

Interactive
Comment

Interactive comment on “Greenhouse gas balance of cropland conversion to bioenergy poplar short rotation coppice” by S. Sabbatini et al.

Anonymous Referee #2

Received and published: 24 July 2015

I have read with great interest the manuscript and my final recommendation is that it could be published in this Journal after minor revision. The subject of the paper, in fact, addresses relevant scientific questions within the scope of the Journal and it can be seen as a possible strategy to reduce greenhouse gas emissions. The paper refers to a real case-study in a Mediterranean site, in Italy, where a greenhouse gas balance of two different agricultural land, planted with Poplar SRC and grassland-wheat rotation, has been made over a period of two years to evaluate the feasibility of the land use change to reduce GHG emissions. By taking into account all emissions coming from all crops management activities, results show that Poplar SRC represents a GHG sink by having $-2202 \text{ gCO}_2\text{eq m}^{-2}$ compared with $156 \text{ gCO}_2\text{eq m}^{-2}$ of the grassland-wheat rotation crop. This allows authors to conclude that the experiment led to a reduction of GHG concentration in the atmosphere, that is Poplar SRC for energy purpose is a

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suitable crop for the climate mitigation. In general the manuscript is well structured and clear: title reflects the content of the paper and the scientific methods are valid and clearly described. Assumptions are also well outlined as well as the credit to other works already present in literature. Moreover, authors describe the experiment in detail and results are quite sufficient to support the conclusion. Authors, in fact, refer only to one cycle of the short rotation coppice (i.e., two years) and not to the whole crop cycle that usually is 12 years. I suggest underlining this aspect both in the abstract and in the text. Concerning the discussion of results, I suggest to divide section 4 (Discussion and Conclusion) into two parts, that are Discussion and Conclusion, respectively. This is because the manuscript not only could appear more clear but also because Discussion need to be extended by considering all the aspects of the crops management related to all impacts to the environment (air, soil, water), both for Poplar and grassland-wheat.

Concerning English language, a revision is suggested. Moreover, check the use of parenthesis when data are presented and when references are reported. Sometimes they seem to be in a wrong place in the text, as for example line 15 in the abstract or pag. 8039 line 9-10. Table 3 is not clear: does Tractor1+2 mean the total diesel consumption of these tractors together or it is the same for each tractor? Please refer to tractors also in the site description when you describe the operations and then also in section 2.6.

Interactive comment on Biogeosciences Discuss., 12, 8035, 2015.

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