

Review on Design and Fabrication of Multipurpose Agriculture Machine

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Abstract-In agriculture, the opportunities for robot-enhanced productivity are immense and the robots are appearing on farms in various guises and in increasing numbers. The other problems associated with autonomous farm equipment can probably be overcome with technology. Crop production may be done better and cheaper with a swarm of small machines than with a few large ones.

The main objective of this paper is to design and fabricate smart solar based seed sowing machine which can automatically sow seeds in the field based on variable pitch which is given as input by the farmers using the keypad present on the machine. This smart machine is economical and user friendly for Indian farmers to operate. The purpose is to implement functionality of adding the number of seeds to be sowed using keypad. Moreover, this vehicle is solar powered so that the farmer need not worry about charging. The selection of design consideration is based on land and crop analysis. This machine also consists of ploughing, grass cutting, fertilizer spraying and padding mechanisms.

Keywords-Mechanization, seed sowing machine, solar operated machine

I. INTRODUCTION

Agriculture has been the backbone of the Indian economy and it'll still stay there for an extended time. It has to support virtually 17% of world population from 2.4% of world geographical region and 4.3% of world's water resources. The present cropping intensity of 137% has registered a rise of solely 25.8% since 1950-51. The net sown area is 142 MHA. The basic objective of sowing operation is to place the seed and plant food in rows at desired depth and spacing, overlay the seeds with soil and supply correct compaction over the seed. The counseled row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for various agricultural and climate to achieve optimum yields and an efficient sowing machine should attempt to fulfill these requirements. In addition, saving in cost of operation time, labor and energy are other advantages to be derived from use of improved machinery for such operations. A traditional methodology of seed sowing has several disadvantages.

This paper is about the different types of methods of seed sowing and fertilizer placement in the soil and developing a multifunctional seed sowing machine which can perform simultaneous operations.

II. MODELLING

A. EXPERIMENTAL SETUP

Below diagram shows the overview assembly of our whole robot. It confirms the location of different application on the chassis. The grass cutter mechanism is in the front of the chassis and the ploughing mechanism is at the back end of the chassis. The seed sowing mechanism is near the ploughing mechanism and fertilizer sprayer is above the grass cutter mechanism. The battery is mounted in between the seed sowing machine. Solar panel is mounted on the upper side of the machine. This assembly is made maintaining the C.G. of whole robot and aesthetically looking good.

