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PV Based Design and Fabrication of Multipurpose Seed Sowing Machine

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ABSTRACT: In India almost 75% of people are depending on agriculture. This project is an eco- friendly and pollution free operation & are performed in the agricultural field like inter cultivation, seed sowing, good carrying and pesticides spraying etc.by using this machine we can reduce the most of the man power and the time. In agriculture it is very important to fill the gap between the farmers and the implementation of Technology Energy demand is one of the major thread for our Country. Finding solutions, to meet the energy- demand is the great challenges for social scientist, engineers, entrepreneurs and industrials of our country according to them, applications of non-convectonal energy is the only alternate solutions for Convectonal energy demand. Now a day the concept and technology employing this non- conventional energy becomes very popular for all kinds of development activities. One of the major area, which finds number applications are in agricultural sector, here we are fabricating the agriculture multi-purpose machine is a new innovation model which is mainly used for cultivation, seeds sowing and water spraying.

KEYWORDS: Cultivation, seed sowing, goods carrying, pesticides spraying.

I. INTRODUCTION

Seed sowing machine is a device which helps in the sowing of seeds in an asked position hence aiding the growers in saving time and plutocrat. The introductory ideal of sowing operation is to put the seed and toxin in rows at asked depth and seed-to-seed distance, cover the seeds with soil and give proper contraction over the seed. The paper discusses different aspects of seed sowing machines which will be helpful for the husbandry assiduity to move towards robotization. The agrarian assiduity has always been the backbone of India's sustained growth. As the population of India continues to grow, the demand for yield grows as well. Hence, there's a lesser need for multiple cropping on the granges and this in turn requires effective and high-capacity machines, robotization of the Agricultural Hence, there's a lesser need for multiple cropping on the granges and this in turn requires effective assiduity in India is still in a stage of immaturity due to the lack of knowledge and the attainability of advanced tools and ministry. In traditional styles seed sowing is done by broadcasting manually, opening furrows by a plough and dropping seeds by hand. The main work of sowing operation is to sow seeds at required depth with specific spacing between the two sowed seeds. This can be achieved with the help of seed sowing machine which will dig the furrow and sow the seeds. After the seeds being placed in the furrow land, it will cover the sowed seeds with soil and sprinkle water. Seed sowing machine saves time and labour requirement, thus saving a lot of money along with the assurance of proper see broadcasting.

II. LITERATURE REVIEW

Mahesh R. Pundkar. et.al High precision pneumatic planters have been developed for many verities of crops, for a wide range of seed sizes, resulting to uniform seeds distribution along the travel path, in seed spacing. The basic function of sowing operation is to sow the seed and fertilizer in rows at required depth and to maintain the distance between the seeds and provide proper compaction over the seed

[1].Aysha Akhtar and et al., studied the information about different types of innovations done in seed sowing machine. This machine is the main equipment of the agriculture field. The aim of sowing technique is to put the seeds in rows at specific depth and space between seeds

[2].R. Joshua V. Vasu and P. Vincentare discussed the "Energy-demand" is the major problem for India. Finding solutions, to meet these demands is a difficult challenge for Social Scientist and Engineers. This paper deals how a 'Power' which is already in use and works with fossil fuel can be converted into a solar operated machine.



[3] Ibukun B. Ikechukwu et al., focused on the planning and fabrication of an operated by hand singlerow maize planter capable of delivering seeds exactly in an exceedingly line with uniform depth within the furrow and with uniform spacing between the seeds.

[4] Roshan V Marode et al., in the traditional method, the rate of seed sowing is more but the total operating time is more and the labour cost is much more. Today's aim is to go towards the rising of all sectors as well as the agricultural sector. New techniques have to be implemented to achieve future demands by the famers, which will not affect the soil but crop production will be increased.

[5] Swetha S. et.al In this machine solar panel is used to capture solar energy and then it is converted into electrical energy which in turn is used to charge 12V battery, which then gives the necessary power to a shunt wound DC motor. This power is then transmitted to the DC motor to drive the wheels. And to further reduction of labor dependency, IR sensors are used to maneuver robot in the field. Here 4 post sensors are used to define the territory and robot senses the track length and pitch for movement from line to line.

III. PROBLEM STATEMENT

Lack of mechanization in farming.

1. Mechanization is a crucial input for agricultural crop production and one that historically has been neglected in the content of developing countries. Factors that reduce the availability of farm power compromise the ability to cultivate sufficient land and have long been recognized as a source of poverty.

Required excess efforts for different process.

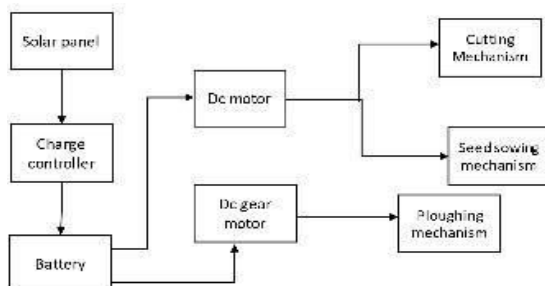
1. Soil preparation: The soil is plowed, leveled and manured before sowing the seeds.
2. Sowing: Seeds of good quality are sowed or dispersed in the soil.
3. Manuring: The nutrients are provided to the seeds at regular intervals. Manure is the decomposition product of plant and animal wastes.
4. Weeding: Weeds or unwanted plants are removed using we dicides or removing them Manually
Excess time consumption for performing individual process
5. By introducing Machine power, mechanised farming etc we can reduce manpower in farming and direct them to small agriculture land to remove their poverty.

