Review of: "Integration and Implementation of Multiple Soil Sensors for Automated and Regulated Irrigation"

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The paper presents a low-cost IoT device that embeds several sensors of interest in precision agriculture. The IoT device can control irrigation of the crop to keep a given range of the humidity of the soil and connects to the internet by means of a GSM interface to transmit the sensed data.

Some notes:

In the abstract and also in the introduction, the claim that other systems "often lack real-time and in-situ measurement capabilities" suggests that there are already at least some systems that provide these capabilities, and this is most likely true. However, this implies that these capabilities are not new to the system presented here. I would suggest cutting the statement and, instead, highlighting the novelty that is unique in your system.

A second consideration is about the use of the term "real-time." It's okay if you want to use it, but in this case, please consider providing evidence of this by analyzing things like the response time and other parameters that are relevant in real-time systems. Otherwise, if it is not a key element of your system, you can avoid this term.

I would suggest providing evidence of the innovation of your system against the state of the art and better highlighting it, but focusing on the aspects that are really innovative.

The system controls the irrigation only on the basis of the humidity sensors. About this, I have two concerns:
- What is the purpose of all the other sensors? Are they only informative for the farmer? The evaluation section focuses on the error in the measurement of these sensors, but if there's no use of these sensors, the error is irrelevant...
- I understand that the system uses two thresholds to keep the soil within a given range of humidity, but is this method realistic and suggested by an agronomist? How can these two ranges be set?

About the use of GSM for the internet connection ... I understand that in some countries, GSM is progressively disappearing. Can you motivate the use of GSM, or, maybe, smooth this part, because, after all, you may connect with any other possible wireless technology; GSM is not so important here.

When on page 5 you mention the temperature sensor, does it refer to soil or air temperature? Can you please clarify and comment on its use/need?

There are many details on the individual components that are probably unnecessary here. I would suggest you omit them and refer to the datasheets. For sure, I would avoid details and figures on the power adaptor and wires, and probably also on the button switch and the rotary switch. I would also avoid repeating the specifications of Arduino and the schematic diagram in fig. 16 and many other details that do not add much to the design and novelty of the device.

The device also has a screen, but I miss the purpose of it and the information it provides to the farmer.

Section 2.6 presents well-known equations and facts; it's ok to present them here, just maybe state that it is presenting well-established methods.
Note that the equations are not well formatted anyway.

About the results in Section 4, the tables present the comparison between your measurements and a reliable measurement by standard methods. Clearly, there is an error, but there is no comment about the quality of these results. How good/bad are they? Most of all, are those errors compatible with the applications you have in mind?