Development of an Intelligent System for Rainwater Collection, Storage, and Irrigation With Arduino UNO

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This research's purpose was to show whether the Arduino Uno would be useful for developing an intelligent irrigation system using rainwater efficiently. The procedure consisted of collecting daily data of the amount of water in the collection tank, and of the amount of moisture found in the soil before the experiment began. The system was designed with a soil moisture sensor which supplied water to the plant when it detected less than the 20 percent parameter required. Common oregano was used as the test plant. The results obtained were that on days one and three the machine supplied water on an average of 0.004 liters/second maintaining an average of 21 percent soil moisture. On day three of the experiment there was rainfall. During the five days after the previous data was collected, the machine did not supply water because the soil moisture was optimal at a 48 percent mark. In conclusion, the system demonstrated its purpose of intelligent irrigation of rainwater effectively, when its moisture sensors indicated that the soil moisture was lower than the required 20 percent parameter mark. Future projections include making improvements to the system that do not require using more than 5 volts and adding more indicators for easier data collection.

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