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Automatic Seed Sprayer Machine

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Abstract: *The Project, is to make a grounded on Seed Sprayer Machine. The design and manufacturing of a solar- powered seed sprayer machine aims to address sustainable husbandry challenges by offering aneco-friendly, cost-effective, and effective result for seed sowing and spraying. Conventional sowing styles frequently demand high labor, energy costs, and energy, while electric- powered druthers calculate onnon-renewable coffers. A solar- powered seed sprayer machine harnesses solar energy to givea renewable power source, significantly reducing energy consumption and emigrations. The machine comprises a solar panel, rechargeable battery, motorized sprayer, seed hopper, and distribution system. The solar panel powers the motor and sprayer, charging the battery for use during low sunconditions, icing nonstop operation. Precision controls allow for accurate seed allocatingand invariantspraying, perfectingcrop yield eventuality and resource use effectiveness.*

In moment's period all sectors are moving towards the rapid-fire growth using numerous advanced technologies. All these sectors, husbandry is also one of them. In order to meet the adding demand of food, growers have to apply advanced ways so that the soil texture isn't affected and the overall food product is increased. Hence, in this design we end at designing and fabricating a solar operated seed sprayer machine. Seed sowing process is generally carried out by humans using homemade power. In this solar seed sprayer machine design, seed in a hopper gets scattered by means of addict or cracker directly to the land without any homemade trouble. Using this process, the seeds are fed in the land during the time of plough. The main advantage of using this fashion is that, it reduces the time of seed to land and reduces mortal sweats. In this solar husbandry sprayer solar panel is used as power source which is used to run the addict, and therefore doesn't bear any freshpower force. This innovativemechanical design of seed sowing outfit can save further time for sowing process and also it reduces a lot of labour cost. This solar agrosprayer designis veritably helpful for small scale growers...

Keywords: Seed Sprayer, Seed Hopper

I. INTRODUCTION

The Project is based on Solar Seed Sprayer Machine. From the Green Revolution to policy reforms and technological advancements, Indian agriculture has undergone significant transformations over the decades, adapting to evolving challenges and opportunities. Despite progress, issues like land fragmentation, water scarcity, and market inefficiencies persist, further compounded by the COVID-19 pandemic. With 70% of the population engaged in farming, ensuring sustainable agricultural development is paramount for food security, rural livelihoods, and environmental preservation. India is an agriculture-based country in which, 70% of people depends on the outcome of farming. But if we observe that with increase in population the farm gets distributed among the family and because of this, farmer in India held averagely only two care farms. Farmers face significant economic challenges, often struggling with poverty that prevents them from investing in modern agricultural machinery like tractors and other expensive equipment. As a result, they are compelled to rely on traditional farming methods passed down through generations. These traditional methods may be labour-intensive and less efficient compared to modern techniques, leading to lower yields and perpetuating the cycle of poverty. Lack of access to credit, limited infrastructure, and volatile market conditions further exacerbate the economic hardships faced by farmers, making it difficult for them to break out of this cycle and improve their livelihoods. Efforts to address these economic barriers, such as providing access to affordable financing, training in modern farming techniques, and improving market access, are crucial for empowering farmers and fostering

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sustainable agricultural development. Basically, many farmers in India also use bullocks, horses and he-buffalo for farming operation. This approach not only boosts efficiency but also empowers farmers to compete on a global scale by increasing their output and quality. Moreover, it reduces dependency on unpredictable human and animal labour, ensuring consistent productivity regardless of external factors. We are developing this smart multifunction agribiont which will satisfy all this need and to solve labour problem. Reason for selecting the problem • Lack of mechanization in farming • Required excess efforts for different process. • Required more man power. • Excess time consumption for performing individual process.

II. RELATED WORK

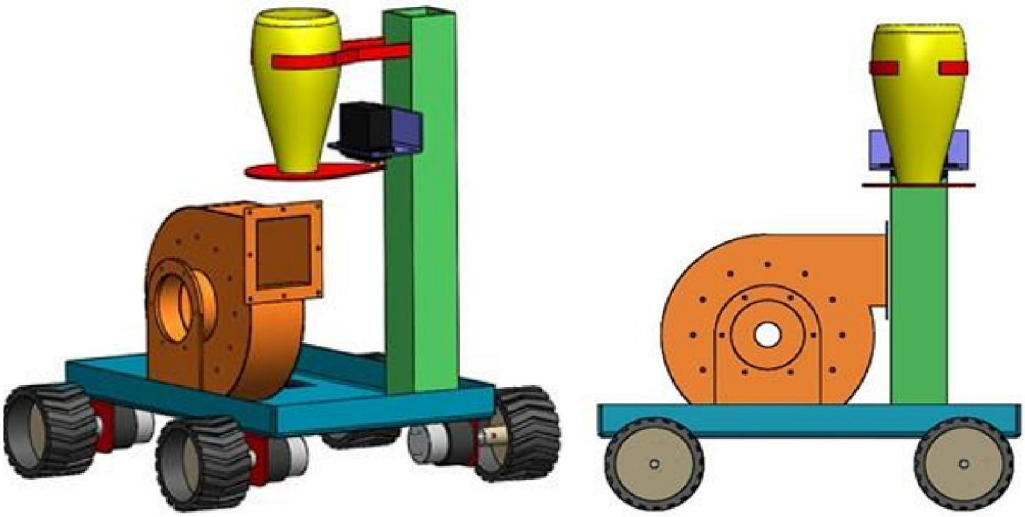
Objective: Understand the problem, identify user needs, and define system requirements.

- Study weed seed characteristics and growth cycles.
- Identify suitable detection and destruction methods.
- Assess available solar power technologies for energy efficiency.

