greenhouse humidity to be maintained (80%), which is only ± 21%, the difference is up to 59%, even though the minimum average humidity After the use of the automation system, 0.72% was still better than the previous system. If the percentage value of the increase in the automation system's performance is calculated against the previous system in maintaining the humidity of the greenhouse, the value is 54.24% at the average humidity and 3.42% at the minimum humidity.

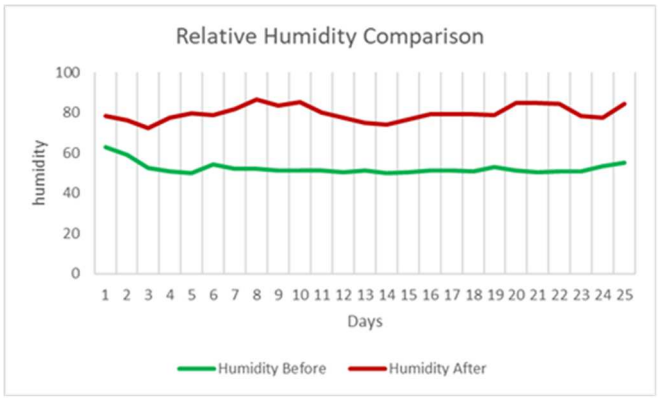

Fig. 7 Comparison between Smart Greenhouse Relative Humidity and Outside Greenhouse Relative Humidity

This may be due to the absence of a barrier on the greenhouse roof, which can reduce the intensity of sunlight entering the greenhouse so that the misting cooling system does not work optimally in maintaining the microclimate of the greenhouse.

IV. Conclusions

The proposed design interfaces with the Raspberry Pi platform and is implemented to control micro-climatic conditions in greenhouses with a web server's help. The architecture built can provide communication opportunities between users and a remote greenhouse control system. Continuous monitoring and control of environmental parameters such as temperature and humidity will be beneficial for crop production. The automation system can maintain and regulate the greenhouse microclimate to suit the optimum conditions for tomato plants every day, but performance will decrease when the sunlight intensity is high. Our misting cooling system design can be turned on automatically when the microclimate is not ideally accurate.

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