AUTOMATIC PESTICIDE SPRAYING MACHINE

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Abstract: The agriculture industry is critical in meeting the population's food needs. There are numerous applications in agriculture where the rate of adoption of new technologies is delayed. Pesticide spraying machines are one of the key applications where modernization is sluggish. Pesticides can be evenly distributed on farms by implementing new innovative techniques in this field. Which lowers pesticide wastage and so minimizes loss of inputs applied on farms, lowering production costs. We employ cutting-edge pesticide spraying technology to achieve increased output with little input.. Nowadays, Indian farmers use antiquated spraying systems and pasties, resulting in pesticide waste and potentially harmful health consequences. Not only have innovations and ideas been developed in this field, but they are not well suited to Indian farming conditions.

Keywords: *Microcontroller, Robot, Agriculture, Sprayer, Farmer etc.*

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I INTRODUCTION

Agricultural lands are the primary focus of the project. It is quite useful in preventing pest damage to plants. Spraying potentially dangerous chemicals in the restricted space of farm plants is one of the tasks that the robot designed to protect humans from.

The use of chemicals has a tremendous impact on the growth of agriculture in the twentieth century, bringing with it more important benefits, but it also has a negative impact on human health.

STATUS OF AGRICULTURE IN INDIA

India is predominantly an agricultural country, with over 75% of the population dependent on agriculture, either directly or indirectly. For generations, farmers have used the same techniques and equipment. For example, seed sowing, spraying, weeding, and other operations are all performed using the same processes. The development of effective spraying equipment is required for enhanced production.

The bulk of Asia's late-developing countries have a bigger population and lower land productivity than prosperous countries. Reduced productivity is caused by a lack of agricultural electricity and low levels of farm mechanisation, to name a few issues. This is particularly true in India.

STATEMENT OF PROBLEMS

Indian farmers (small, marginal, small and marginal, semi-medium) currently use backpack sprayers that are actuated by a lever. A backpack sprayer is made up of a tank with a capacity of 10 to 20 litres that is carried by two adjustable strapsTo operate this, a constant pumping speed is required, resulting in muscular dysfunction, and the backpack sprayer is unable to sustain pressure, resulting in drifts and dribbling. It takes a lot of effort and time to build up enough pressure. Pumping to operational pressure takes some time as wellFurthermore, while spraying, only a tiny area is covered. Spraying the entire land

area takes a long time. Back ache can develop in middle age as a result of carrying a 10-20 litre tank on one's back.
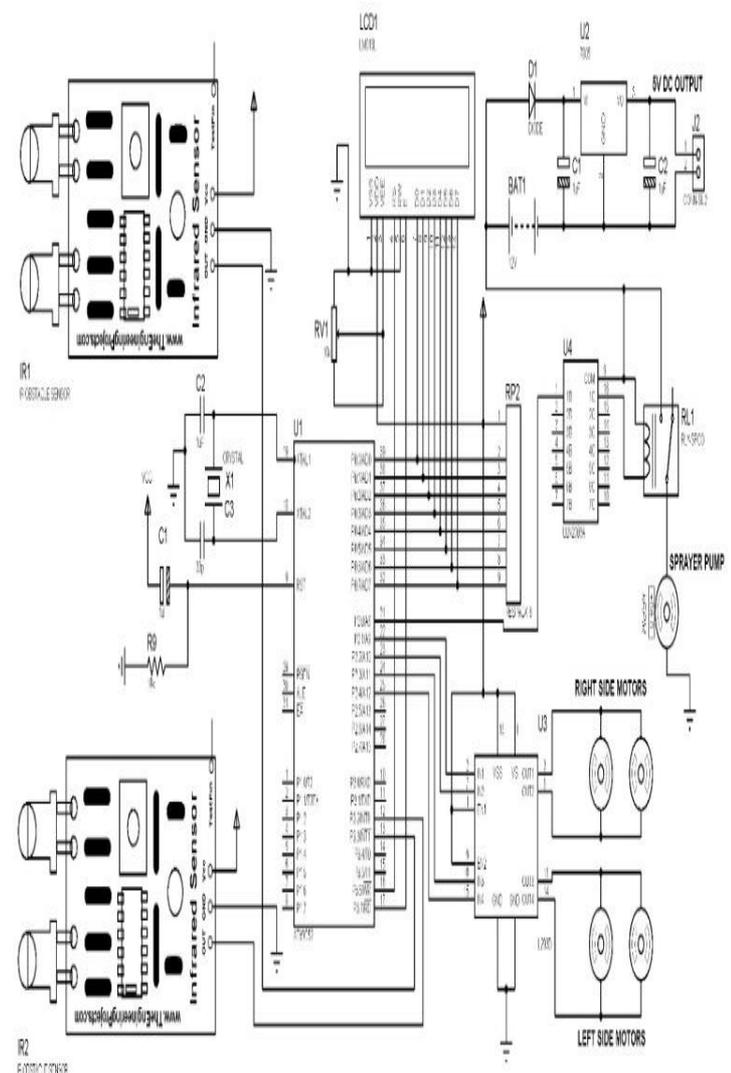
II MODELLING AND ANALYSIS