IV. PROPOSED SYSTEM

While concluding this stage-1 report, we feel quite fulfil in having completed the project assignment well on time which is literature stage-1, we had enormous practical experience on fulfilment of the report writing of the literature survey & working project model. We are therefore, happy to state that the in calculation of Electrical field proved to be a very useful purpose in future fabrication parts. Although the design criterions imposed challenging problems which, however were overcome by us due to availability of good reference books which work had already done by us in this stgsge-1 report. In future we will do the selection of raw materials as per design specifications given in stage-1 report which will help us in machining of the various project parts & components. In next stage-2 our work is to develop, fabricate & test the project by giving our potential efforts during machining, fabrication and assembly work of the project model to our entire satisfaction to solve the problem in agricultural field for social welfare in next stage-2.



BLOCK DIAGRAM



V. WORKING

The solar panels which are observed the solar radiation in the form of heat energy or DC. This DC is stored in battery charged circuit. There is steady static blade is used at rear side of machine with shaver blade. But in this machine we modified the tooling system is steady into rotary which is driven by Electric de motor with producing the torque. This consist of a solar panel and it generates energy to run this machine the solar radiations are immerse on Solar panel by this process the solar energy is converted into electrical energy is stored in a battery then the battery passes electric energy to controller kit, when controller kit is energized we can minimize or maximize motor speed as per our need. After controller kit gets it supply to run motor, when the motor runs and final work is done by rotor where there is turn machine we can tum it easily can be charged from solar panel or alternatively by direct electrical source. Here we are using PMDC (Permanent magnet DC) motor which is having the features like, it is a type of motor that uses permanent magnet to create the magnetic field.To run the PMDC motor, the supply is taken from the battery. Energy required for spraying purpose will be supplied from battery. Motor shaft is arranged to place vertically, gear system makes conversion of vertical rotation into wheel movement in forward direction. The required energy will be drawn from battery. Seed container is used to store the seeds. Lever is fitted to close the seeds after the seed sowing. The blade is rotated in clockwise direction but the shaft rotates in anti-clockwise direction to develop a torque. The whole machine requires the 12V battery to operate the system. In the absence of solar energy we can use alternative source of supply.

VI. COMPONENTS

The main function of frame is to carry whole assembly on it so it has to be strong enough to hold it. The frame square pipe and it is formed out of mild steel.

Wheels: Wheel is used to carry the whole assembly and move machine from one place to another by rotary motion of wheel is a wheel, most commonly a wire wheel, designed for a bicycle. Bicycle wheel is designed to fit into fork via drop outs, and hold bicycle tire. A typical modern wheel has a metal hub, wire tension spokes an carbon fibre rim which holds a pneumatic rubber tire. We use a tubeless tire wheel.

Solar panel: A solar cell (also known as a photovoltaic cell or PV cell) is defined as an electrical device that converts light energy electrical energy through the photovoltaic effect.

Battery: We used two batteries with the voltage of 12V and current of 7.5A each, producing a fully charged output voltage of 24volts. 15Amps. A battery cell consists of two lead plates a positive plate covered with a paste of lead dioxide and a negative made of sponge lead, with an insulating material(separator) in between.

DC motor: DC motor, stator field is generated by DC motor and hence the field remains constant. Due to constant stator field, linear torque/speed characteristics can be obtained. DC motor provides high torques; it is widely used in the application where accurate position control is required. In this project the motor need starting torque as to be high that's why this project use DC motor of following rating.

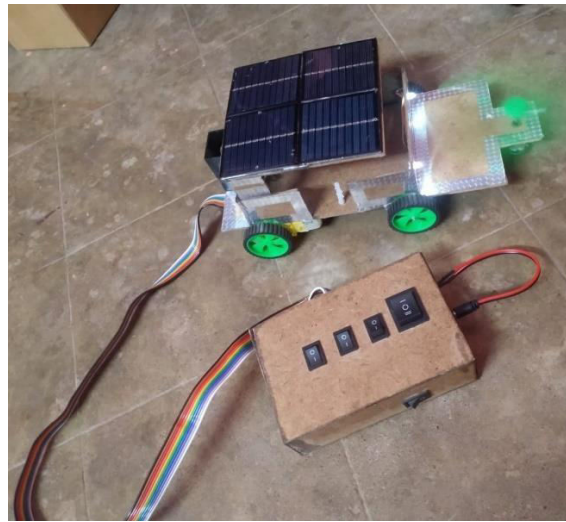
DC Gear Motor: DC gear motor in a solar power seed sowing machine for moving a wheel in a vehicle is a smart choice. DC gear motors provide the necessary torque and control required for precise movement, making them ideal for applications like seed sowing where accuracy is crucial. Plus, the solar power aspect adds sustainability and reduces



reliance on traditional energy sources. It's a win-win for efficiency and eco-friendliness.

