Review of: "A Study for Estimation of Greenhouse Gas Emissions of Cotton in Central Greece"

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Potential competing interests: No potential competing interests to declare.

This article attempts to determine the level and determinants of the greenhouse gas emissions of the three farm plots in Greece producing cotton. The authors address an important topic, however, the exposition could benefit from a few improvements listed below.

First, the Introduction section should be better structured. While it provides a lot of information regarding the greenhouse gases in general and the importance of agriculture in particular, the discussion jumps between general and specific issues, while a top-down approach would be more appropriate. I would suggest starting with a general statement about the importance of agricultural sector to the greenhouse gases' emission and their effect on the global environment. I would then say that the cotton-producing sector is one of the important sources of certain greenhouse gases such as nitric and nitrous oxide. I would then conclude the Introduction section by mentioning the main contribution, i.e. a discovery of the fact that it is fertilizers that are responsible for most of the greenhouse gas emissions in the Greek cotton-producing sector.

It is also standard to conclude Introduction by a paragraph starting with “This paper is organized as follows: …” where you list the subsequent sections and describe what you do in each one of them.

In the “Data Collection” subsection of the “Materials and Methods” I would be more specific about the exact data that were collected. Again, it is standard practice to include a table of summary statistics that lists the names of all variables used in the study, their units of measurements, and basic summary statistics such as the minimum, maximum values, mean and median, and the standard deviation. Dividing the variables in this summary tables into five groups is fine.

A couple of academic references to the cool farm tool would definitely add legitimacy to the usage of this tool in a scientific research paper.

In the Results and Discussion section I would present the data on greenhouse gas emissions in a better-structured way. I understand three farm plots were engaged in the study, but there seems to be a single Figure 1a that presents the information on the CO2 equivalent emissions lump sum for all three farm plots. Also confusing is the fact that Figure 1b has the same title, although it apparently represents a different set of numbers.

Same remark for Figure 3: same title.

The message of the ANOVA analysis in Table 6 is not clear: what is the message?

I understand Table 7 presents the results of a regression analysis linking GHG emissions to their determinants. First, the R-squared statistics in the first two regressions is way too high (99%), which makes it difficult to believe its validity. It is also not a standard way to represent the results of a multivariate regression analysis, which would be to report standard errors below each coefficient, and the associated statistical significance level, i.e. 1%, 5%, or 10%. In the third regression, the coefficient for pesticides (Pe) becomes negative--why is that?

In the Conclusions section, the following question should be answered: what is the gap in existing knowledge that the authors' study is filling in? We know that greenhouse gases are harmful to the environment, we know that fertilizers are a problem--so what is it that the authors are finding that the academic community doesn't already know? I would start the Conclusions section with a short statement of the main finding and a clear description of how it contributes to the existing stock of knowledge.