

Solar Operated Multigrain Seed Sowing and Fertilizing Machine

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Abstract

Agriculture is the major sector in the world that plays a vital role in developing the economy of a nation. Agrotechnology is the process of implementing the recent technologies to develop crops that are being produced. The use of agro-technology not only helps in improving the efficiency of the crop that is being produced but also helps in developing devices that are suitable for doing mechanical works in the fields. This results in minimization of the total cost of production, saving of time and reduction in the effort involved in the process. The new technology should also be economically feasible and hence the behavior of the technology and its role in society is an important consideration before developing a new product or process. In this work, solar operated multigrain seed sowing machine has been developed that helps the farmers in sowing operation by using sun rays with the least efforts. This is multi-utility bullock and solar-driven flexible equipment which can be used as equidistance seed sowing cum fertilizer as well as for plowing. Mixed cropping is obtained at the same time. Crops such as Jowar, Tuar, Udad, Bajra, Soyabin, etc.

Keywords: Agro-Machinery, Multigrain, Seed Sowing Machine, Solar Panel, Metering Mechanism

I. INTRODUCTION

Today the environmental impact of agricultural production is very much in focus and the demands to the industry are increasing. In the present scenario, most of the countries do not have sufficient skilled manpower in the agricultural sector and that affects the growth of developing countries. Therefore farmers have to use upgraded technology for cultivation activity (digging, seed sowing, fertilizing, spraying, etc.). So it's time to develop the agro machinery to overcome this problem. Agriculture has been the strength of the Indian economy and it will continue to remain so for a long time. Seed sowing machine is a device that supports the sowing of seeds in a wanted location hence support the farmers in saving time and money. The straightforward objective of sowing operation is to put the seed and fertilizer in rows at wanted depth and seed to seed space, shelter the seeds with soil and deliver suitable compaction over the seed. The agricultural industry has always been the backbone of India's continuous development. As the population of India continues to raise, the ultimatum for produce grows as well. Hence, there is a greater need for numerous cropping on the farms and this, in turn, requires effective and high-capacity machines. This paper is about the dissimilar types of methods of seed propagating and fertilizer location in the soil and developing a multifunctional seed sowing machine that can perform simultaneous operations.

II. MECHANISM OF OPERATION

The power from PV panels is transmitted to the battery and then to the motor which will drive the front wheel. The chain and sprocket mechanism is provided in between the front and rear wheels so the rear wheels will be driven. As soon as the machine is pulled by the power source the ground wheel holds the grip on the surface of the field, the motion is transferred from the teeth wheel shaft to the main shaft by chain, the main shaft is rotated and the seeds are poured from hopper to the groove the seed metering mechanism, as the hole matches with hopper seed fall into the hose and from hose to the ground. The teeth plow the soil in a definite pattern. For different types of seeds, the manual seed adjustment mechanism (seed adjuster) is provided.

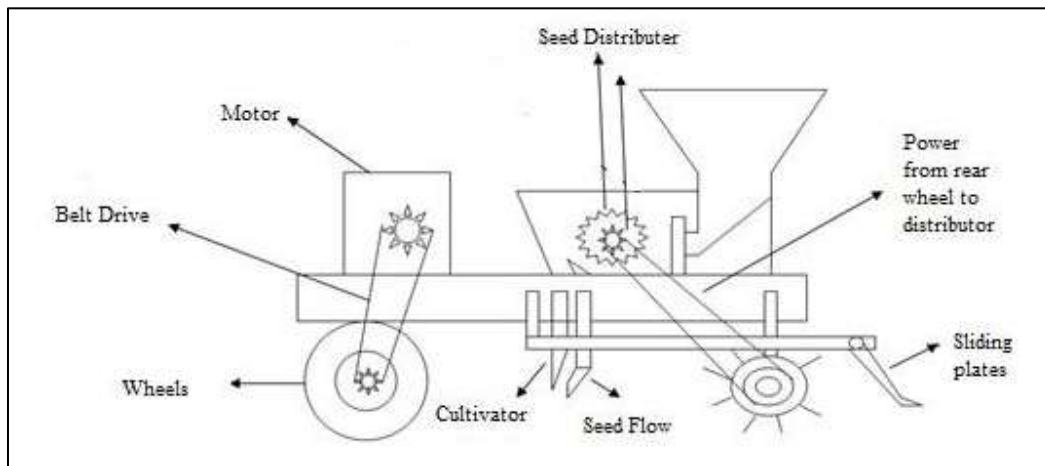


Fig. 1: Mechanism of Operation

III. MAIN COMPONENTS

- 1) Solar plate
- 2) Motor
- 3) Chain drive mechanism
- 4) Wheels
- 5) Seed and fertilizer hopper
- 6) Pipes
- 7) Cultivator
- 8) Covering plate
- 9) Metering mechanism

IV. CAD MODEL

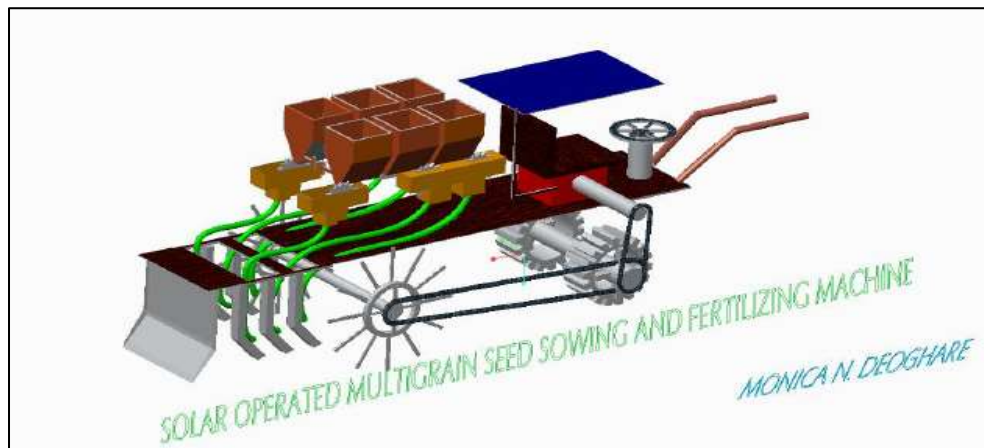


Fig. 2: Solar Operated Multigrain Seed Sowing and Fertilizing Machine

V. FUNCTIONS

- 1) Sowing seeds with the fertilizer of dissimilar sizes and shapes.
- 2) Place the seed in the suitable pattern of spreading in the field.
- 3) Place the seed (equidistantly) exactly and homogeneously at the desired depth in the soil.
- 4) Cover the seed and compacted the soil around it.

VI. CONCLUSION

As we know that in our country about 70% of the population lives in villages & their mainly income depend on the agricultural source. Hence the aim of this research of Solar Operated Seed Sowing and Fertilizing machine is to fulfill the tasks like digging, seed sowing and fertilizing by using non-conventional energy sources. This machine will help the farmers of those remote areas

of a country where fuel is not available easily. And also they can perform their regular cultivation activity as well as saves fuel up to an extent. At the same time by using solar energy environment pollution can also be reduced.

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