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Solar Powered Fully Automated Seed Sowing Machine for Multiple Applications

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ABSTRACT: The farming process often used conventional seeding operation used conventional seeding operation takes more time and more labor. the seed feed rateis more but the time required for the total operation is more and the total cost is increased due to labor hiring of equipment the conventional seed sowing machine is efficient time consuming. today's era is marching towards the rapid growth of allsectors including the agricultural sector to met the future techniques which will not affect the soil texture but will increase the overall crop production. agriculture sector is the backbone of Indian economy .there is a need for improvement in agriculture sector, which can be achievement by using advanced technological methods for forming process like digging sowing and irrigation etc. mechanization reduces labor cost and improves the overall productivity without affecting the quality of soil .this machine maintains seed to seed spacing and row to row spacing. It also decreases the cost of sowing the seeds and requirements of labor

KEYWORDS: Solar panel, Motor, Battery, Voltage Controller, Control Unit.

I.INTRODUCTION

The India is the place known for villages. This being said the major occupation of majority of villages in India is agriculture. Our whole economy is based on agriculture. Agricultural field involves the effective production of food, feed, fiber,and other goods for humans and animals. Also agriculture includes operations like production of cut flowers, timber, fertilizers, animal hides, leather, and industrial chemicals. Heavy material handli. For example, in vegetable cropping, handling of heavy vegetables in organic farming, handling of heavy compost bags. Near about 70% people are dependent upon agriculture.   Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. It has to support almost 17 per cent of world's water resources. The economic reforms, initiated in the country during the early 1990s, have put the economy on a higher growth trajectory. Annual growth rate in GDP has accelerated from below 6 percent during the initial years of reforms to more than 8 percent in recent years. This happened mainly due to rapid growth in non-agriculture sector.

The workforce engaged in agriculture between I980-81 and 2006-07 witnessed a very small decline; from 60.5 percent to 52 percent. According to a study made by ISAE, it is found that hoes, axes and shovels are the main farm tools used by the farmers in India for agricultural operation. These tools are conventional, time immemorial and no improvement in agricultural practice is adopted hence, it is necessary to develop a system which results in drudgery reduction and is user friendly to agriculture community in India.

II.METHODOLOGY

The method of seed sewing is with the help of a simple device having bamboo tube with a funnel on it attached to a plough. As the plough moves over the field the tube attached to it leaves the seeds kept in the funnel at proper spacing and depth. The sowing methods have following limitations; 1) In manual seeding, it is not possible to achieve uniformity in distribution of seeds. A farmer may sow at desired seed rate but inter- row and intra – row distribution of seeds is likely to be uneven resulting in bunching and gaps in field. 2) Poor control over depth of seed placement. 3) It is necessary to sow at high seed rates and bring the plant population to desired level by thinning. 4) Labor requirement is high because two persons are required for dropping seed and fertilizer. 5) The effect of inaccuracies in seed placement on plant stand is greater in case of crops sown under dry farming conditions.
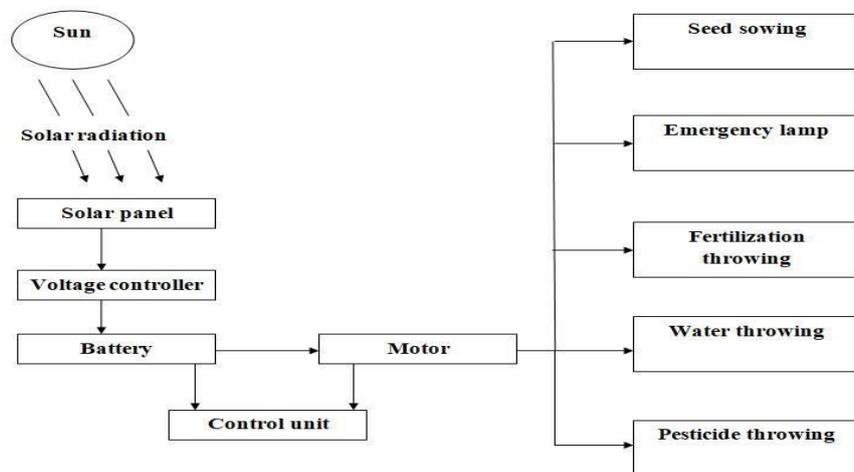

Figure 1: Diagram of solar powered fully automated seed sowing machine

A solar panel (photovoltaic module or photovoltaic panel) is a packaged interconnected assembly of solar cells, also known as photovoltaic cells. The solar panel is used as a component in a larger photovoltaic system to offer electricity for commercial and residential applications. Because a single solar panel can only produce a limited amount of power, many installations contain several panels. This is known as a photovoltaic array. A photovoltaic installation typically includes an array of solar panels, an inverter, batteries and interconnection wiring. Solar panels use light energy (photons) from the sun to generate electricity through the photovoltaic effect.

