Automated Greenhouse: Is Its Use a Good Way To Boost the Plants' Growth?

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This project aims is to build a small automated and self-sufficient greenhouse as well as to compare the growth of vegetables inside the greenhouse and in a traditional orchard. Aspects such as the process and materials for the construction of an automated orchard were addressed, from the construction process of the structure, the assembly of the required electronics, to the software for everything to work properly. Remarkably, the greenhouse was automated by the use of Arduino, a board that enables the connection between sensors and actuators. Among the different characteristics of the designed greenhouse, we highlight an extended water tank duration, which is possible due to the water level control, the water collection and the characteristics of its design. Also, features like the usage of a ventilator and a mobile gate, generate a flux of air that enables the control of the humidity and temperature inside it. The comparison between the growth of vegetables to know where it was faster, was done by planting the same vegetables inside the automated greenhouse and a normal orchard. The recovered data (height, diameter and amount of leaves) was taken during the growth of the plants. The obtained results were remarkably positive for the project's greenhouse. Altogether, the results obtained point out that by using a self-sufficient greenhouse, we can give the vegetables the right conditions for their growth. Thanks to the design, optimization, and construction of this automated greenhouse, we have proved that the growth of vegetables with it is faster than in a normal orchard. Finally, the implementation of automated greenhouses in our cities could be a solution for the lack of vegetables cultivated space and could also promote self-production as a new way to live.

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