Review of: "Yield Forecasting Model for Maize Using Satellite Multispectral Imagery Driven Vegetation Indices"

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Potential competing interests: No potential competing interests to declare.

The authors claim that their interest was to examine the relationship between Sentinel and Landsat. Furthermore, in the Abstract, they declare that Sentinel provided superior performance compared to Landsat. In my opinion, it would be preferable to combine the sensors in a relationship, instead of comparing different models based on individual sensors. Consider that many places on earth may lack images due to cloud cover, making any available sensor an invaluable contribution to earth observation, crop monitoring, and yield prediction. Thus, solutions combining sensors are much more innovative and useful.

The authors are advised to provide a table showcasing all the respective data collected from the parcels. In this table, it is recommended to include the size of the parcels, sowing and harvest dates, variety, agronomic practices (e.g., irrigation, plant protection), plus the dates of the image acquisition.

In the materials and methods, it is said that the sowing dates were "considered to be". Considering that the sample is only 20 parcels, I assume that the authors should have collected this crucial information from the farmers. Additionally, this information could also be derived by examining the satellite images from the start until the end of the cropping period.

The sample size (20 parcels for 3 years = 60 maize yields), in my opinion, is not sufficient to conduct such research and to extract safe results. Furthermore, the authors used 20 yields (combined) to develop the algorithm and 20 yields to validate it. Therefore, the design of the “experiment” is weak for yield prediction.

Since the authors try to solve a practical matter, if we were to develop an automated process for policymakers, agri-food companies, and farmers, how would the appropriate date of image acquisition for yield prediction be selected? What would trigger the initiation of yield prediction? Would it be the maximum NDVI? And how can anyone be sure that the maxNDVI is reached? And what would happen if, on the date of image acquisition, there was not a clear image? There would not be a yield prediction? What would the alternative be?

I do not see any reason to include such an extensive literature review and discussion on NDVI.

The authors calculated the mean NDVI in a way that is not very clearly described. I understand that the NDVI was calculated for each parcel within the parcel borders, and then the mean NDVI of the pixels falling within the parcels was derived (am I correct?). So how many pixels per parcel contributed to the mean NDVI? This is crucial and needs to be defined. If the parcel size is too small, then there must be a lot of influence from pixels on the borders of the parcels, which may be rural roads, weeds, or other adjacent parcels uncultivated or with different crops. The researchers declare that

pixels with NDVI<0.25 and >0.95 were removed. Were these pixels in the borders of the parcels or not?

Additionally, we see in Table 3 that parcel 18 has a lower NDVI of 0.3. What if the lower NDVI was ≤0.25 and these values had been removed? Wouldn't that result in errors?

In Tables 2 and 3, I do not see any reason to include the coordinates. I would suggest the authors add the number of pixels per parcel, min, max, and mean NDVI per parcel.

In my opinion, Figure 3 is totally confusing and serves no purpose. The ranges of the NDVI in the images should be the same and represented by the same colors.

The authors should provide tables with statistical criteria (not just the correlation coefficient R2) derived from all analyses: 1. individual NDVI-Yield 2018-2019, 2. individual NDVI-Yield 2019-2020, and finally 3. combined. The RMSE statistical criterion should have the units of yield. All the statistical criteria should be recalculated for the validation of 2020-2021.