Solar powered fully automated seed sewing machine technology is a method design in order to reduce the human efforts as it requires less amount of manmade labour and can be handle efficiently without a skilled operator. Seeding manually requires lots of time, therefore this technology develops which eradicated much amount of time with proper efficiency, less time consuming, accuracy in sowing seed at specific distance.   The majority of modules use wafer-based crystalline silicon cells or a thin-film cell based on cadmium telluride or silicon. Crystalline silicon, which is commonly used in the wafer form in photovoltaic (PV) modules, is derived from silicon, a commonly used semi-conductor .In order to use the cells in practical applications, they must be connected electrically to one another and to the rest of the system protected from mechanical damage during manufacture, transport, installation and use (in particular against hail impact, wind and snow loads). This is especially important for wafer-based silicon cells which are brittle. protected from moisture, which corrodes metal contacts and interconnects, (and for thin-film cells the transparent conductive oxide layer) thus decreasing performance and lifetime. Most modules are usually rigid, but there are some flexible modules available, based on thin-film cells.

III.SIMULATION

SOFTWARE REQUIERIMENTS:

- Matlab version 7.10
- Window XP operating system

For technical computing MATLAB is a high performance language

Which integrate with computation, visualization and programming .It is an interactive system in an array and it does not require dimensioning. It allows us to solve many technical computing problems.
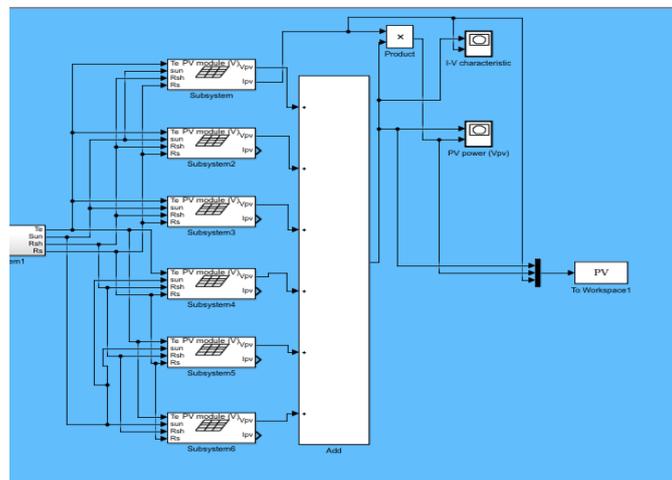

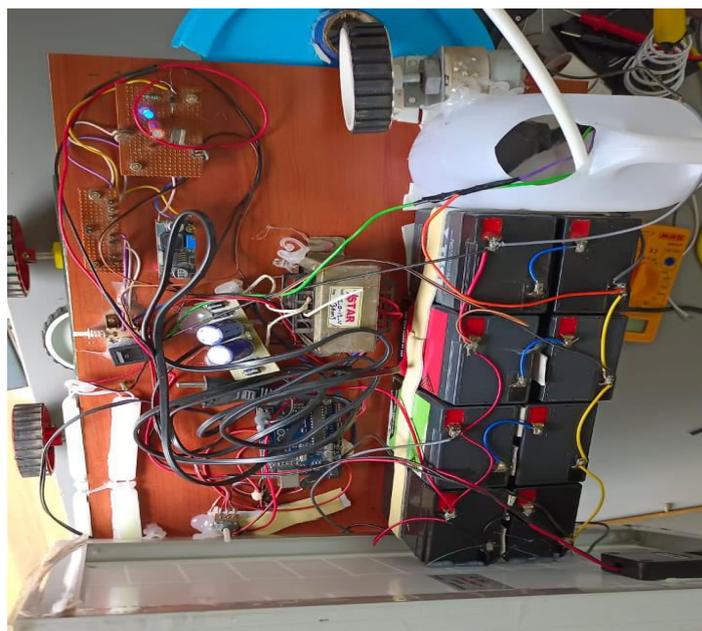**Figure 2. Simulation Solar Array**

Figure 3. Hardware Model

IV. CONCLUSTION

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 machine can be made by raw materials also which saves the cost of whole project and is easily manufactured in available workshops. Hence by using this machine we can achieve flexibility of distance and control depth variation for different seeds. hence usable to all seeds. perform the various simultaneous operations and hence saves labor requirement so as labor cost labor time and also energy. The basic modeling of solar plant has been stimulated and the obtained results to be very much useful to design real time hardware for the agriculture applications in our project.

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