AUTOMATED ROBOT FOR SEED SOWING AND FERTILIZER SPRAYING ALONG WITH WEED REMOVER BASED ON MSP430 CONTROLLER

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Introduction:

In the current scenario most of the countries do not have sufficient skilled manpower specifically in agricultural sector and it affects the growth of developing countries. So it’s a time to automate the sector to overcome this problem. An innovative idea of our project is to automate the process of sowing crops such as sunflower, baby corn, groundnut, cotton and vegetables like beans, lady’s finger, pumpkin and pulses like black gram, green gram etc to reduce the human effort and increase the yield.

The plantations of seeds are automatically done by using DC motor. The distance between the two seeds are controlled and varied by using Microcontroller. It is also possible to cultivate different kinds of seeds with different distance. Also the project consists of sprinkler, which would be used for reducing the wastage of fertilizers that is done by spraying appropriate amount of fertilizers required for the particular crop. The sprinkler would sprinkle on the senses from wheel movement and the on and off of the sprinkler would be controlled by Microcontroller. When the Robot reaches the end of the field we can change the direction with the help of remote switches. The whole process is controlled by Microcontroller.

Literature Survey:

In the current scenario most of us have come across the atomization in various fields as the advancement of technology has to a lead tremendous development in the industrial products
that have made our lives a lot easier and helpful than what our ancestors faced. The advancements especially in the field of agriculture have helped evolve a new era of development and growth of different developing countries. The atomization in this field has been a trademark for the people who are completely dependent on agriculture for their survival and other needs. Accordingly a report made says that most of the agriculture equipments that are been projected in various fields, that is either by researchers or by the engineers are practically very difficult to implement. These equipments made are mostly very complex in terms of field operation or are either less efficient as they are implemented based upon the basic concept from the design point of view.

Many of the other devices developed based upon the concept of seed sowing and fertilizing are either a single application devices or they are very less efficient. As these devices are developed taking in point the present scenario in the field of agriculture these devices are hence forth based upon the basic concept model and are practically inefficient to implement as these are designed to work in single rows which can be done more efficiently using manpower. Thus in order to overcome these issues we are making an effort to develop a model which could be more efficient when being implanted on the practical basis.

Objectives:

Reduces the amount of manpower requirement. Gradually reduces the amount of the time required for sowing seeds and fertilization. The technique of sowing and fertilization is automatic. **Seeds are being sowed in multiple rows at an single instance (4 rows at a time).** **Proper and accurate (fixed) distance is maintained between seeds.** Wastage of seeds and fertilizers are reduced to a large amount. Increased efficiency as the device runs on battery. Use of solar panel operation avoids dependence of electricity. Due to proper cultivation of seeds the harvesting of the crop is done at once that is no crop grows earlier or later the yield comes at once. **To remove the weeds that grows along with the crop.** It causes no pollution or any kind of harm to the environment.

Methodology:

The following system design is achieved depending upon the requirements. The block diagram of the robotic end and control section is shown in figure given below. This system has two main sections, robot end and control section, which are intercommunicated using RF Communication technologies. The robotic station possess the seed dispenser, seed storage, fertilizer storage, fertilizer dispense, robotic system with motors, microcontroller and power supply. The controller used here is the “**MSP430 Microcontroller**”. The microcontroller is brain of this system, which can dedicate the order of suggestions received to all the networks, and sensible factors processed by their corresponding embedded programs. Robotic mechanism played by their internal motors and motor drivers that drive the motors in desired directions.
Here the one will monitor the robot and send the signal. According to the received signal the robot will move in the direction and it will place the seed and fertilizer on field for specified distance. **The seeds are sowed in 4 rows at a single instance.**

**Block Diagram:**

When implemented successfully the device will first dig the hole for the seed to be sowed and pick the seed from the container and put the seed in respective hole and later the hole is covered with mud. Like this 4 rows are sowed at a time. The sprayer will sprinkle the water with fertilizer. The height of device can be adjusted depending on growth of the crop in order to spray the fertilizer. The weeds are removed with the help of blades attached on the wheels that is when wheels rotate on the field the weeds are removed.
Conclusion:

In this project we made an effort to overcome some problems in agriculture. The rapid growth in the industries is influencing the labors who are situating in the villages to migrate to the cities. This will create the labor problem for the agriculture. The wages for the labor is also more. As the prices of commodities such as food grains, fuels, cloths and other essentials of daily life is increasing rapidly the labors demand for the more wages from the owners. These factors influencing the farmers who are interested in agricultural activity to leave their land uncultivated. By implementing this project in the field of agriculture we can help the farmers in the initial stage of agriculture i.e. during the seeding and fertilizing. This project can be a better substitute for the human who performs the seeding, fertilizing and removing weeds. This project is very useful for the farmers who are intended to do agriculture activity but facing the labor problem.

Future Scope:

The project can be improved with reference to the number of arms we are using in order to sow the seed. If so, from 4 rows we can extend up to 6 or 8 rows at a time. This reduces the time required for seed sowing, fertilizer spraying and also weed removal.