Strategic Tillage Gas flux analysis:

1. ReadGCReportPDF2021.R & ReadGCReportPDF2022.R
2. GCResultsCompilation2021.R & GCResultsCompilation2022.R
3. GCAnalysis.R
4. HMR\_Analysis.R
5. FelipesHMR2.R
6. MassFluxCalculation.R
7. SoilGasFluxStatisticalAnalysis.R

Comments on the first round of analysis results:

The N2O and CO2 emissions are too high. The N2O emission measure calculated by Alli were around 10 kg-N/ha yr.



The results from this analysis are much greater. There is an error in the analysis.

Year 2021



Year 2022



The error does not seem to be systematic because emissions in blocks 1 and 2 are consistently high in 2021 and 2022, and consistently low in block 3 and 4.

Possible reasons for it?

Slope calculation, Area under the curve calculation.

The calibration regression for the GC based on standards seem to be irrelevant, as the important aspect affecting the emissions is not the particular concentration data point, but the slope of the consequent concentration measurement inside the chamber that result in the emission rate.

Plotting all the N2O GC data

















The data from the GC does not seems to indicate any mayor difference in the results. The high emissions do not seem to be the result of the GC analysis.

The intercept in the GC standard calibration has an important effect and is wrong in the linear model with free intercept. With the intercept forces through 0 the calibration improves significantly. Plot with free intercept.





Plot with the intercept forced through 0.



