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

Leticia Citlaly López-Teloxa[1]

1 Universidad Autónoma de Chapingo

Potential competing interests: No potential competing interests to declare.

The study focuses on analyzing greenhouse gas emissions (GHG) in cotton production in Greece during the years 2020 and 2021. The Cool Farm Tool (CFT) is used to identify the main sources and factors contributing to these emissions. The results indicate that GHG emissions per unit area of cotton in the central region of Greece increased from 2,018.37 kg CO2e per ha in 2020 to 2,126.10 kg CO2e per ha in 2021. This increase is attributed to higher irrigation and pesticide applications due to elevated temperatures. The study shows that fertilization is the primary influence on carbon emissions and suggests that improving fertilization efficiency and promoting sustainable development in the cotton industry are effective strategies to reduce the carbon footprint in cotton cultivation in the future.

The study has conducted an analysis of GHG emissions in cotton production in Greece, focusing on the years 2020 and 2021. Despite the results, there are legitimate concerns about the relevance of regressing data from a single year to draw definitive conclusions about GHG emissions in cotton crops. The methodology described does not explain why and how ANOVA and regression were applied; this omission in the methodology section is addressed in the results. It is suggested to dedicate a few lines to the statistical analysis in the methodology. Updating the study with more recent references is recommended. The introduction could benefit from more contextualization. Initially, it is not entirely clear why the study is being conducted or why it is relevant. Providing a broader context on climate change and the importance of sustainable agriculture could help the reader better understand the study's motivation. Additionally, it would be beneficial to discuss the practical implications and limitations of the study in more detail in the conclusion section, along with future research directions and an updated literature review supporting the findings. It is also recommended to provide more context regarding the relevance of current environmental issues and the research's contribution to closing the knowledge gap in the field. The figure titles are quite long, for example, "Figure 1a: CO2e (kg) emissions per hectare for residues management, fertilizer production, fertilizer application, crop protection, energy use and yield transportation to ginning mills." It is suggested to change it to "Figure 1a: CO2e (kg) Emissions per Hectare in Central Greece (Sterea Hellas and Thessaly)."