



SRF Vs. Rapeseed: Insights from soil respiration and combustion heat per area

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Bioenergy crops may be important to mitigate global warming risks. They are a renewable energy source and have the potential to offset CO₂ emissions by storing C in soils. In this study, a comparison between willow and poplar short rotation forestry (SRF) with rapeseed cultivation was made to estimate the ratio between the emitted quantities of carbon dioxide from soil (soil respiration) and the combustion heat obtained from the extracted products per hectare. This ratio is valuable because it delivers a three dimensional information: soil respiration (kg CO₂), combustion heat values (GJ) and area of used land (ha). A manual static closed chamber (SEMACH-FG) was applied to measure CO₂ emissions at the SRF and rapeseed sites during the growing season 2014 (April–October). Our results showed that poplar and willow SRF has a very low ratio comparing to rapeseed (157.78 ± 12.03 , 199.91 ± 31.3 and 1128.14 kg CO₂ GJ⁻¹, respectively). We thus recommend poplar and willow SRF as renewable sources for bioenergy over the currently prevalent rapeseed production.