

Artificial Weather Chamber

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Abstract: Now a days many techniques are being implementing in plant growth, whether it is an organic plant or inorganic plant. Artificial weather chambers produce controlled environments, which are crucial in making reproducible observations in experimental plant biology research. Integrated artificial weather chambers can provide precise controls of environmental parameters, such as temperature, humidity, moisture, and light, also the capability to regulate the environmental parameters via integrated complex system. With this, one can be able to grow any kind of seasonal plant by creating artificial weather conditions inside the chamber. There is no need to wait for a particular season in order to grow specific seasonal plant.

Artificial weather chamber means a four-wall design structure, inside of which a Peltier module is provided for cooling and different sensors like Thermocouple, Humidity, Carbon dioxide, pH and Light sensors will be used to create artificial weather conditions. Soil pH value plays a vital role in plant growth, so it is necessary to maintain the soil pH value. In this project, temperature will be tightly controlled. Raspberry Pi application will be used in the working of this module. With the help of this chamber, one can grow mangotrees in any season by creating a suitable hot weather condition inside the chamber without using chemicals. Plants can also be grown in an organic method without using chemicals and pesticides. It will also be useful in Biological Research centers as well as plants grafting. It will increase research opportunities in experimental plant biology.

Keywords: Raspberry Pi, Thermocouple, PMMA (Poly Methyl Methacrylate), Humidity, pH, Candela sensors, Peltier Module.

Research Algorithms in Real World Applications

development. Along with the levels of Light, Co₂, water and nutrients, it influences the plant growth and ultimately crop yield.

In our project setting, each and every parameters were precisely controlled.

We use different sensors in the form of modules.

In this we are going to explain about the five main cycles of Artificial Weather Chamber:

- Temperature Cycle.
 - Humidity Cycle.
 - Carbon dioxide Cycle.
 - Candela (Light) Cycle.
 - pH Cycle.
- We can also grow plants in organic method without using chemicals and pesticides.
 - In order to grow a plant, you need an environment. But in this project, we don't need earth's atmosphere to grow a plant.

Temperature Cycle:

- Thermocouple takes readings from the chamber and sends feedback to the system. Program crosschecks the I/P value which comes from thermocouple with set values.

