

Fabrication of Bluetooth Based Seeding And Sprinkling System

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Abstract- *In the farming process, often used conventional seeding operation takes more time and more labor. The seed feed rate is more but the time required for the total operation is more and the total cost is increased due to labor and hiring of equipment. The conventional seed sowing machine is an old technique, less efficient and time consuming. Today the world is moving towards the rapid growth of all sectors which includes the agricultural sector. To meet the future food demands, the farmers must implement the new techniques which will not affect the soil texture but will increase the overall crop production. The motto of this project is to develop and design a seed sowing machine. The seed sowing machine is the basic component for agricultural background. Many techniques used in India for seed sowing and fertilizer placement are manual, and tractor operator. So, we are introducing this equipment which will accomplish all this requirement and user-friendly to handle. This machine performs four farming operations (digging, sowing,) which is used small scale farming. By using the above attachments, one may perform various farming operations in less time and economically by adding the latest technology using Bluetooth by Arduino controller.*

Keywords- Arduino, Wheel motors, sprinkling motors, servo motor, water level indicator, jumper wires, 12V Battery.

I. INTRODUCTION

The main aim of the project is on the design, development and the fabrication of the equipment (robot) which will dig the soil, place the seeds at constant distance and by maintaining constant depth without waste of seeds, these whole system of the robot works with the battery and operated using Arduino cell phone by simply connecting Bluetooth device to control the vehicle from one place or without any human force or fatigue. Applying on the seed sowing machine. Almost 40% of the population in the world opts agriculture as the primary occupation, in recent years, there has been a surge of interest in the development of autonomous vehicles in the agricultural sector. The agricultural sector has long been the driving force behind India's continuous economic development. With the expanding population of India, the demand for agricultural produce has

witnessed a parallel rise. Therefore, the necessity for multiple cropping on farms has increased, leading to a demand for efficient and high-capacity machinery. However, the mechanization of the agricultural industry in India is still in its early stages due to limited knowledge and the unavailability of advanced tools and machinery. In traditional methods, seed sowing is performed manually through broadcasting, furrows are opened using a plough, and seeds are dropped by hand. As the agricultural industry has always been the backbone of India's sustained growth, there is a pressing requirement for time-saving and efficient machines to facilitate multiple cropping on farms.

II. LITERATURE SURVEY

In this study [3] states that the seed sowing machine is a key component of agriculture field. The advent of high precision pneumatic planters has revolutionized agriculture by offering a solution for various crop varieties and seed sizes. These advanced planters enable uniform seed distribution along the travel path, ensuring precise seed spacing. By utilizing this method, it becomes possible to plant a larger number of seeds within a smaller area, facilitating concentrated watering, weeding, and fertilizing efforts. This increased precision and efficiency contribute to optimizing crop growth and productivity.

The study [5] conducted on the utilization of a seed drill for wheat crop revealed significant advantages compared to the conventional method. Firstly, it showed a notable increase in yield by 13.025 percent when the seed drill was employed. Additionally, the study found substantial time savings, with a 69.96 percent reduction in man-hours and a 55.17 percent reduction in huloock hours when compared to the conventional method.

The seed drill operates by attaching a tube to the plough, which ensures proper depth and spacing of seed placement. As the plough moves across the field, the seeds are dropped into furrows created by the seed drill. However, this system does have some drawbacks. It may lead to improper germination of seeds, resulting in suboptimal plant growth.

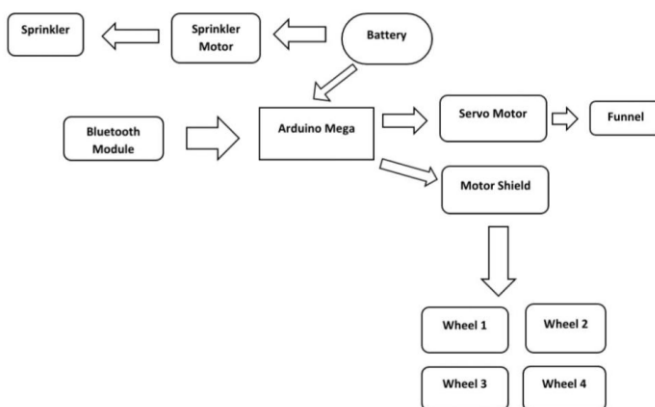
There can also be wastage of seeds, and the system may lack control over the precise depth at which the seeds are placed.

