# Smart farming system

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Introduction

Smart Farming System is a way to help farmers grow crops better. It uses sensors to measure how much water the crops need and gives them the right amount of water. Farmers can also use technology to adjust how much fertilizer to use based on the nutrient levels. This helps farmers waste less and grow more crops. Smart Farming System is unique in that it allows farmers to break away from the traditional NPK ratio and use any type of ratio they want. With Smart Farming System, farmers can use resources like water and fertilizer more efficiently, making farming more sustainable and productive.

Features

➢ It can connect to Wifi, so farmers can control it from their phones even when they are away from their farms.

➢ It can also be run using voice commands through devices like Google Home or Echo Dot.

➢ It also measures NPK nutrients level in the tanks and send it to the app, so if the tanks get empty famers can refill it and use it.
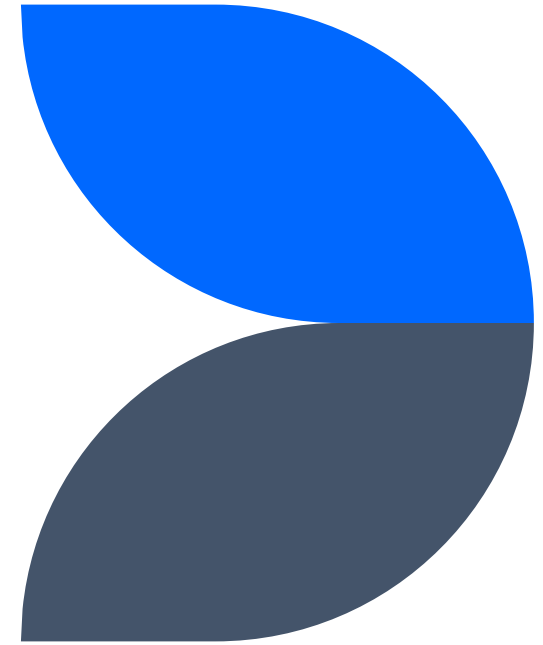
Working

1.The moisture sensor senses the moisture level in the soil and sends the data to the NodeMCU microcontroller.
2.The NodeMCU microcontroller reads the data from the moisture sensor and sends it to the app via wifi.
3.The farmer can view the moisture level data on the app and can adjust the water flow to the crops by turning on the solenoid valve to increase or decrease the water flow.
4.The farmer can also adjust the NPK levels by turning on the corresponding solenoid valves for nitrogen, phosphorus, and potassium. This helps the farmer to use any type of NPK ratio they want.
5.The relay controls the solenoid valves based on the data received from the moisture sensor and the farmer's inputs on the app.
6.The farmer can control the Smart Farming System remotely through the app, even when they are away from the farm.
7.The system can also be controlled using voice commands through devices like Google Home or Echo Dot.

Future plans

➢ In future we can do more development in this

➢ By using AI and Machine Learning(ML) it can supply nutrients and water on its own can tell farmers what is the nutrient level in soil can also measure PH level in soil with the help of sensor and wind speed temperature of that area and care the plant according to the data.

➢ By using AI and Machine Learning(ML) it can warn farmers about any climatizes so the farmers can take the necessary step according to it.

➢ In India the villages saw unconditional power cuts, so we can add solar panels to it so it can work even there is power cuts.

➢ We can use electronic waste to make it more cheaper and eco friendly , can also use plastic waste to make it even cheaper.
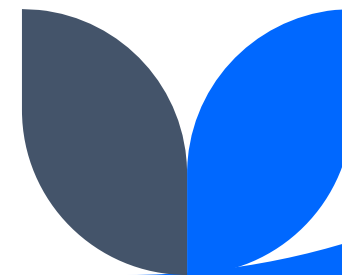
Advantages

➢ **Improved efficiency:** Smart Farming Systems can help farmers use resources such as water and fertilizer more efficiently, resulting in less waste and more sustainable practices.

➢ **Customizable nutrient ratios:** Smart Farming Systems allow farmers to break away from traditional NPK ratios and use any type of ratio they want, giving them more flexibility in their farming practices.

➢ **Increased crop yield:** By providing crops with the optimal amount of water and nutrients, a Smart Farming System can help improve crop yield.

➢ **Remote control:** With Wifi connectivity and voice commands, farmers can control the Smart Farming System even when they are away from their fields, making it more convenient to manage their crops.

➢ **Better decision-making:** With the help of sensors and data analytics, Smart Farming Systems can provide farmers with valuable insights into their crops and soil conditions, helping them make better decisions for their farms.

Thank you