

Introduction

Back in the days scientists use to toil long and hard outdoors to observe the behavior of plants but nowadays with sophisticated devices in place to control the environmental parameters involved in plant growth the research can be performed in places where the outside environmental conditions are less than favourable for the specific plants growth. This opens up the possibility of creating a naturalistic environment that can help you observe the behavior and growth patterns of various plant species. So our team of four decided to combine biology and robotics in unison for our project-growth chamber for plants!

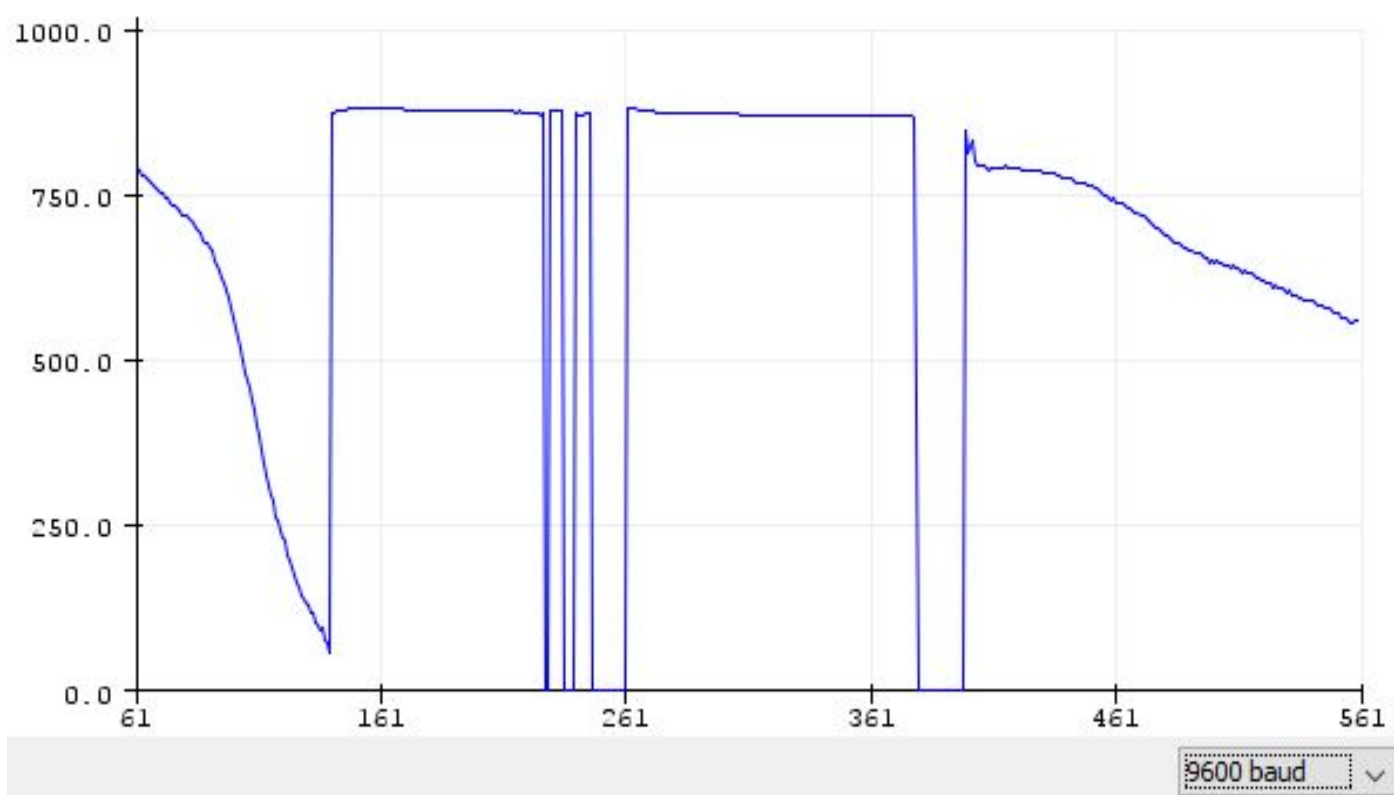


Figure 1. Graph from the Soil Moisture Sensor. Value range= 0 ~ 300 : Dry Soil, 300 ~ 700 : Humid Soil, 700 ~ 950 : in Water. (X-axis=Time, Y-axis=Value)