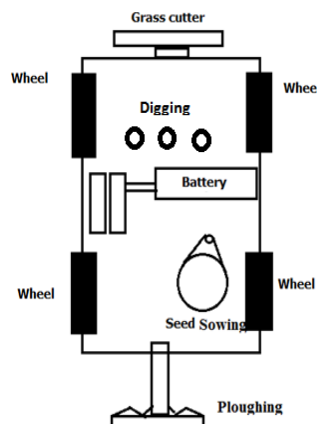


Fig. 1. Experimental Setup of the Machine

B. 3D MODELPICTURE OF MULTIPURPOSE AGRICULTURE MACHINE

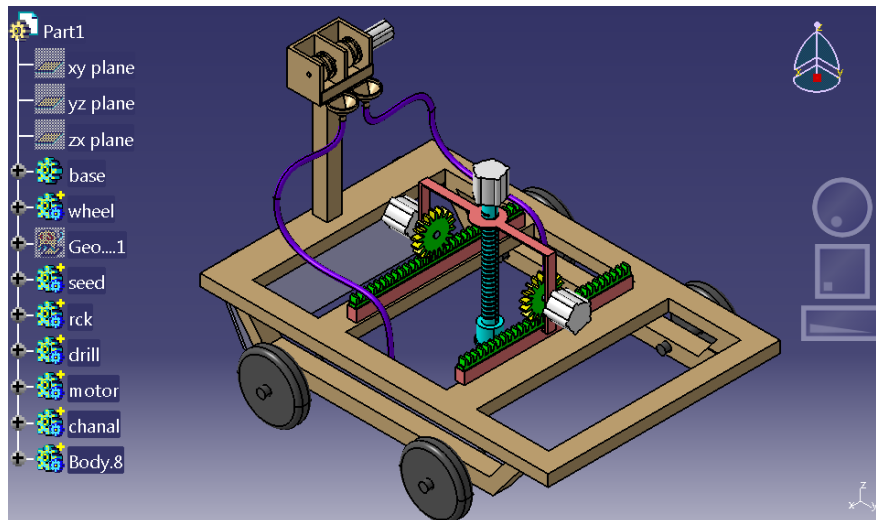


Fig.2. CAD Design of Agriculture Machine

III. LITERATURE REVIEW

A.Nithin P V, Shivaprakash S

The paper aims on the look, development and therefore the fabrication of the mechanism which digs the soil, places the seed, level to shut the mud and sprayer to spray water, these whole systems of the mechanism works with the battery and also the solar energy. More than 40% of the population in the world chooses agriculture as the primary occupation, in recent years the development of the autonomous vehicles in the agriculture has experienced increased interest. The vehicle is controlled by Relay switch through IR detector input. The language input permits a user to move with the mechanism that is acquainted to most of the individuals. The advantages of those robots square measure hands-free and quick information input operations. In the field of agricultural autonomous vehicle, an idea is been developed to analyze if multiple little autonomous machine may well be a lot of economical than ancient giant tractors and human forces.

B. Amol B. Rohokale, Pavan D. Shewale, Sumit B. Pokharkar, Keshav K. Sanap

Agriculture is demographically the broadest economic sector and plays a big role within the overall economy of Asian nation. For the expansion of Indian economy, mechanization is critical. The main purpose of mechanization in agriculture is to enhance the general productivity and production. Planting is conventionally done manually that involves each animate (humans and draught animals), this lead to higher value of cultivation and delay in planting. The main purpose of this paper is to match between typical sowing technique and new planned machine which might perform range of operation. The required row to row spacing, seed rate, seed to seed spacing and fertilizers placement varies from crop to crop may be achieved by the planned machine. This machine reduces the sowing time, human efforts and labor value.

C. Swetha S, Shreeharsha G.H.

The real power needed for machine instrumentality depends on the resistance to the movement of it. Even now, in our country ninety eight percent of the up to date machines use the facility by burning of fossil fuels to run IC engines or external combustion engines. This evident has led to widespread air, water and noise pollution and most significantly has led to a sensible energy crisis in the future. Now the approach of this project is to develop the machine to reduce the operating value and additionally to cut back the time for digging and seed sowing operation by utilizing solar energy to run the robotic machine. In this machine electrical device is employed to capture alternative energy and so it's reborn into voltage that successively is employed to charge 12V battery, which then provides the required power to a shunt wound DC motor. This power is then transmitted to the DC motor to drive the wheels. And to more reduction of labor dependency, IR sensors used to maneuver automation machine within the field.

IV. CONCLUSION

The multipurpose equipment is designed and fabricated with low cost, easy to use and effective equipment for agriculture. By providing a balanced mechanism for various objectives in a single machine signifies the technological improvement in agriculture sector. Single equipment performing more objectives with flexibility in changing the operations will motivate the farmers. The traditional method of seed sowing has many disadvantages.

This paper is regarding the various styles of technique of seed sowing and plant fertilizer placement within the soil and developing a multifunctional seed sowing machine which might perform coinciding operations.

ACKNOWLEDGMENT

It gives us great pleasure to present a project paper on “Design and Fabrication of Multipurpose Agriculture Machine”. In preparing this project report, number of hands helped us directly and indirectly. Therefore, it becomes our duty to express our gratitude towards them.

We are very much obliged to our Head of Department, Dr. N. P. Sherje, Department of Mechanical Engineering, for helping and giving proper guidance. His timely suggestions made it possible to complete this project report for us. All our efforts might have gone in vain without his valuable guidance.

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