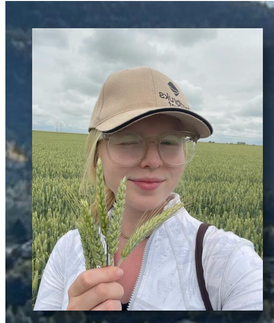

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# Nitrous oxide emissions in a long-term organic grass-clover ley system

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## AIM

The purpose of this study was to quantify $N_2O$-emissions from a grass-clover ley system and asses the impact of anaerobic digestion

## METHODS

The experiment was set up in 2011 in Tingvoll, Norway (Fig. 1&2), to study the long-term effects of anaerobically digested (AD) slurry compared to undigested slurry (US) on soil characteristics, crop yields, nitrogen use efficiency and $N_2O$-emissions. The experiment consists of 5 treatments: ADSL & USL (180 kg N/ha), ADSH & USH (220 kg N/ha), and control. In this study only ADSH, USH and control were studied. Gas samples were taken using gasmet and manual static chambers and analysed with gas chromatography. Four gas samples were taken per plot with 10-minute intervals (at 0, 10, 20 and 30 minutes) to be able to calculate gas fluxes.

Figure 2. Static manual gas chambers

## PRELIMINARY RESULTS & DISCUSSION

The results show that in spring and summer USH has the higher emissions of the treatments. During these seasons there is also less variation between both plots and treatments. During the summer months (June-September) the control treatment had the highest emissions, especially in mid-July. One reason for this can be that the soil temperature was higher in the control treatment and that temperature had a greater impact on emissions than treatment over a certain temperature.

