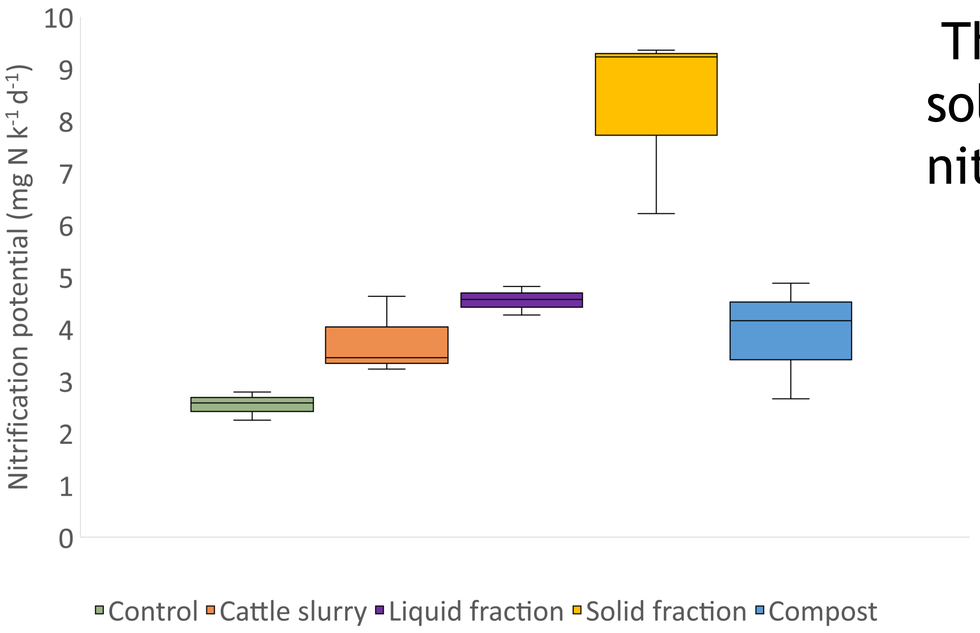

Figure 1. Nitrification potential on day 8 after fertilization.

The highest nitrification potential were observed in the solid fraction. All the other treatments presented a low nitrification potential close to 4 mg N kg^{-1} day^{-1}.

Compost application resulted in significantly lower N_2O emissions than the slurry and liquid fraction, with 21% and 26% respectively lower emission.

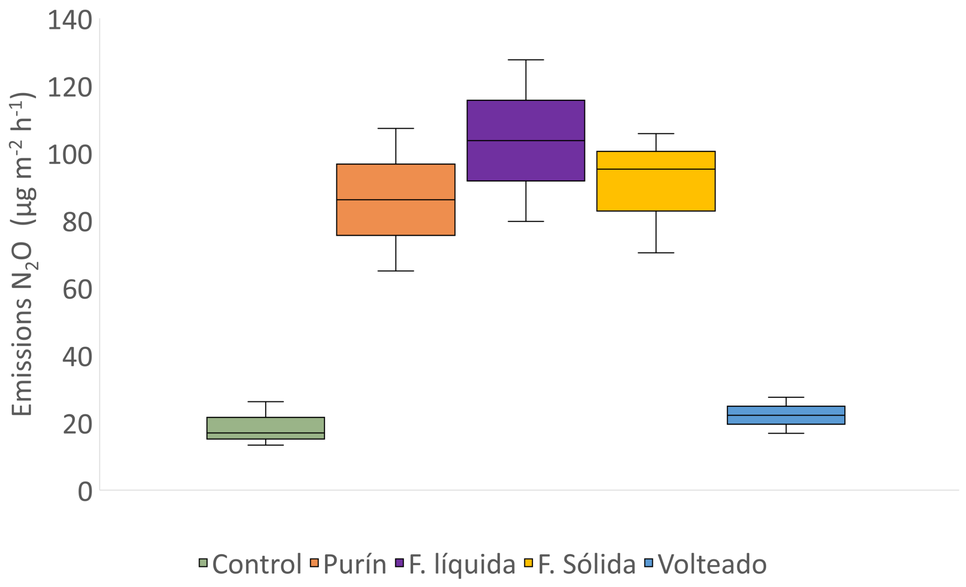

Figure 2. N_2O emissions on day 8 after fertilization.

CONCLUSION

Hence, the different nitrogen availability of the amendments can cause emissions to vary greatly.

Composted manure can be considered as a mitigation strategy to decrease N_2O emissions.

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