



Carbon and greenhouse gas balance of the FR-GRI crop site from 2005 to 2014

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The carbon and greenhouse gas balance of the ICOS FR-GRI site from 2005 to 2014 is presented. The site is a wheat-barley-maize rotation with the introduction of oil-seed rape in 2012. The site receives large amounts of organic fertilization, but is shown to be a strong source of carbon to the atmosphere, especially due to the increase in the exportations of residues during the period. The exportations have increased from around 4 to around 8 t C ha⁻¹ year⁻¹ over the period on average except for maize for which it remained constant. In the meantime the carbon importations have increased from around 1 to around 2 t C ha⁻¹ year⁻¹ during the same period. Overall the field was losing around 2 t C ha⁻¹ year⁻¹ over the whole period but largely driven by last years (2012-2014). This would represent 17% loss of the soil carbon content in the 0-60 cm in the 2005-2014 period. The discussion focuses on explanations of these losses and possible drawbacks in the methodology. The effect of the winter intermediate crops on the carbon balance is also discussed.