Charge Controller: The charge controller is used for the conversion of solar energy collected by the solar panel the electrical power. The electrical power after the conversion in the charge controller is stored and used through the battery.

VII. PHOTOGRAPH OF MACHINE



Future Scope

- 1) Introduction of drill in place of cutter can be used as soil erosion equipment.
- 2) Machine can be operated automatically with the help of remote control or navigation sensors.
- 3) Multi-hopper can be attached instead of single hopper for sowing of a large farm.
- 4) Seed Spacing sensors can be used for accurate spacing.

VIII. CONCLUSION

In India about 70% of the population lives in rural areas and their main source of income is dependent on agriculture sector. So, it is important to have special focus on agriculture sector and to apply latest technologies and methods which are more advance and efficient. This will lead to better growth rate of the country. Our machine which operate on solar power when compared to different traditional seed sowing methods, it can be concluded that:

- 1) Sowing rate can be controlled
- 2) Seed spacing can be achieved
- 3) Less manual power is required
- 4) No pollution is caused
- 5) Economical
- 6) Variety of seeds can be sowed

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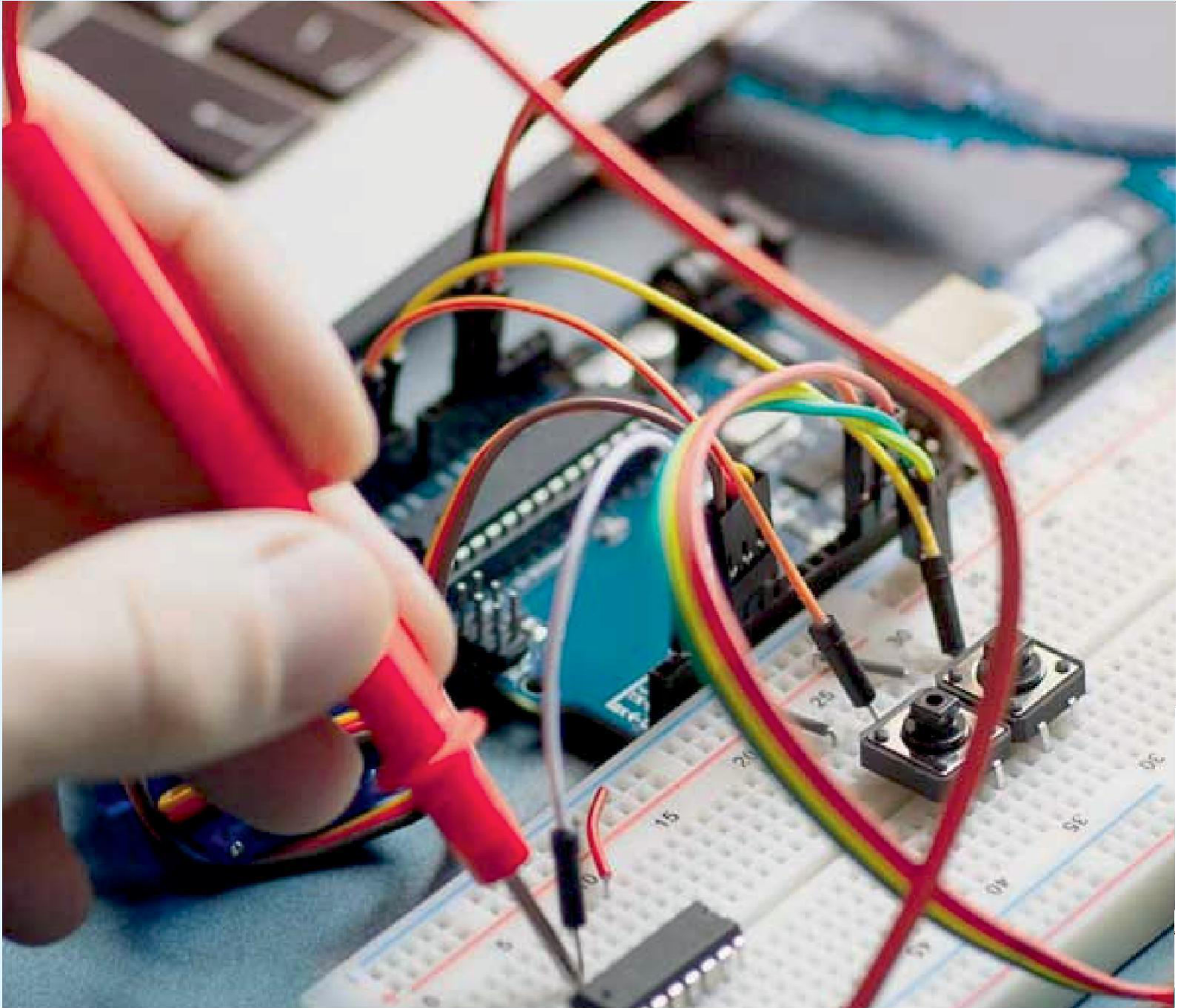


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