

IoT in Greenhouse Supported by Climate Conditions Management Platform

| Conference paper | First Online: 01 April 2026

| pp 198–207 | [Cite this conference paper](#)



Current and Future Trends of

Agrifood

(ICoWEFS 2025)

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Abstract

The system called iMeteo4all is a management platform for several physical variables, inherent to the control and management of climatic conditions inside structures, for the intensive production of plants called greenhouses and to be one contribution for agriculture 4.0.

The objective of this work was to design and develop software for monitoring and managing the quality of the internal environment, through successive data

collection/readings provided by a network of sensors and process automation for more efficient and sustainable agriculture.

Different case studies of greenhouses whose production technologies are distinct, such as aquaponics and soil technologies were considered, in these controlled environment structures to produce plants (edible and non-edible). This platform requires an Internet address to perform the interface among a tablet, a cell phone, a computer and communication systems between a net of IoT (Internet of Things) sensors, which collect climatic variables inherent to growth and connected to several MCUs (Micro Controller Unit).

Subsequently, managers and employees will be able to view and interact in real time, making more accurate decisions, depending on the climatic variations inside the greenhouse, increasing efficiency in several areas in greenhouses.

It is possible to access the history of each sensor and configure automations according to the collected data. Access to data from this solution is secure through an SSL (Secure Sockets Layer) certificate applied to the public https address. If hardware failures exist, the system is prepared to be restored through regular backups in the cloud and internally, providing users with confidence and robustness in the constant use of this platform.

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