

Bluetooth Based Agriculture Robot

- Plough, Level, Seed and Water

<https://www.youtube.com/watch?v=DX6aivHaP1k>

The Solar Agribot is an innovative, eco-friendly agricultural robot designed to automate essential farming operations such as seeding, watering, ploughing, and land levelling. The system is powered by a solar panel with a rechargeable battery and regulated using an LM2596 voltage converter, ensuring sustainable and efficient energy utilization. The core controller of the system is an Arduino UNO, which coordinates all operations.

The robot is wirelessly controlled by the user through an Android mobile application using an HC-05 Bluetooth module, enabling real-time control and monitoring. Multiple relay modules are used to operate DC motors for robot movement, water pumping and seeding mechanisms. Additionally, ploughing and levelling tools are mechanically attached to the robot frame, allowing these processes to be performed automatically as the robot moves across the field.

This system reduces human labor, increases precision in farming tasks, and promotes smart agriculture practices. By integrating renewable energy with automation and wireless control, the Solar Agribot offers a cost-effective and efficient solution for modern farming needs, especially in remote and rural areas.

Objectives:

- To design and develop a solar-powered agricultural robot for smart farming applications.
- To automate seeding, watering, ploughing, and land levelling using a single robotic platform.

- To utilize solar energy with a rechargeable battery for eco-friendly and sustainable operation.
- To enable wireless control of the robot through an Android mobile application using Bluetooth.
- To control robot movement and farming mechanisms using an Arduino UNO and relay modules.
- To reduce human labor and improve the efficiency of agricultural operations.
- To ensure precise and uniform seeding, watering, ploughing, and levelling of farmland.
- To provide a low-cost, energy-efficient, and user-friendly solution for modern agriculture, particularly in rural and remote areas.

Components used:

- Battery Power supply.
- Arduino UNO.
- Solar.
- Charging Circuit.
- Relays.
- HC-05 Bluetooth module.
- Ploughing Mechanism
- Levelling Mechanism
- Seeding Mechanism
- Watering System

- DC motors.

Software used:

- Embedded C Language.
- Arduino IDE.
- Express SCH for circuit design.

Block diagram of the project