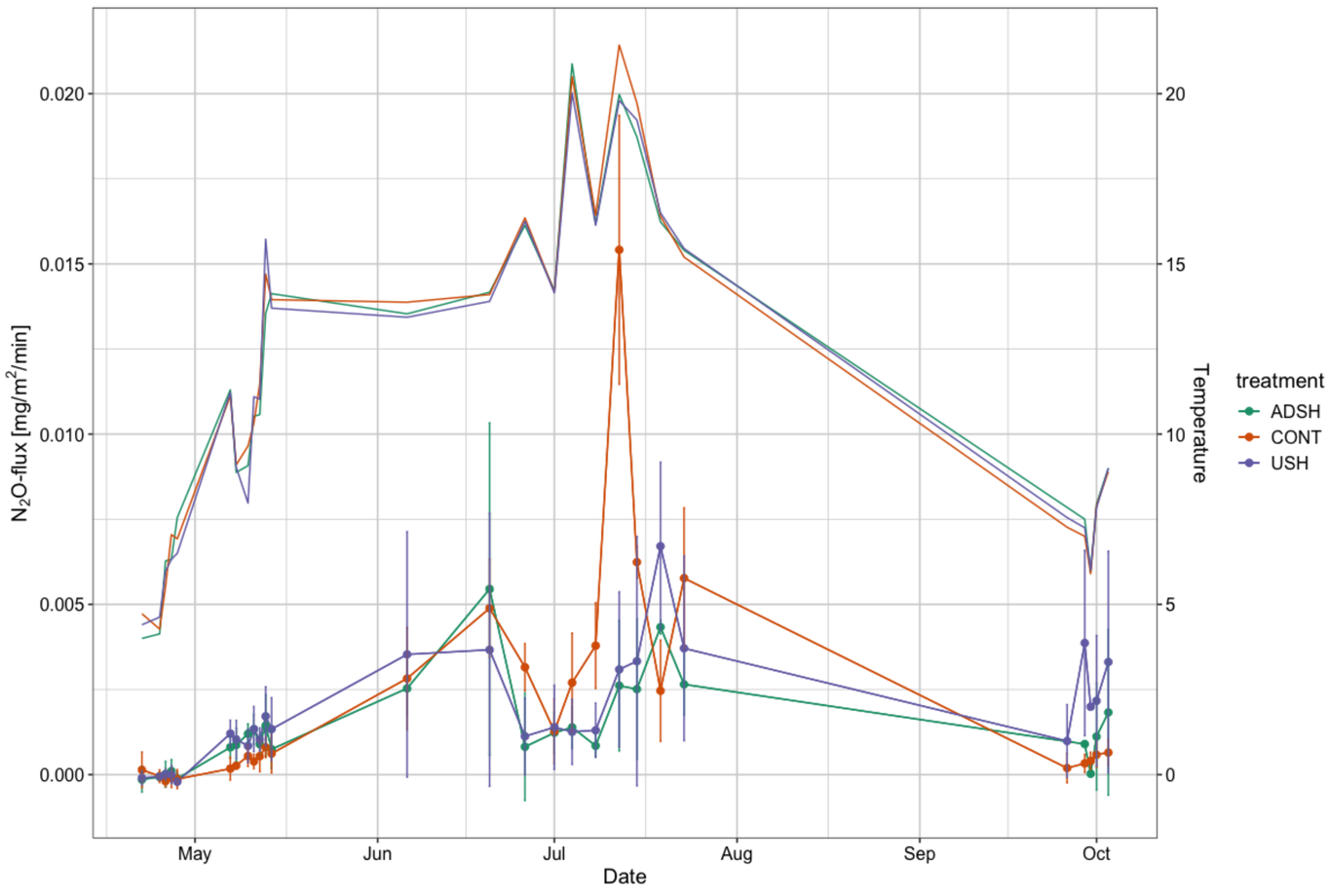


Figure 3. Graph by sampling date and treatment and soil temperature

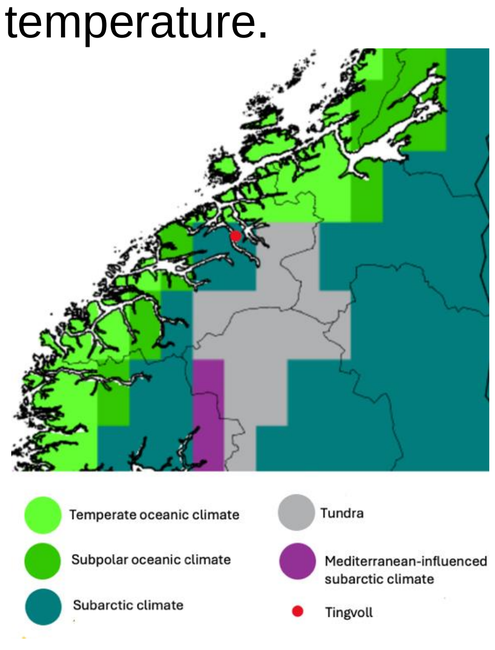


Figure 1. Location and climate classification

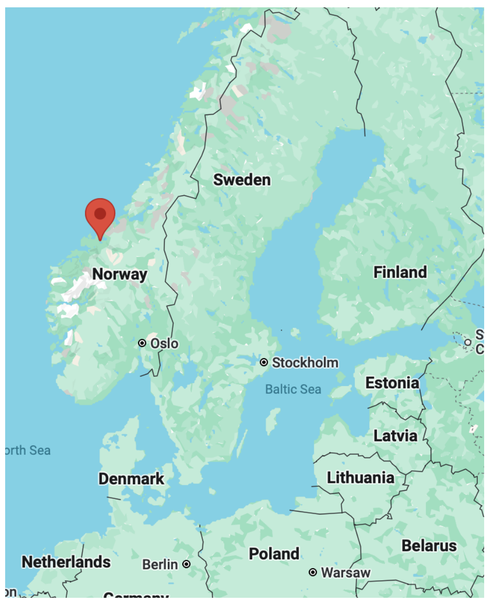


Figure 2. Location in google maps

## CONCLUSION

At this stage, it can't yet be said that US or ADS are the primary predictors for $N_2O$-emissions. These findings suggest that temperature may have a greater effect on emissions than slurry treatment under certain conditions. Further studies to explore the importance of soil temperature the importance of fertilizer type must be done.