Intro  
Agricultural management involves agro-ecosystem activities to boost productivity, profits, and food security, while conserving resources. Traditional manual methods are time-consuming and energy-intensive, often leading to subpar results due to improper sizing and dosing. Innovation is crucial for efficient dryland agriculture, elevating production and resource efficiency.

Problem Statement

According to AFSIS, South-East Asia have 5 main agricultural comodities : rice, maize, sugarcane, soybeans, and cassava. Yet the 2 out of 5 have seen the increase in demand that cannot be met by ASEAN production. In 2022, maize imports has reached 15 million metric tons. And Soybean imports exceed local production in a ratio of 15 to 1. Both of them are cultivated in a dryland environment and can be successfully grown in South-East Asia. Considering this aspect of food in ASEAN, there is no doubt about the urgency of developing innovations to enhance our food security.

Solution

Meet Bottani, The Future of Sustainable Agriculture. Equipped with advanced sensors and AI technology, Bottani efficiently manages irrigation, fertilization, and monitoring. ensuring optimal growth and reducing resource waste.

Features

Bottani embodies the essence of Smart Farming and Precision Farming. Through real-time data collection and analysis Bottani delivers accurate and data-driven agricultural practices. Bottani boasts a powerful 100AH battery capacity allowing up to 3 hours of uninterrupted operation without solar input and a quick recharge with its 1000WP solar panel. With a remarkable movement accuracy of up to 1cm. Bottani efficiently covers 1 hectare of land in just 3 hours equivalent to the work of 10 manual laborers in 4 hours.

The camera is directed towards the plants. Utilizing computer vision and AI processing, the robot identifies plant positions beneath it, enabling swift and precise maintenance actions, such as pesticide spraying, fertilizer application, watering, and targeted solid fertilizer distribution. The robot's 3D degrees of freedom allow automatic mechanism adjustments within its operational range.

The Bottani robot is equipped with sensors including moisture and temperature sensors. It periodically monitors and samples data at different points to ensure precision. The collected data is then transmitted to the database and showcased on the manager's dashboard, facilitating plant-specific actions informed by monitoring outcomes.

Impact

Bottani serves as a catalyst for achieving two major goals in the SDG framework. First, SDG number 2, Zero Hunger. The agricultural productivity resulting from precise and efficient farming techniques will produce a surplus of food, thus helping to reduce hunger.

Second, SDG 7: Affordable and Clean Energy. By utilizing solar panels, farmers do not have to worry about rising fuel and electricity costs. The use of solar panels also leaves no carbon footprint, so this innovation not only saves humans but also saves the planet.