Overall, while the utilization of a seed drill offers advantages such as increased yield and time savings, it is important to address these drawbacks to ensure optimal seed germination and minimize wastage in order to maximize the benefits of the technology.

In This study [6] conducted the field experiment to evaluate the effect of different seed rates on different sowing dates to suggest the appropriate seed rate of wheat for different sowing dates and suggested the farmers that wheat should be preferably sown on 15 November with seed rate for better production. This research paper presents a seed sowing machine. In this they present the objective of seed sowing machine design, factors affecting seed emergence, and some mechanisms. The primary aim of the sowing operation is to accurately place seeds and fertilizers in rows according to the desired requirements, depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed.

III. METHODOLOGY

In this block diagram we have demonstrated the working of seeding and sprinkling system using the Bluetooth module. With the main usage of Arduino Uno, Bluetooth module, Sprinkler motor, motor shield, Servo motors.



This project helps extensively in seeding and sprinkling. Types of seeding allowed:

- Broadcasting
- Dibbling
- Drilling
- Seed Dropping behind the Plough
- Transplanting

- Hill Dropping
- Check Row Planting

Types of agricultural irrigation:

- Basin Irrigation
- Perennial Irrigation
- Terrace Irrigation
- Underground Canals

This system gives an advanced method of sowing and ploughing crops with minimum manpower and labor, making it an efficient vehicle and eco-friendly vehicle using a cell phone control. The machine will cultivate the farm by considering rows and specific column at fixed distance depending on crop which is controlled manually by the driver for a particular distance.

IV. OBJECTIVES

The major objective is to design a Bluetooth based Seeding and Sprinkling system using Arduino at low cost. This system aims to increase the efficiency of the seeding process, low usage of fuel, doesn't consume time and affordable for people to buy. This minimizes the labor and the spacing efficiency for seed placement is achieved. This proposed system will be of great benefit to future endeavor of agricultural business to optimize Seeding and Sprinkle manually.

Using Bluetooth, we control every data from our mobile phone. First, we need to connect the functions of the system via Bluetooth to our mobile phone, so we use an electromagnetic switch (also called a relay) and then we will use an Arduino. This Arduino will program the data however required. The power is transmitted to the rear wheel through gears, which is also controlled using the android app, depending on the conditions needed.

V. FABRICATION WORK



VI. RESULTS AND DISCUSSION

In the present scenario most of the countries do not have sufficient skilled manpower in agricultural sector and that affects the growth of developing countries. Therefore, farmers must use upgraded technology for cultivation activity (digging, seed sowing, Sprinkling, fertilizing, etc.). So, it's a time to automate the sector to overcome this problem which in turn will also eliminate the requirement of Labors and avoid the wastage of seeds. In the proposed method we have designed a four-wheel Robot Vehicle. Here it can be controlled either with the help of Bluetooth or RF, it is more advantages compared to Robots designed using GPS, Wi-Fi. Because these systems use network signals and in remote place signal issues will be there and such systems may not work properly. In this paper it makes the electric and mechanical systems share their power in efficient way. It reduces the running cost of digging machine.

The proposed robotic machine for Agriculture is an automated Seed sowing machine which can increase productivity. It has the capability to handle the weight of the complete setup properly performing all the operations. Seed sowing practices vary depending on the prevailing conditions and requirements. All the data in Robot is collected in Android application and saved for future process. Robotics in Agriculture plays a very important role for the increase in production and economy development of the country. The scientists in agricultural research are mostly focusing on replacement of laborers completely by robots. In India very few areas are covered with robotic implementation in the future there is a lot of scope for the complete automating in farming. Many Agricultural robots designed are based on GPS, but it may have signal issues and may not give accurate results. But in this proposed project Bluetooth is used and hence it may give precise results.

VII. CONCLUSION

This system gives an advance method to sowing and plowing crops with minimum manpower and labor, making it an efficient vehicle and ecofriendly vehicle using cell phone controlled. The machine will cultivate the farm by considering rows and specific column at fixed distance depending on crop which is controlled manually by the driver for a particular distance.

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