



**AMAL JYOTHI**  
**COLLEGE OF ENGINEERING**  
**A U T O N O M O U S**  
**K A N J I R A P P A L Y**

# ECOGROW

23INMCA310 - Mini Project 1

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# ABSTRACT

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**PROJECT TITLE : ECOGROW**

**TECHNOLOGIES USED :** **Frontend:** Reactjs, HTML, Tailwind CSS, JavaScript  
**Backend:** Python, Mysql

## DESCRIPTION

This project uses an ESP32 and sensors to monitor temperature, humidity, and CO<sub>2</sub> in a greenhouse. An AI model checks if these conditions are safe for plant growth or may lead to bacteria or fungus. It sends alerts and shows history to help farmers keep the greenhouse environment healthy.

### 1. Environmental Data Collection (ESP32 Module)

The ESP32 collects real-time temperature, humidity, CO<sub>2</sub>, and air-quality readings from the farm using connected sensors.

### 2. Cloud Data Transmission Module

The ESP32 sends all collected sensor data securely to the backend server for processing and storage.

### 3. AI-Based Bacterial Growth Prediction Module

An AI model analyzes sensor readings to predict the likelihood of harmful bacterial or fungal growth in the atmosphere.

### 4. Ideal Environment Comparison Module

The system compares current environmental values with ideal crop conditions to generate a Plant Comfort Score.

### 5. Smart Alert & Recommendation Module

Alerts and recommendations are generated instantly when conditions become unsafe or favorable for bacterial growth.

### 6. History & Trend Analytics Module

The backend stores past readings and displays trend graphs to show environmental patterns and risk history.

### 7. Multi-Zone Monitoring Module

Multiple ESP32 nodes allow comparison of environmental conditions across different farm zones for deeper insights