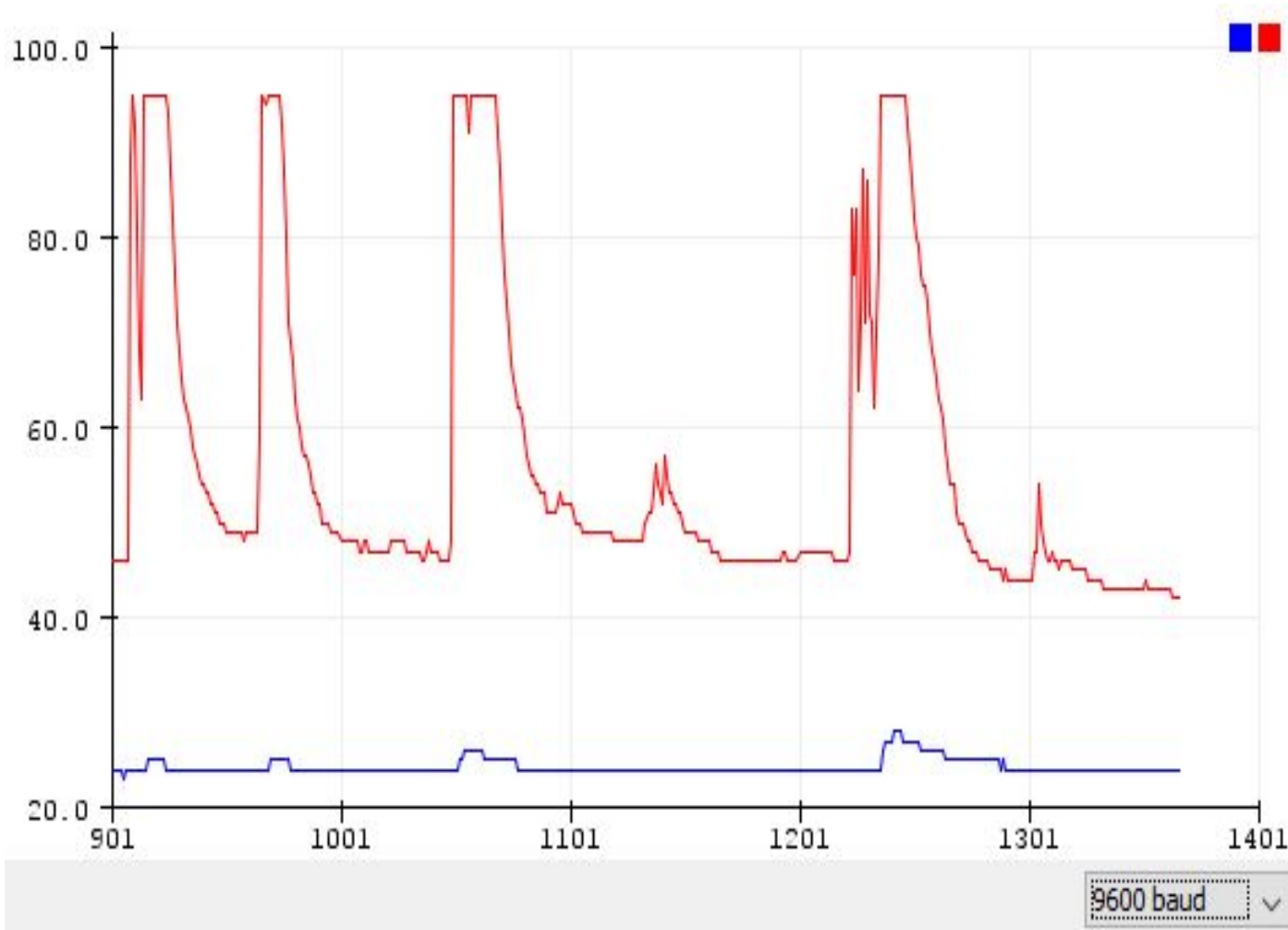


Figure 2. Graph from the Tem. & Humidity sensor. Red=humidity(X-axis=Time, Y-axis=Humidity in %) & Blue = Temperature(X-axis=Time, Y-axis=Temp.)



Figure 3. Growth chamber for plants.

Main Theme

We have solved the problem of growing fresh vegetables (onions/green onions in our project) in less favorable environments for example during the winter season when plant growth is stunned and problematic.

- First of all a cube shaped frame was constructed.
- The upper side of it was covered in LED's (for delivery of sufficient amount of light).
- An ultrasonic sensor was added in order to measure distance from the plant and a continuous motor for height adjustment from the plant.
- A DHT sensor was added in the environment (to detect air humidity and temperature) and a humidity sensor in the soil(to determine if the plant soil is watered) and a light sensors to determine incoming amounts of light.
- A main computer added to process all sensors data together through arduino. And a computer fan to help with air circulation, humidity, temperature in the chamber.