Geophysical Research Abstracts
Vol. 14, EGU2012-6024, 2012
EGU General Assembly 2012

Farm-gate budget of energy crops: an experiment to assess changes in GHGs balance due to a land use change from grassland to short rotation coppice of poplar

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Over the last decades the rising in the prices of oil pushed many farmers all over the Europe to exploit part of their fields to produce biomass for energy. Government funding promoted this trend in order to contrast global warming and Green-House Gases (GHG) emissions. Nevertheless energy crops entail, in addition to a land use change, a sum of treatments that leads again to emissions of GHG.

In the context of the GHG-Europe FP7 project we set-up an experiment to study a case of land use change from grassland to Short Rotation Coppice (SRC) of poplar clones in central Italy. Through the Eddy Covariance (EC) technique, we measure carbon and energy fluxes over two different poplar SRC with different ages, and over a reference site (grassland) representing the original land use. Furthermore, we measured additional fluxes such as soil respiration, CH4 and N2O fluxes using chambers. To compute the Farm-Gate Budget (FGB) of both the grassland and the poplar plantations, we collect also additional data that contribute to GHG budget such as management (tillage, fertilizations, irrigations, harvesting) and disturbances. In this poster we present the experiment set-up and the first results resulting from the measurements.