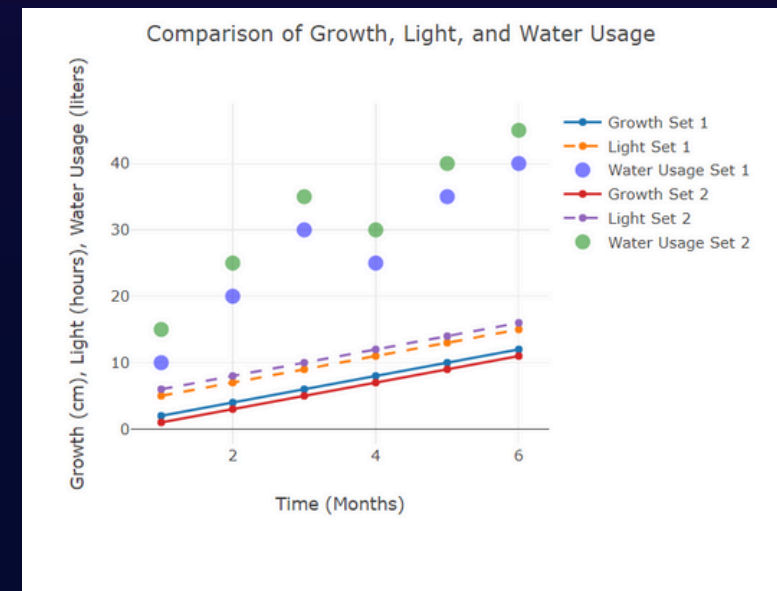


Prediction of Lady Slipper Orchids Growth

Automated Temperature Monitoring and Irrigation System for Cultivating *Paphiopedilum niveum*

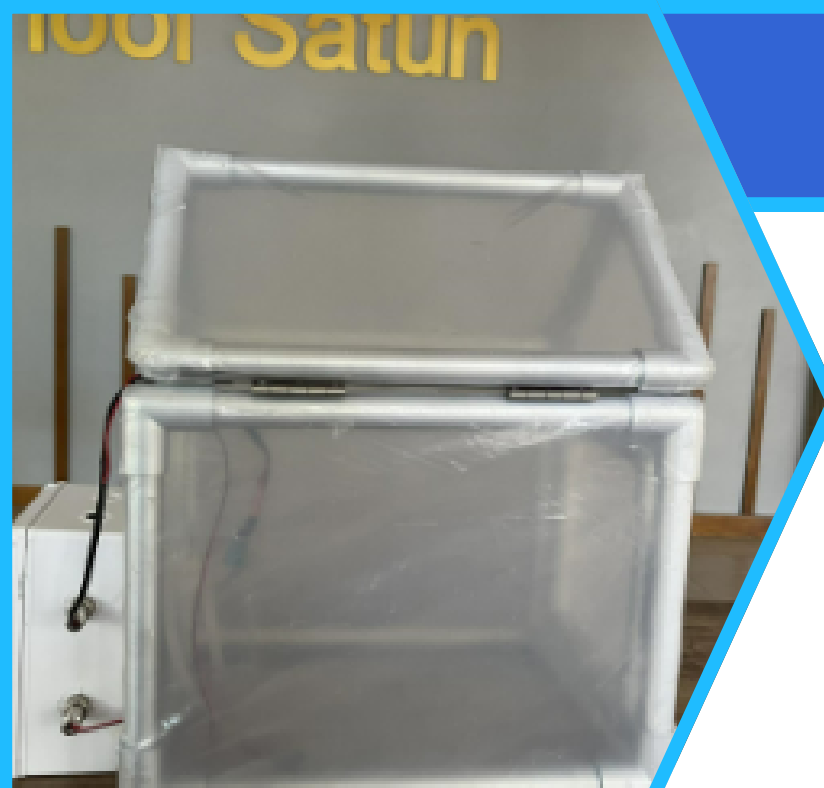


Introduction

Thailand is home to many species of Lady Slipper Orchids that are highly valued in the global orchid community. One of the most beautiful and rare species is the Satun White Lady Slipper Orchid. However, deforestation and illegal collection have greatly reduced their numbers in the wild. Using smart farming and IoT technology to grow and care for these orchids is a key solution. This approach not only helps increase their numbers and protect them from extinction but also supports local economies and conserves Thailand's natural biodiversity.

Result

1. The test plant with the automatic system grew faster and had more leaves than the control plant.
2. The automatic system used less water by watering only when needed, while the control plant used more water with manual care.
3. The test plant had stable temperature and humidity, while the control plant experienced more changes in conditions.
4. The test plant was healthier overall, with stronger growth than the control plant.



Method

1. Install temperature and humidity sensors in the air and soil in suitable positions.
2. Connect the sensors to an LCD display and relay, then set up a 12VDC water pump and connect it to a PVC pipe using a small hose.
3. Use a 5V adapter to power the sensors, LCD, and relay, and connect the water pump to the relay to control its on/off function.
4. Program the microcontroller (e.g., Arduino) to read data from the sensors and control the water pump based on soil moisture levels.
5. Test and adjust the system to fit the environment and needs of the Satun White Lady Slipper Orchid.

Benefits

From studying and developing a smart farm and IoT system for growing the *Paphiopedilum* White Satun orchid, the project successfully created an automated temperature monitoring and watering system. This system efficiently controls the growing environment for the orchid using IoT technology, improving its growth and reducing the risk of extinction.