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Journal Name:	**Advances in Research**
Manuscript Number:	**2013_AIR_7752**
Title of the Manuscript:	**PRODUCTION OF BIODIESEL FROM MARINE AND FRESHWATER MICROALGAE: A CRITICAL REVIEW**
Type of the Article	**Review**

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments	The goals of the paper are reported in the Abstract but they should be reported also in the Introduction. If the aim of the review is to discuss the production of biodiesel from microalgae, the description of each component (proteins, carbohydrates, etc) is too long, and should be shortened. The paragraph about macro algae (including figures and Tables) is redundant and could be omitted, leaving just a few lines (i.e. page 8 lines 153-156). On the contrary some other paragraphs are too concise and should be extended and rewritten adding the appropriate references and/or summarizing the data in a table. As the title of the paper is "a critical review" an evaluation of the environmental profile of biodiesel production from microalgae should be reported through environmental assessment methods like Life Cycle Assessment analysis. See for example: Collet, P., Spinelli D., Lardon L., Helias A., Steyer J.P., Bernard O., 2013. Life Cycle Assessment of Microalgal-Based Biofuels. In: Biofuels from algae. Pandey A., Lee D.J., Chisti Y., Soccol S.R, eds. Elsevier, USA. Lardon, L., He´lias, A., Sialve, B., Steyer, J.P., Bernard, O., 2009. Life-Cycle Assessment of Biodiesel Production from Microalgae. Environ. Sci. Technol. 43, 6475–6481. Further applications of microalgae extracts like human nutrition, animal feed and aquaculture should be included in the Review Typos, especially spacing, should be carefully checked	
Minor REVISION comments	In the Abstract line 20 "transesterificaition" should be "transesterification" . For the same word there is a mistake in the keywords also and at the line 73 Line 53-54: studies of environmental problems evaluation should be considered in the case of oilseeds for biofuel production as: Spinelli, D., Jez, S., Pogni, R., Basosi, R., 2013. Environmental and life cycle analysis of a biodiesel production line from sunflower in the Province of Siena (Italy). *Energy Policy* 59, 492-506. Halleux, H., Lassaux, S., Renzoni, R., Germain, A., 2008. Comparative life cycle assessment of two	

	biofuels ethanol from sugar beet and rapeseed methyl ester. *The International Journal of Life Cycle Assessment* 13, 184-190. Cavalett, O., Ortega, E., 2010. Integrated environmental assessment of biodiesel production from soybean in Brazil. *Journal of Cleaner Production* 18, 55-70. Spinelli, D., Jez, S., Basosi, R., 2012. Integrated Environmental Assessment of sunflower oil production. *Process Biochemistry* 47, 1595-1602. Line 67: other advantages from the use of microalgae should be mentioned: nutrients for microalgae cultivation (especially nitrogen and phosphorus) can be obtained from wastewater, therefore, apart from providing growth medium, there is dual potential for treatment of organic effluent from the agri-food industry; higher content of CO_2/kg DM; microalgae have a rapid growth potential. Line 85: a table with the properties of 1st generation biodiesel, algal bio-oil and typical diesel should be reported and discussed. Furthermore it should be considered that the use of pure diesel in existing diesel engines could create problems to the engines in term of efficiency. Line 95 table 1: billion of L Line 118 is it microalgae or macroalgae ? Line 267-268 The sentence is meaningless Line 299 DCW is explained later (line 337) Lines 302-304 To be substituted with: ”lipids are converted into biodiesel through trans-esterification reaction with an alcohol, catalyzed by an acid or base” Lines 373 “research’s” genitive is not necessary Lines 400-401 To be replaced with: ”light is an electromagnetic radiation characterized by different wavelength and intensity” Lines 593-606: should be better explained Lines 682-683 As far as the statement “they require less light” it should be explained why the open ponds requires light if they are normally lighted by sun. Lines 742-744: Units should be uniform (tons/ha and tons/acre) Line 806: the unit reported as xg has to be written as g or as rpm Line 963: To be substituted with: ”Methyl alcohol and fats are likely to produce fatty acid methyl esters (FAMEs) Line 969: check typos Line 987. In Figure 11 The biodiesel formula structure is incorrect.	

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Optional/General comments	The review describes in details the production of biodiesel from marine and freshwater microalgae. The paper is very long and difficult to read. Some recent relevant references are missing. No attempt to develop a real "critical review" with evaluation of environmental impact is accomplished. In my opinion the paper needs substantial major revision before becoming suitable of publication in "Advances in Research"	

Note: Anonymous Reviewer