

Hydrol. Earth Syst. Sci. Discuss., referee comment RC8  
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## Comment on hess-2022-96

Anonymous Referee #8

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Referee comment on "FarmCan: A Physical, Statistical, and Machine Learning Model to Forecast Crop Water Deficit at Farm Scales" by Sara Sadri et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-96-RC8>, 2022

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In my opinion the term "Needed Irrigation" is not appropriately used in this paper and could be misleading.

Since FarmCan has been applied to rainfed cropping system, I think that the term "water deficit" (as in the title) is more appropriate.

The computed "crop water deficit" could be smaller than the actual crop water demand for achieving an "optimal yield". As far as I know, MODIS PET is influenced by vegetation indices. In rainfed cropping system, crop canopy development could be suboptimal, as it might be affected by crop water stress. Thus, the estimated PET is smaller than the crop ET under standard conditions (i.e., no soil water constraints with respect to what required for crop optimal development): MODIS PET cannot be used for assessing the "water needed ....to reach an optimal yield". The paper should be revised by carefully considering this point. The attribute "optimal" should be carefully applied.

I am not sure about Equation 1: is NI negative when PET is larger than P?

The paper should also clarify how this tool could be practically employed in "near real time": what kind of strategies could be implemented "to minimize potential crop failure and losses" in rainfed cropping systems?