AUTOMATED PESTICIDE SPRAYING ROBOT

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Abstract— India is the farmland with a population of three-fourths in agriculture. In accordance with the climate and other resources accessible to them, farmers will grow multiple plants in their field. But some technical abilities along with technological assistance are required to achieve high output and excellent quality.

This system deals with the exposition of how robotics can be applied to various fields of agriculture. It is very important to improve the efficiency and productive capacity of agriculture by replacing laborers with intelligent solar-powered machines like robots using the latest technologies. The system proposes a new plan to put back humans in diverse agricultural operations like detection of the presence of pests, spraying of pesticides, spraying of fertilizers, etc. thereby providing safety to the farmers and accurate agriculture. This application is adopted in crop protection to prevent pest infestation, to improve product quality and to maximize yield.

Keywords— Robotics, Pesticide Sprayer, Fertilizer Sprayer, Crop Protection, Accurate Agriculture.

I. INTRODUCTION

Agriculture in India constitutes more than 60% of the occupation. It serves to be the backbone of the Indian economy. It is very important to improve the efficiency and productive capacity of agriculture by simultaneously providing safe cultivation of the farmers. Operations like spraying of pesticides, sprinkling fertilizers are very slow processes. Though spraying of pesticides has become mandatory it also proves to be a harmful procedure for the farmers. Farmers, especially when they spray pesticides, take too many precautions like wearing appropriate outfits, masks, gloves, etc so that, it does not cause any harmful effects on them. Avoiding pesticides is also not completely possible as the required outcome must be met. So, the use of robots in such cases gives the best of the outcomes for these problems, along with the required production capacity and efficiency. Cost-effective technology using components that are capable of controlling agriculture robot, geared motors that facilitate the robot wheels to move and mobile application to guide the robotic movement are incorporated in this agricultural pesticide sprayer to make all of the above feasible.

II. SIGNIFICANCE OF THE SYSTEM

- To stop manual spraying on the real farm with pesticides.
- This will reduce the plant's excessive use of pesticide.
- To build this machine in such a manner that it can travel through any terrain.
- To design a mechanism for spraying and managing parameters like area of spraying, deliver a pesticide/fertilizer spraying tank on it and pass across the fields.
- To remotely control the pump and rover from mobile application.

III. LITERATURE SURVEY

In the agricultural field, robotics is steadily increasing its productivity. Some of the major problems in the Indian agricultural are rising of input costs, accessibility of skilled labours, lack of water resources and crop monitoring. In agriculture, automation technologies with robotics were used to solve these problems. Following are some references which highlight the literature review:

A. According to *Shubhangi. B. Londhe, K. Sujata* Robotics model provides a facility to control the movement of agriculture vehicle. Plant diseases may decrease the quality and quantity of agricultural products, resulting in a massive post-effect situation. Plantation crops face a number of challenges, including early pest detection. The first step entails keeping a close eye on plants on a regular basis. The diseased plants will then be categorised, and photographs of the affected parts of the plants will be taken with a camera. Pre-processing, transformation, and clustering are then applied to these images. The images are then presented to the processor as input, and the processor compares them. If the image provided is an affected image, an automatic pesticide sprayer is used to apply the pesticide to a specific area of the leaf. If it isn't, the processors will automatically discard it, and the robot will continue on its way.

B. According to *Wasswa Fahad Malende, K. Lokesh Krishna, Omayo Silver, K. Anuradha,*