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.

The Greek author calculates/estimates the GHG of local cotton fields in central Greece, a large flat area with cotton as a major agricultural crop, providing income for the farming community. This area between Larissa and Volos has just been submerged in the floods after the storm Daniel.

The field data originate from local farms, while the GHG calculation uses the Cool farm tool (https://coolfarmtool.org/). Although many online tools are available for GHG emission calculations in terms of kg CO2e, a validation of the results is often difficult and recommended using /equivalent factors/tractor runs on the field, actual diesel consumption as dependent on tractor size, speed and application and insecticide, which could also explain any potential discrepancies between both approaches. Due to their nature, the GHG online tools tend to overestimate the GHG relative to individual real field data:

1. More details are required to explain the standard settings for the online GHG tool like conversion factor for %N2O, pesticides and in table 7.
2. In the last chapter of the introduction, the author forgot to mention the countermeasures, possible strategies used in other cotton growing regions or with other agricultural crops/fruit to approach the Greek National carbon reduction project/scheme- please add, also in the abstract.
3. In the M/M and the sentence with the avge temp, should be 24.5°C (delete the second decimal and add the ° degree sign)
4. In the M/M, the first description is on planting four rows, the next chapter talks about sowing- please explain /correct.
5. In GHG from inputs, author may want to add the system boundaries in the comparable studies; this may explain the lower GHG in Iran and Australia and larger one in China.
6. In figure 1a, 1b and 4, delete the redundant decimals in both the diagram and on the Y axis
7. Author has a great chance to explain the reason for for doubled GHG in the Elatia region relative to the other two growing areas- can several cultivation/tractor runs be combined in Elatia, as the energy (diesel) seems to be the main driver?

The results are an increase in GHG with rising temperatures and fertilizer use through N_2O emissions, as expected. This gives rise to countermeasure / GHG reduction potentials such as the use and efficiency of nitrogen fertilizer in terms of type (slow release, foliar spray), split application and timing.

The study is important considering a) providing guidance for farmers aware of ag induced GHGs, and b) media attention to the large share of the clothes industry to GHG/GWP and cheap clothes shops/chains indicating the demand for more sustainable clothes and longer wear. The manuscript is suitable for publication after attending the above comments.