Smart Seed Sowing Agrobot using Arduino

Dr. K. R. Suja, Ashmi. N. S, Akash. S. R, Gowsik Ram. R. S

Department of Electrical and Electronics, Amrita College of Engineering & Technology, Tamil Nadu, India

ABSTRACT

This project strives to develop an Agrobot capable of performing seed dispensing in the field. It also reduces the cost and time to perform seed sowing operation. It enables efficient seed sowing at specified distance between crops and their rows. It can sow various types and sizes of seeds according to the selection of user. Seed dispensing is accurate hence no wastage of seeds. The bot can be operated either manually or automatically. Ultrasonic sensor is used to detect obstacles. RF module is used to create a network for controlling the robot when operated manually.

I. INTRODUCTION

The word 'Agriculture' is derived from the Latin word 'Ager' means Land or field and 'Culture' means cultivation. Agriculture is a backbone of Indian economy. In India about sixty four percent of the total population is dependent on agriculture for their live food. Today India is facing two main problem concerned with agriculture. The first is meeting the increasing demand of food and other is supplying agro products for ever increasing population and the second is uneven development of agriculture and changing pattern of agriculture land use.The major problem in Indian agriculture is rising of cost, availability of skilled labours and water resources. By implementing agrobots in the field these problems can be solved. Seed sowing is the basic operation in agricultural field. The aim of this seed sowing Agrobot is to reduce human effort, increase productivity, and to avoid wastage of seeds. Skilled labour is not required to operate this bot when operated manually. Usually tracks are used to make the bot to move in the straight line. Here we use path tracking algorithm instead of track.

II. SYSTEM DESCRIPTION

Seed sowing operation is done electronically which makes the construction is simple. The method of seed sowing is broadcasting. The seeds are stored in seed storage box. When the operation is started the seeds are dispensed through pipe to the ground. The spacing between adjacent seeds are given by programming code and seeds are dispensed according to it. The number of rotations of Dc motor is taken for inter-distance of seeds. A battery ranges 12V is given as supply for Arduino. This bot will be very helpful to the farmers and gives high efficiency hence the seed dispensing is accurate. In manual broadcasting method the seeds are not sown

properly and also the sown seeds does not get sufficient nutrients. Therefore it gives less efficiency because of seed wastage. Hence this agrobot helps farmers to overcome these problems.

III. PROPOSED SYSTEM

In proposed model, seed sowing operation is done by either manually or automatically. In manual mode we control the agrobot with RF transmitter and receiver. In automatic mode it goes in straight path. Ultrasonic sensor detect the obstacles and gives buzzer sound. Arduino is the controller used to control the process. Dc motors are used for wheel movement. Various types of seeds can be sown using this robot according to user choice.
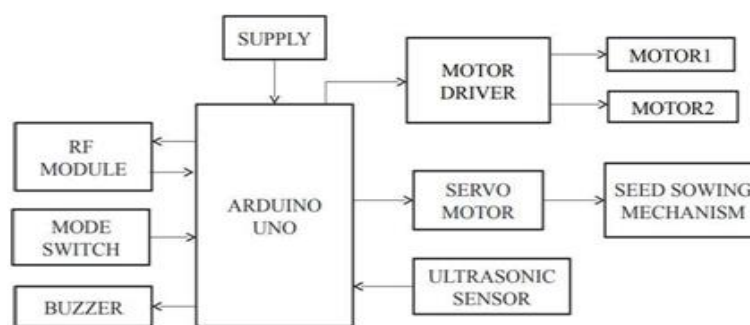
IV. BLOCK DIAGRAM

Fig 1.Block Diagram

V. WORKING

Initially, the supply is given to the ardunio. This bot can be operated either manually or automatically. In automatic mode, the bot sow seeds with specified distance. The seeds are stored in seed storage tank. As the servomotor moves the flip which is fixed at the seed he bottom of the pipe that is connected to the seed tank , the seeds fall in the ground .And it continues the process till the seed storage tank is empty .The flip control can be adjusted through delay given in the program. In manual mode RF module is used for transmission and reception of signals. In remote RF transmitter is fixed and receiver is fixed in the bot. Encoder is used to encode the signal from transmitter and decoder is used to decode the signal by the receiver. Four steps are present in the remote for forward movement control. Backward control, right movement control, left movement control. If the right and left key are present simultaneously ,then the flip opens and when the keys are released the flip closes .Ultrasonic sensor detects the obstacles and gives buzzer sound.

VI. CONCLUSION

Thus, an Agrobot has been developed to perform seed sowing operation using Arduino to reduce the human effort. This bot is based on electronic seed dispensing and the construction is simple. This bot have been

developed to overcome the difficulties faced by farmers in agriculture and maintenance of inter distance between seeds is achieved. This bot will be very helpful to farmers in bringing high yield to them without the wastage of seeds and also they can select the type of seeds that should be sown in the field.

VII. REFERENCES

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