

# North Wyke Farm Platform

Case study no. 14

## Measurements of greenhouse gases on the NWFP

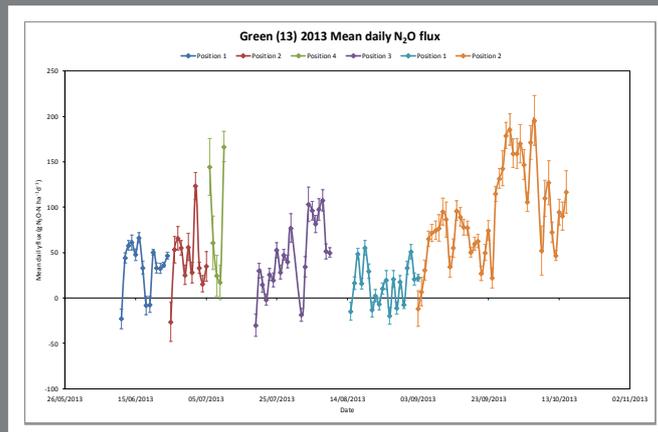
Cardenas, L., Dunn, R., Griffith, B., Orr, R., Misselbrook, T.

The objectives of this project are to measure greenhouse gas emissions on the North Wyke Farm Platform. Baseline emissions were measured before the fields were ploughed in Longlands, plots 13, 14 and 15. Measurements continued after the plough and reseeded in the three fields.

This work will determine if there is an impact on emissions during the various stages of management in each field (fertilisation, ploughing, reseeded) and if there are differences between the different treatments. Plot 13 represents the control treatment, where permanent pasture remains, plot 14 was reseeded with Festulolium and white clover, and plot 15 was reseeded with Festulolium, an innovative grass species with deep rooting systems. All plots were grazed by sheep and received fertiliser N as ammonium nitrate.

Sampling is done via 12 LICOR automated chambers linked to an IR analyser for CO<sub>2</sub> analysis and an INNOVA photoacoustic analyser for CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> analysis.

The 3 automated systems are moved every 2-3 weeks within the same field to allow for the grazing effect. Measurements were carried out in 2013-2015, mostly during the spring, summer and autumn seasons.



Measurements were carried out on Longlands between 2013-2015. A Master's student from Italy, Filippo Broccoli helped to setup the systems and produced the first protocols based on the instrument manuals and his experience from running the systems. From the spring 2015 the systems were moved to the Dairy paddocks and measurements continued until 2016 when they were moved back to Longlands.

Two plough events were captured in this period. The graph shows an example of the data from the green plot in 2013. The different colours in the graph show the periods when chambers were located at each location. Four locations are covered in no more than 3 months.

Data are currently being analysed for diurnality of the fluxes and the effect of management events including plough and reseeded. Also to study the effect of the treatments on emissions.