

Interactive comment on “Contributions of agricultural plants and soils to N₂O emission in a farmland” by J. Li et al.

Anonymous Referee #1

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General Comments:

Direct and indirect Plant N₂O emission is a controversial topic. In this paper, the authors did not provide any direct evidence of the plant N₂O production or transportaion. It is suggested that the authors submit the paper to other journals.

Comments in detail:

Page 5512, line 14-15. do the “plant chambers” and “soil chambers” in the parentheses wrongly labelled?

Part 3.1 should be put in the site and method section.

Page 5512 line 13-25. in the first several lines of the paragraph, plant chambers and

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soil chambers were mentioned, but in the last several lines, the results in transparent and dark chambers were presented, what are the connections of these chambers? Confusing!

Page 5512, line 13. why did the authors write “another performance measure is chamber blank”?

Page 5513, line 2 to 8. the paragraph should be put in the site and methods section.

Page 5513, line 2 to 3. What does the authors want to say? In the paper the measurement frequency was two times per week. Eventhough there are some big diurnal variation, how can you solve it?

Page 5527, Table 1. How did the authors get the equations because the authors did not measure diurnal flux? If the equation was get by the whole measurement, how can the authors solve the water and substrate (NH_4^+ and NO_3^-) availability problem because during different period the water content and substrate availability is different.

Page 5534, Fig.4, and page 5509, line 7. Cotton were sown on April 29, but the measurement began at the beginning of July, how about the flux during May and June? How can the results represent the seasonal flux?

Page 5528, Table 2. It is difficult to use dark chamber measurement to represent the nighttime flux.

Page 5513, line 19. The authors should state it clear that in what period the flux of the “former level” represent.

Page 5515, line 2 to 3, it lacks support to use dark charber mensurement to represent nighttime flux.

Page 5515, line 18, WFPS is water filled pore space.

Page 5516, line 5 to 7. the results contradict with the results in Table 1.

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Page 5516, delete line 15 to 18.

Page 5527, Table 1. N₂O flux is pulse pattern and did not show a fixed temperature response pattern on the field condition. Moreover, soil moisture, substrate availability are other factors to control N₂O emission. From Fig.3 to 5, no relationship between temperature and N₂O flux could be found on a lot of measurements.

Page 5517, line 6-7, in Table 3, the readers can not find the exponential relationship between T and N₂O flux.

Page 5517, line 13, what is base emission. It is suggested that the authors do not change the concept frequently, such as background, base. Or the authors should explain it clearly in the site and method section.

As for the soil N₂O emission, there are not any new ideas. The authors are suggested to delete that section.

Page 5518, line 12, how could the authors get the soil-plant system N₂O emission?

Page 5518, line 21-23. For which crop?

Page 5519, line 1-2. it is difficult to get such conclusion.

Page 5519, line 3-11. the plant uptake NH₄ or NO₃, and then transformed to protein. No relationship was found between plant N₂O flux and soil NO₃ content, it is difficult to say the N₂O flux from plant comes from the soil.

Page 5521. In the conclusion section, the authors only need to write the main important findings in this paper, there is no need to write unrelavent words.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/8/C1823/2011/bgd-8-C1823-2011-supplement.pdf>