

Design and Development of Automatic Operated Seeds Sowing Machine

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Abstract:-The area of agriculture is so wide, therefore this field requires the advance technologies in the process of sowing, cropping, cutting. This advancement in technology will not affect the quality of soil and increase the efficiency of getting crop. During the seed sowing process the feeding of seed as well as fertilizer is pour. Now a days the availability of labor is a major problem faced by farmer. We demonstrate that the easy method for seed sowing. In this work we replace complicated gear system by hall effect sensor for easier and costlier seed sowing and also reduce a need of labor. The Hall Effect sensor convert rotation into distance for which seed sowing at particular distance. Also there is adjustable system for sowing at different distance. By using this machine the sowing can be done row by row and distance will maintain. So this machine reduces their efforts and reduces the cost of seed sowing process with great efficiency and accuracy with reduction in labor requirement.

Key words: Solar Powered, Mechanical Hardware, Motor, hall effect sensor, Microcontroller,

I. INTRODUCTION:-

Agriculture field contribute their presence in the Indian economy and it will continue to remain so for a long time. In any process of agricultural field timeliness is required. Is most important factor and it can be achieve by using an appropriate used of small, portable and advance technology. Manually seed sowing will cause the inefficient and inaccurate seed sowing. This method will do the seed sowing row by row. At a time multiple strips are utilize/used for sowing process. This method will be achieve the great efficiency and accuracy.

In This system gear system is replace by hall effect sensor. With this rotation is converted into distance by using controller ATMEGA16. It will save the labor cost, fuel cost. This method minimize and overcome the disadvantages occurred in previous process and will achieve the spacing between two seeds and depth of the seed sowing

II. OBJECTIVES:-

The seed sowing system is effectively use for automatic sowing with great efficiency and accuracy.

In this the hall effect sensor can be use for conversion of rotation into distance.

Also by using this system we can protect seeds from damaging as well as increases rate of sowing .

III. LITERATURE REVIEW

“a seed sowing machine: a review”

mahesh r. pundkar

ijess volume 3, issue 3. issn: 2249-9482, international journal of engineering and social science.

summary:- stated that the seed sowing machine is a key component of agriculture field. high precision pneumatic planters have been developed for many varieties of crops, for a wide range of seed sizes, resulting to uniform seeds distribution along the travel path , in seed spacing.

“frontline demonstration on bullock-drawn planter enhances yield of soya bean crop.

p.p. shelke

international journal of farm science 1(2):123-128, 2011.

summary:- concludes that bullock drawn planters are becoming necessity for sowing as the skilled workers for sowing are almost diminishing. planting distance and plant population are crucial factors in maximizing the yields of crops.

“effects of sowing method and seed rate on growth and yield of wheat”,

umed ali soomro

world journal of agricultural sciences, vol. 5, no. 2, pp. 159-162.

summary:- in pakistan has evaluated three sowing methods and seed rate in a four replicated rcbd method and concluded that drilling method of sowing at seed rate 125 kg/ha is optimal for yield and quality of wheat grains, because the said sowing method and seed rate distribute seed uniformly and desired depth which provide appropriate depth for seed germination and crop establishment.

