# Power to the Plants

Eswaran, Surabhee (School: Little Rock Central High School)

Many people in the world, especially in rural locations, are under high water scarcity; however, many of these areas grow banana plants, which require a large amount of water. The hypothesis of this project was that the current and electrical potential produced by the banana plants can be harvested using technology to monitor its irrigation needs, which assists in water conservation. To test this hypothesis, a three-fold experiment was performed. In the first experiment, variation of the electric potential in the plant was determined in its natural environment, where it was subject to dry and rainy conditions. The second experiment consisted of the building and testing an amplifier based electrical circuit that will boost the plant voltage in order to light up a LED sensor which would the serve as a moisture indicator. The final experiment was performed in an indoor controlled environment at constant temperature. The water level was varied in a step-by-step manner to observe the changes in the electric potential with the moisture indicator providing the irrigation status of the plant. The results showed that the changes in the plant's voltages provided sufficient power at 1.75 V to light an LED to indicate the presence of adequate water. On the other the hand, voltages lower that this value were not able to power the LED during the dry spell, indicating the need for irrigation. The successful demonstration of this moisture indicator design can be applied in rural settings for the conservation of water.