Figure 1: Circuit Diagram

IR Sensor senses the plant and gives the signal to the microcontroller, after that controller gives the signal to the relay driver. With the help of the relay pump on-off mechanism controlled by the controller. Then solenoid valve opens and spray the pesticides.

If the plant is not detected the robot goes forward until it gets a signal from the sensor. For driving the robot DC motors are used and those controlled by the controller with the help of motor drive. It has one more feature of detecting the level of the pesticides in the tank by the level detector and gives pre-signal through Buzzer.

MAIN COMPONENT

1. Micro Controller

The Atmel 89c52 is a microcontroller that was created by Atmel. The AT89S52 is a CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory that is low-power and high-performance. This is a capable and energy-efficient device that can be used for a wide range of tasks. It has the ability to execute the majority of its instructions during the cycle, allowing it to operate at a faster rate. Because the Atmel Company provides the best compiler and application support, this microcontroller is ideal for implementing C-programming.

Figure 2: Microcontroller

2. DC Motor

DC motor is a simple, robust electromechanical device that converts an electrical input into a mechanical rotary output. The 4 motors used for robot wheels and at the output is a 30 R.P.M,12 Volt, geared D.C. Motor.

1 water motors (water pumps) are used for lifting the pesticides from the tank.

Figure 3: DC Motor

BATTERY

A rechargeable battery is used to provide supply voltage to the robot. The specification of battery is as follows

Voltage: 12V

Current: 4.5AH

Figure 4: Battery

LCD:

Liquid crystal display is used to show the information about the robot. SIZE- 16 X 2 (16 COLUMNS AND 2 ROWS)

Figure 5: LCD

III RESULTS AND DISCUSSION

The robot car is mainly base on agricultural field. It is use full in avoiding insects harmfulness on the plants. Sensor sense the plant and give signal to the microcontroller, after the controller gives signal to the relay driver. With the help of relay pump on-off mechanism controlled by controller. Then solenoid valve open and spry the pesticide. If the plant in not detected the robot goes forward until it get signal from sensor. For driving the robot DC geared motor are used and those controlled by controller with the help of motor drive. It has one more feature of detecting the level of the pesticides in the tank by level detector and gives pre signal on display.

The robot car will work in real time. To work the system more effectively and reliable, the sensors and motors used of good quality to respond fast operation.

IV CONCLUSION

For agricultural purposes, a robot is being developed. an A robot is a concept that, once optimized, can be used in agricultural spraying operations to improve product performance and cost. We are confident that if this concept is presented in a way that is appropriate for the Indian market, it will assist to reduce the 15% modality rate seen in Indian formers, which is linked to pollution It will, on the other hand, assist in lowering the 15% modality rate seen in Indian formers linked to agricultural spraying operations.

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