# Drip - A Precision Irrigation System for Developing Nations

Sawan, Waleed (School: Oakridge Secondary School)

The Food and Agriculture Organization (FAO) predicts the world's population will increase from 7.3 billion to 9.7 billion people by 2050 – which will require global crop yields to increase by 70% to meet rising agricultural demand. To avoid creating undue stress on the global food supply chain, farmers will need to use innovative methods to conserve the resources they draw upon the most, with water being top of mind. With greater demand for water resources, conservative water management techniques will become of greater importance. To overcome these challenges, farmers in developed nations implemented precision irrigation systems, but farmers in developing nations lack similar systems due to high-cost and complexity. Drip is a low-cost, efficient precision irrigation system was designed to service the needs of farmers in developing nations. Drip employs an advanced mesh networking algorithm to enable a Wireless Sensor Network (WSN) of field nodes. An Internet of Things gateway is used to upload data points from the WSN into the Drip database. The Drip dashboard uses innovative data visualization techniques to integrate the field data collected and data from online API’s to provide a comprehensive view of the crop irrigation needs. Drip’s pioneering hardware and software modular architecture, enables a base implementation of the system for less than $12, with additional nodes costing $3 - $6, depending on the required functionality. This represents a 98% reduction from the cost of similar precision irrigation systems, such as the CropX Pro Sensor.

**Awards Won:**
Third Award of $1,000
Qatar Foundation, Research &amp Development: Award of $1,000