Microclimatic Monitoring and Analysis in a Hydroponic Greenhouse

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**Abstract.** In the last decades, there is the increasing reduction of per capita arable land and the increasing demand for food [1]. These needs require the development of advanced solutions, like soilless cultivations [2]. In particular, hydroponics represents an interesting and efficient response for sustainable cultivations [3]. Hydroponic greenhouse is the evolution of the traditional one and it needs a different management. This management is not only limited to the cultivation area, but it involves also other factors, for example structural characteristics of greenhouse, microclimate management, nutrients management [4, 5]. To maximize resources efficiency and quality food production it is fundamental to characterize the microclimatic parameters and their distribution inside greenhouses.

This work provides the preliminary study to measure and analyze the main microclimatic parameters in a hydroponic greenhouse, located in Vinchiaturo (Italy), without microclimatic controlling system.

In this work a set of sensors were installed to acquire continuously data. The sensors were managed by a supervision system that allowed also to historicize all measured data.

The analysed data were used to identify an appropriate control logic that could be implemented for a low-cost management to improve greenhouse efficiency.

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