IV. DETAILED DESCRIPTIONS

BLOCK DIAGRAM OF SEEDS SOWING MACHINE

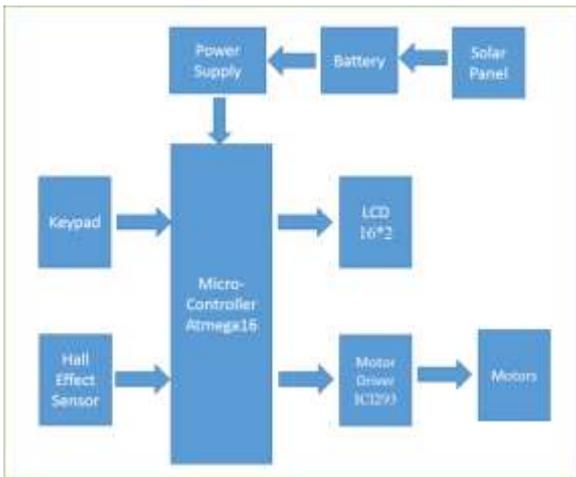


Fig.1 Block diagram of automatic seeds sowing machine

Circuit diagram of automatic seeds sowing machine

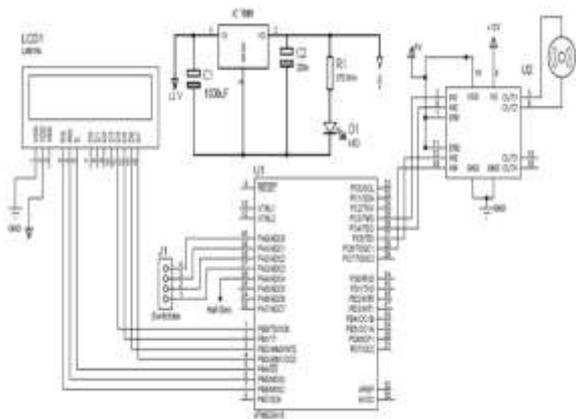


Figure.2 circuit diagram of automatic seeds sowing machine

HARDWARE:-

Model consist of following components:-

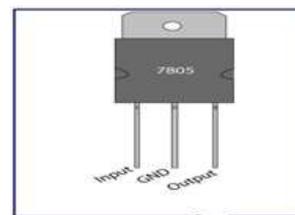
- Mechanical hardware
- Microcontroller
- Induction motor
- hall effect Sensor
- Regulated DC power supply

MICROCONTROLLER

Microcontroller can be termed as a single on chip computer which includes number of peripherals like RAM, EEPROM, Timers etc., required to perform some predefined task. There are number of popular families of microcontrollers which are used in different applications as per their capability and feasibility to perform the desired task, most common of these are 8051, AVR and PIC microcontrollers. In this report we introduce you with AVR family of microcontrollers.

VOLTAGE REGULATOR (7805)

7805 is a voltage regulator integrated circuit. It is a member of 78xx series of fixed linear voltage regulator ICs. The voltage source in a circuit may have fluctuations and would not give the fixed voltage output. The voltage regulator IC maintains the output voltage at a constant value. The xx in 78xx indicates the fixed output voltage it is designed to provide. 7805 provides +5V regulated power supply. Capacitors of suitable values can be connected at input and output pins depending upon the respective voltage levels.



HALL EFFECT SENSORS:-



figure 3: hall effect sensor

Many types of sensors use the Hall Effect to sense the presence of magnetic fields. The above figure is a conceptual drawing of a Hall Effect sensor. A constant current runs through a conductive Hall strip inside the sensor. The drawing shows a rotating magnet near the sensor. The alternating field from this rotating magnet will cause an alternating Hall Effect voltage to be generated across the strip. This alternating voltage waveform is fed into circuitry that shapes the waveform. The output of the circuitry is a digital signal that is either +5VDC or 0VDC. Sensors are available with a variety of output voltages and polarities. In the following discussion, we assume that the

sensor is turned ON by a south magnetic pole, and remains on after the South Pole is removed. When a north magnetic pole approaches, the North Pole will turn the sensor OFF.

V. WORKING ARCHITECTURE:-



figure 4: machine of seed sowing.

Put the seeds and in the box as per its capacity.

When the machine will going in forward way, the motion Is transmitted to the fluted roller seed cup from sprocket at ground wheel through the chain.

The fluted roller seed cup is having the arrangement of seed cut-off and controlling flap to control the amount of seeds.

The seeds will get placed in the furrows through the guide pipes.

In this way the seeds are placed in the furrows at proper distance and this machine maintains the proper row spacing.

V. ADVANTAGES AND APPLICATION

ADVANTAGES:-

It maintains the proper row spacing.

The seeds can be placed at proper depth.

Seed rate can be controlled.

Many seeds can be sown by this machine.

Due to small size machine is portable. And can also be used in small area.

Cost efficient.

Improve agricultural soil carbon sequestration.

Save energy, money and time of a farmer.

DISADVANTAGE:-

It will uses man power to drive the machine.

APPLICATION'S

It use in agriculture for seeds sowing with fixed distance and with more accuracy.

Also it is used for gardening purpose.

VI. CONCLUSION & FUTURE SCOPE

CONCLUSION:-

Innovative Seed sowing equipment's has remarkable influence in agriculture. By using this innovative project of seed sowing equipment we can save more time required for sowing process and also it reduces lot of laborer cost. It is very helpful for small scale formers. After comparing the different method of seed sowing and limitations of the existing machine, it is concluded that the solar powered seed sowing machine can maintain row spacing and controls seed rate.

Control the seed depth and proper utilization of seeds can be done with less loss.

Perform the various simultaneous operations and hence saves labor requirement so as labor cost, labor time and also save lots of energy.

Hence it is easily affordable by farmers. So we feel that this project serves something good to this world and we would like to present it before this prosperous world.

VII. FUTURE SCOPE:-

Introduction of Cutter in place of drill can be used as grass cutter equipment.

Using remote control machine can be made automatic.

Addition of multi-hopper can be attached side by side for sowing of large farm.

Water dripping unit could be included in seed sowing machine.

If the system can attach to the solar vehicle this will be very time efficient as well as effortless work will done by the farmer with automatic, accurate and efficient way.

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