

Agricultural tool for weed Removing and seed sowing operation

Ms. Charulata S. Mali, Ms. Urmila D. Khot, Mr. Rohit P. Kambale, Mrs. S. K. Apte.

Abstract - In India, Agriculture has a huge market and the largest economical sector. Still, the farming processes use the conventional practices. Weeding and sowing are one of the major tasks that require large number of workers. To rectify the farming operations which are done by using large human power, here in this paper a prototype model is designed and presented which is performing the task of weeding and seed sowing.

The traditional weeding machine needs to be pushed by a person which requires large power and is inconvenient. The provision to erase this need here is operating the wheel using motor. The machine includes a sowing mechanism which performs the seed sowing. In order to process the seed sowing activity properly that is with appropriate distance and in good proportion.

The novel approach makes the whole mechanism simple and smooth, so as to make it available to farmers with durable cost and light weight.

Index Terms- dribble, herbicides, sowing, weed.

I. INTRODUCTION

The major occupation of the Indian rural people is agriculture and both men and women are equally involved in the process. 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% of world population from 2.3% of world geographical area and 4.2% of world's water resources. The present cropping intensity of 137% has registered an increase of only 26%.

Weed control is an important issue in the agriculture field. Automatic weed removing is achieved by the help of the machine system which typically uses sharp blades jointed at the bottom of the machine.

The basic objective of sowing operation is to put the seed in rows at desired depth and spacing, cover the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agricultural and climatic conditions 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 agricultural operations.

II. PREVIOUS WORK.

Many different techniques have been introduced for weed removal as well as for sowing. Recently used weed removing machine operates on diesel and is heavy weighted one. Its weight is about 37kg and requires 1 liters diesel to operate for 1 hour. Some rural areas still uses traditional technique for weed removal which is time consuming and it require large man power.



The typical seed sowing method used is dribbling. Dribbling is making small holes in the ground for seeds and then filling it with seed. This is the better method for sowing. But this is time consuming and offers labor cost.

Other methods has been used for weed removal and seed sowing that can be studied from the references [1] to [9] that are as given at the end of the paper.

A. BLOCK DIAGRAM

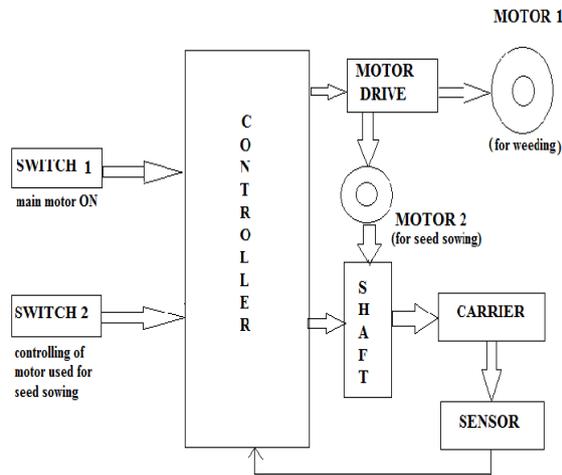


Fig. block diagram of the proposed system.

The weeding & sowing operation is fully controlled by a controller IC. The two switches connected to the controller as an input will drive the weeding & sowing circuitry respectively.

Switch1 is used to start the weeding machine whereas switch2 is used for sowing machine. Pressing switch1 to ON will cause logic 1 at the port pin where motor drive is connected so as to move the machine in forward direction. The movement of motor will drive the wheel of weeding machine to which weeding blade is connected. The blades are removable and are available in variety of shapes.

Switch2 is used to activate the sowing mechanism which in terms will drive the second motor connected to shaft. This shaft will control the flow of seeds. The motor 2 or shaft's speed is such that particular amount of seeds at fixed distance will be passed through carrier. The seeds to be sown are kept within a container. At the end of the carriers or sowing pipes sensors are mounted. So that it can detect the object or mud present at the end of carrier.

B. WEEDING & SEED SOWING MECHANISM

Weed removal system prefers the mechanical weed removing techniques. These are achieved by the use of mechanical knives, hoes and other desired mechanical equipment used for weeding in the agriculture field.

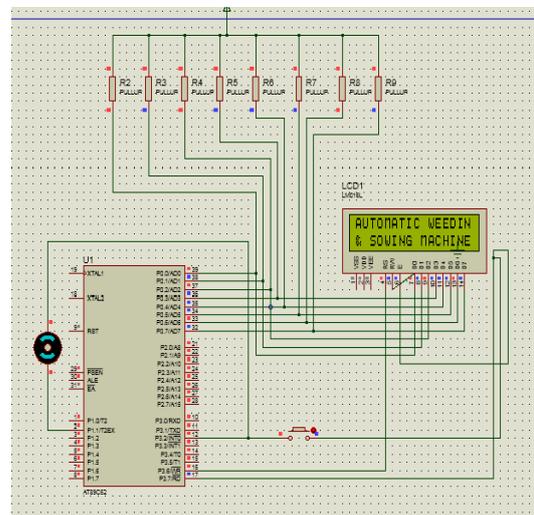
Figure shows the sowing mechanism at the bottom end which is sharpen blade with hole in it. This will dig the soil before inserting the seed.

The mechanism also allows variation in seed's size, depth of penetration. The proposed system performs the sowing task in which during one rotation 2-3 units of seeds are passed and the distance of digging is around 0.5-1.5 feet.



C. CONCEPTUAL SCHEMATIC DIAGRAM

The weeding and sowing process is controlled by microcontroller IC89S52. The inductive proximity sensor is used to detect the distance covered. According to sensor's output seed sowing is done. For sowing, an internal dc motor is used which will pass the seeds through carrier.



The weeding blades used in the machine are attachable and detachable type i.e. these can be removed when not in use. The two switches are provided to activate the two motors. Switch1 will activate the main motor which is powered by a battery. And another one is to activate the internal motor which is used for sowing.

V. CONCLUSION

This paper permits the idea about the automatic weeding and seed sowing in the agriculture field, especially, the removal of weeds mechanically. So the usage of herbicides in the agriculture field is avoidable. Also the seed sowing automatically whose action is controlled by a microcontroller.

Along with benefits of weeding, the sowing mechanism, it maintains row spacing and controls seed sowing rate. It perform the various simultaneous operations and hence saves labor requirement, labor cost, labor time, total cost of saving and can be affordable for the farmers.

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BIOGRAPHIES:



Mali Charulata Sunil,
Final year student
At Sanjay Ghodawat
Institute, Atigre,
E&TC Department



Khot Urmila Dattatray,
Final year student
At Sanjay Ghodawat
Institute, Atigre,
E & TC Department



Patil Rohit Prakash,
Final year student
At Sanjay Ghodawat
Institute, Atigre,
E & TC Department

Mrs. Apte Saniivane K., Assistant Professor
at Sanjay Ghodawat Institute, E & TC
Department
are working under this project.