Robotic Farmer

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Abstract **- In Modern world, Automation robot is used in many of the fields such as defence, surveillance, medical field, industries and so on. In this paper, the robot system is used to develop the process of cultivating agricultural land without the use of man power. The aim of the paper is to reduce the man power, time and increase the productivity rate and assist the farmers. Robotic farmer or "Agro-bot" is a robot used for agricultural purposes. Here the designing systems like plough the land, sowing the seed or spraying the fertilizer and harvesting of crops are preferred by this autonomous robot using microcontroller.**

Keywords **- Seeding, Agriculture robot, Microcontroller.**

I.INTRODUCTION

In present scenario most countries are facing problems due to the old and conventional methods in agricultural sector and it affects the growth of developing countries [1] [2].so it's time to make some technological advancements in the sector to overcome this problem. In India, there are 70% people dependent on agriculture. So we need to study the problems arising in agricultural methods. Innovative idea of our project is to automate the process of sowing crops [1]. The farming system like ploughing, cultivating, weeding, harvesting, etc is the different process. All the processes are improvising the mechanism in farming which works automatically with very little man power requirement. The small machine would be assembled from existing mass produced components without the need of changing the existing design and tooling. Also, energy require in this machine is less as compared with tractors or any agricultural instrument.

s.no.	PARAMETER	MANUAL	TRACTOR	SEEDING MACHINE
1	Man power	More	Moderate	NO
2	Time required	More	Moderate	LESS
3	Seeding technique	Manually	Manually	AUTOMATICALLY
4	Required energy	High	Very high	LESS
5	Labor cost	High	High	INITIAL COST ONLY
6	Pollution	no	More	NO

Table I. Comparison between the seed sowing Method

II. LITERATURE SURVEY

Agriculture is the backbone of the Indian economy and it will continue to remain so for a long time. It has to support almost 17 percent of world population from 2.3 percent of world geographical area and 4.2 percent of world's water resources.

Designing an Autonomous Soil Monitoring Robot (IEEE - 2015) Patrick M. Piper and Jacob S. Vogel et al designed an autonomous soil monitoring rover to accelerate the process of data collection. The rover will be able to autonomously navigate through a field and avoid obstacles. [1] reviewed that lack of man power has resulted in spending a lot of money in seed sowing, which is not only time consuming but also not accurate. [2] The basic objective of sowing operation is to put the seed and fertilizer in rows at selected 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 according to different agricultural and climatic conditions to achieve optimum yields and an efficient sowing machine should attempt to fulfil these requirements. [3] 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 range of seed sizes, resulting to uniform seeds distribution along the travel path , in seed spacing. [4] revealed that by using a seed drill for wheat crop there was an increase in yield by 13.025 percent in comparison to the conventional method, it also revealed that by using a seed drill for wheat crop, a saving of 69.96 per cent in man-hours and 55.17 percent in hillock hours was achieved when compared, with the conventional method.

III. PROPOSED WORK

This ROBOTIC FARMER is a multifunction Robot that perform THREE major functions normally required in Agriculture field i.e. Ploughing, Seed distribution or fertilizer spreader and Agriculture paddy Harvester.

This robot consists of a control panel to select field measurement in Length and breadth in Ft. After selecting the size of field, a function key allows you to select mode like Ploughing, Seed distribution or Harvester. A start button will activate the DC geared motors to run the AgRo-bot to perform desired function.

IV. METHODOLOGY OF PROPOSED WORK
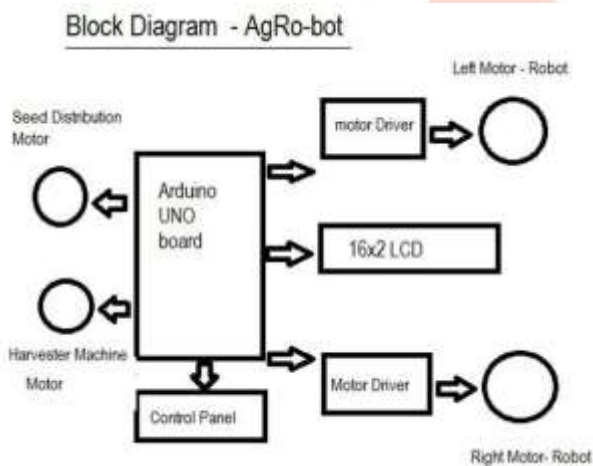
The agricultural robot will be using a chassis as a base to connect and assemble everything on it will be consisting of four motors. Two of which are toy motors and the other being gear motors. The robot is capable of doing three separate functions.

1. PLOUGHING

2. SEEDING

3. HARVESTING

will be working in different modes. Programming of different modes will be done separately the different modes .The LCD will be displaying the input given to the robot by the user the measurements of the length and breadth of the field are to be given in feet.

The length and breadth of the fields are to be entered in feet with the help of the 4 keys attached and are displayed on the LCD as shown in the figure .

Arduino is programmed in such a way that: after entering the data of length and breadth of field, mode is to be selected in which the robot is made to work;

MODE 1: SEEDING , this mode adds seeds or fertilizers to the land , a vibrators is attached to the container , the vibrator is activated to the mode 2 command.

MODE 2: HARVESTING , in this robot a prototype of harvest machine is attached at the front end of the robot which activates on mode 3.

MODE 3: PLOUGHING , this prototype does farming implement with one or more blades fixed in a frame, V.

V.CONCLUSIONS AND FUTURE SCOPE

Research efforts are now beginning to invest more in the development of multi-robot vehicles as platforms for a robot farming system. These vehicles include an electronic robot vehicle that can provide crop information using sensors, and two-robot tractors capable of performing various implement functions. Application of inexpensive navigation sensors to the robot farming system makes the system economically adaptable with the environment. With the development of robot farming system, food production can be increased considerably and economically.

With fully-automated farms in the future, robots can perform all the tasks like mowing, fertilizing, monitoring of pests and diseases, harvesting, tilling, etc. This also enables the farmers to just supervise the robots without the need to operate them.

VI.REFERENCES

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