Irrigation management is challenging, subjective, and time consuming on long-term crops. The high leaching rates in offshore stock plant production can cost over $100,000 per farm per year in wasted fertilizer and water. Growers are facing increasing regulation of runoff in many countries and our industry needs to be truly “green”.

**Objective:**
- Evaluate soil moisture-sensor and climate-based irrigation technologies to help improve irrigation consistency, reduce leaching, and save on water and fertilizer costs for long-term stock and potted plant production.

**Our approach:**
- We have grown geranium stock plants in perlite and gravel substrates, and poinsettias in peat/perlite, using moisture sensors tied into our environmental control computer to automatically trigger irrigation.
- We have also tracked plant water use using a logging weight scale, and related this to climate conditions (vapor pressure deficit and light) and crop leaf area.

**Other planned research:**
- Evaluate potential cost savings, reduced water and fertilizer leaching, and the effects of different substrate and irrigation practices on stock plant quality and yield using sensor-based technology.
- We will evaluate a new wireless PlantPoint irrigation package (Decagon Devices, Inc., available later this year) that integrates moisture sensors with online tracking and irrigation management, for stock and potted plant production.

**How can you use this information:**
- Measure how much water and fertilizer is leached at your operation, and calculate potential for cost savings.
- Consider using sensor-based technology on long-term crops. We can help with installation and setting up irrigation regimes.

Sensor-based irrigation can benefit stock and finished plant production with consistency and less waste
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**Example comparing water content measurement by weight or Decagon sensor**

**Volumetric water content per pot with three irrigation regimes**

Di-electric soil moisture sensors were used to trigger irrigation based on a mV signal. A logging weight scale also measured volumetric water content in the growing substrate. Sensors can be easily calibrated on-site to a particular growing substrate & crop. We created “wet”, “medium”, or “dry” regimes by irrigating at different moisture levels (mV set points on the sensors) and irrigation durations.