Auto-Irrigator: A Self-Conservation Method

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Many people in rural areas are dealing with severe water shortages, but these locations are also big producers of banana plants, which require a great amount of water. In order to deal with this, water conservation must occur. In this project, it was hypothesized that water conservation efforts could occur if a banana plant's voltage could serve as a moisture indicator to create an automated irrigation system. This hypothesis was tested with a two-fold experiment. In the first experiment, a circuit, which was built to measure and display the plant's voltage, was used to determine the voltage trend of the plant during the day and night. It was determined that the plant had no specific voltage pattern, with the plant's baseline voltage mostly remaining constant. This experiment also showed that the circuit was efficient and was further developed in the second experiment, in which an automated irrigation system was tested. The system was programmed to irrigate the banana plant when the voltage of the plant was below 0.11 volts, its approximate baseline level. This system was efficient because it only watered the plant when needed, increasing the plant's voltage and its moisture level. Since the automated irrigation system was successful in displaying the plant's voltage and irrigating it when necessary, the system can be used in rural locations to prevent residents from over watering their crops and assisting them in saving the water for other basic necessities.

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