Agro-Bot

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Abstract— **The paper aims on the design, development and the fabrication of the robot which can dig the soil, put the seeds, close the mud and spray water. The whole systems of robot works with the battery .More than 40% of the population in the world choose 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 Bluetooth. In the field of agricultural autonomous vehicle, a concept is been developed to investigate if multiple small autonomous machine could be more efficient than traditional large tractors and human forces.**

Keeping the above ideology in mind, a unit with the following feature is designed:

- **Digging is one of the first steps in farming. During this process we till the land with teeth like structure called harrow.**
- **Seed sowing comes next where the seeds need to be put in ground at regular intervals and these needs to be controlled automatically.**
- **Mud leveler is fitted to close the seeds to the soil and to level ground.**
- **Water pump sprayer is used to spray water.**

***Index Terms*—Agro boat, farming, agriculture.**

I. INTRODUCTION

The idea of applying robotics technology in agriculture is very new. In agriculture, the opportunity for robot-enhanced productivity is immense- and the robots are appearing on farms in various guises and in increasing numbers. We can expect the robots performing agricultural operations autonomous such as digging, seed sowing, mud closing and water spraying. Watching the farms days and night for an effective report, allowing farmers to reduce the environmental impact, increase precision and efficiency and manage individual plants in novel ways.

The applications of instrumental robotics are spreading every day to cover further domains, as the opportunity of replacing human operators provides effective solutions with return on investment .This is especially important when the duties ,that need be performed ,are potentially harmful for the safety or the health of workers, or when more conservative issues are granted by robotics .Heavy chemicals or drugs dispensers, manure or fertilizers spreaders etc are activities more concerned by the deployment of unmanned options

II. SCOPE OF THE PROJECT

The present project aims at designing an intelligent robotic vehicle which can be controlled wirelessly through Bluetooth. A 12v battery is used, which gives the necessary power to a dc motor .This power is then transmitted to the rear wheel through gear drives. In this projrct an attempt is made to make the electric and mechanical systems share their powers in an efficient way.

Thus taking into consideration the ever increasing pollution levels and the stringent pollution norms set up by the pollution control board, since the fossil fuels are depleting, probably may last within the decades to come or earlier, and to reduce the running cost of the digging machine, we are in an attempt to incorporate the above mentioned features in our Multi Purpose Agriculture robot

III. OBJECTIVE

The objective of this paper is to present the status of the current trends and implementation of agricultural and autonomous system and outline of potential for future applications. Different applications of autonomous vehicles in agriculture have been examined and compared with conventional system, where three main groups of field operations have been identified to be the first potential practical applications: crop establishment, plant care and selective harvesting.

Our aim is to fabricate a prototype multipurpose agriculture robot which can perform the following operations

- This project objective is to fabricate a robot vehicle which can dig the soil, put the seeds, and close the mud and to spray water, these whole systems of the robot works with the battery and solar power.
- To reduce human effort in the agricultural field with the use of small robot.
- To perform all 4 operations at single time, hence increases production and save times.
- To complete large amount of work in less time.
- Farmer can operate this robot through remote by sitting at one side.

Focus will be on potential labor cost savings, farm structure implications and sizes for operation, daily working hours, potential environmental impact, energy costs and safety issues

IV. METHODOLOGY

This whole system of the robot works with the battery and controlled by Bluetooth

- The base frame is made for the robot with 4 wheels connected and driven the rear wheel is dc motor.
- One end of the frame, harrow is fitted to till the soil.
- Funnel is made of plastic, to store the seeds and the seeds flow through the funnel through the drilled hole on the shaft to the digged soil.
- On the other end leveler is fitted to close the seeds to the soil, and water pump sprayer to spray the water.
- The whole system of robot requires 12v battery to operate
- Arduino is used to control the working of the robot.

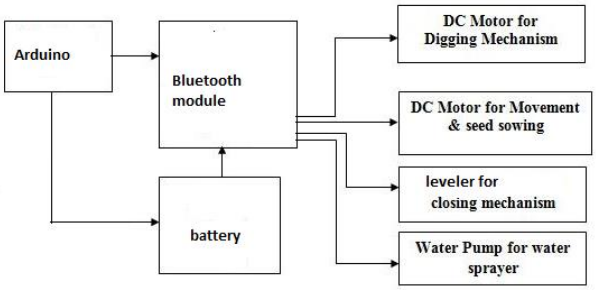

Fig -1: Block Diagram of Multi-purpose Agrobot

V. OPERATIONS

A. Steering operation

The direction of motor is controlled by remote controller for steering the vehicle to either left or right side direction. Motor is connected to Arduino .Thus Arduino is solely responsible for movement of the robot.

B. Cultivating operation

Teeth like structure harrow is used to dig soil in order to sow Seeds

C. Seed sowing operation

Seed drum consist of seeds and with the help of funnel like structure, the seeds are dropped into the soil.

D. Mud closing operation

Leveler attached at the end of the robot does the work of leveling and closing the mud.

*E. Water spraying operation***.**

A water container is used for water storage. A water pump is used for pumping water to the water sprayer.

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VI. CONCLUSIONS

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. This equipment may be in our future, but there are important reasons for thinking that it may not be just replacing the human driver with a computer. It may mean a rethinking of how crop production is done. Crop production may be done better and cheaper with a swarm of small machines than with a few large ones.

One of the advantages of the smaller machines is that they may be more acceptable to the non-farm community. The jobs in agriculture are a drag, dangerous, require intelligence and quick, though highly repetitive decisions hence robots can be rightly substituted with human operator. The higher quality products can be sensed by machines (color, firmness, weight, density, ripeness, size, shape) accurately. Robots can improve the quality of our lives but there are downsides. The present situation in our country all the agricultural machine is working on manual operation otherwise by petrol engine or tractor is expensive, farmer can't work for long time manually to avoid this problem, we need to have some kind of power source system to operate the digging machine.

- To implement a prototype model of drilling and seed sowing machine system within the limited available source and economy.
- The system can be subjected to further development using advanced techniques
- It may become a success if our project can be implemented throughout our country.

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