Objective: Develop a conceptual design of the machine.

- Solar Power System – Select high-efficiency solar panels and battery storage.
- Seed Detection System – Integrate AI-based image recognition, infrared sensors, or spectral analysis.
- Seed Elimination Mechanism – Choose the best method for killing seeds:
- Thermal Destruction – Using concentrated solar power or electric heating.
- Mechanical Crushing – Grinding or pulverizing seeds to prevent germination.
- UV Light Exposure – High-intensity UV to damage seed DNA.
- Navigation System – Implement GPS, AI-based path planning, or sensor-based movement. Control & Monitoring – Design a user interface for remote operation and data monitoring.

III. METHODOLOGY



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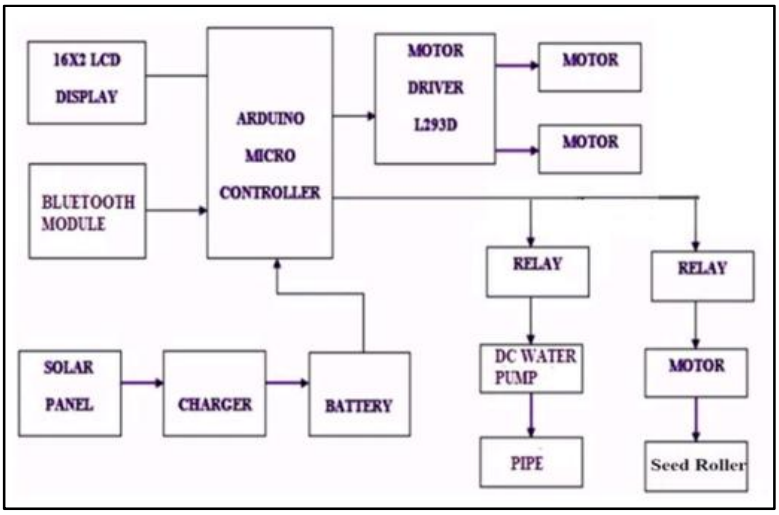
IV. BLOCK DIAGRAM



V. HARDWARE COMPONENTS

- Arduino uno
- Lithium battery of 12v
- Wheel
- Ultrasonic Sensors:

Arduino Uno

Lithium battery of 12v

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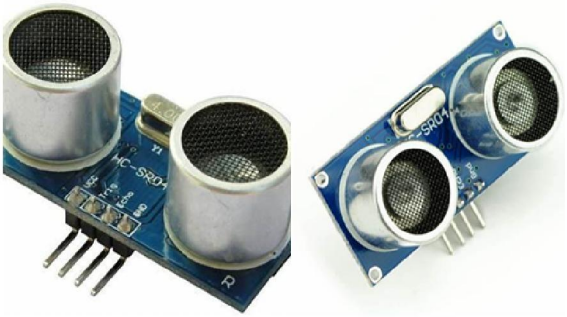
Wheel

Ultrasonic Sensors



VI. PROPOSED MODEL IN REAL LIFE

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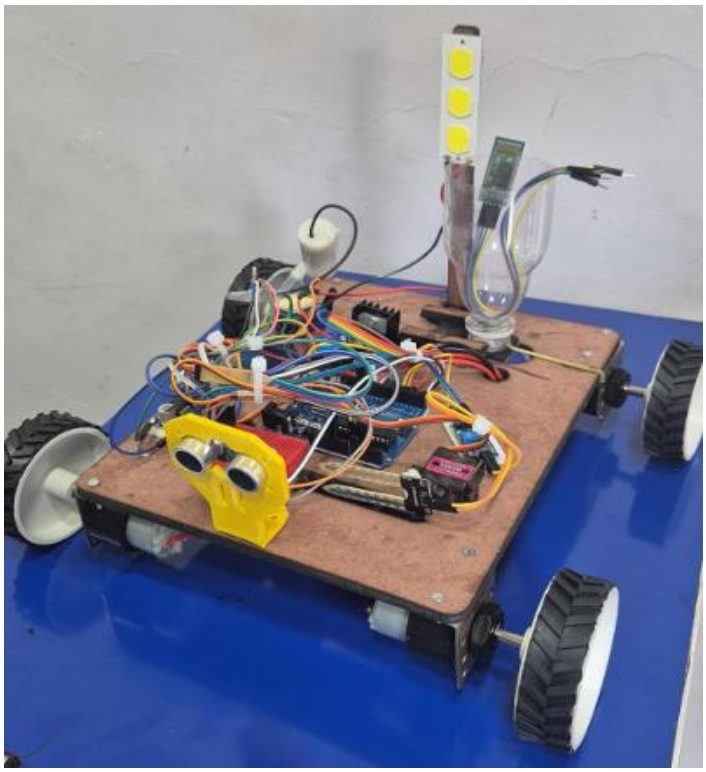

VII. CONCLUSION

A solar seed sprayer machine is designed for small farmers to improve their productivity. In this machine a common seed storage place is introduced to reduce the cost of the machine. The drawbacks in the existing sowing machine are rectified successfully in our machine. It will be more useful for small farmers and the agricultural society. Thus, solar operated automatic seed sowing machine will help the farmers of those remote areas of country where fuel is not available easily. And also, they can perform their regular cultivation activity as well as saves fuel up to larger extent. At the same time by using solar energy environment pollution can also be reduced. Thus, aiming to save the revenue of government & also most demanded fossil fuel. By using this innovative project of seed sowing equipment, we can save more time required for sowing process and also it reduces lot of labourer cost. It is very helpful for small scale farmers.

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