

DESIGN AND CONCEPT FOR A PESTICIDE SPRINKLER ROBOT WITH BLUETOOTH COMMUNICATION

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ABSTRACT

Agriculture is a labor-intensive job that involves many tiresome procedures and practises, one of which is spraying pesticides in vines. In the summer, a normal vineyard needs heavy spraying every 4-5 days, whereas in the wet season, it requires spraying every 3-4 days. The traditional techniques include using a sprayer and physically activating a lever to create pressure and pump the pesticide via a tube, or using a mobile vehicle equipped with an integrated compressor and sprayer unit that must be manually operated by a human operator. These techniques are energy intensive and prone to human mistake. Another significant disadvantage of human-operated systems is that the operator is exposed to hazardous substances throughout the spraying process. Prolonged exposure, as is the situation here, may be very harmful to the operator's health. This is a project that may be regarded as a potential alternative to these established techniques. The Bluetooth-enabled pesticide sprayer robot is a gadget that sprays pesticides in any vineyard with little or no human intervention. The gadget is powered by an inbuilt battery, which reduces the device's operating costs. The gadget is controlled through an integrated microcontroller unit that has been configured to react to the bluetooth device.

INTRODUCTION

A pesticide is any chemical or combination of compounds used to prevent, kill, repel, or mitigate the presence of any pest. Though the word pesticide is often misconstrued to refer only to insecticides, the term also encompasses herbicides, fungicides, and a variety of other chemicals used to manage pests. Additionally, pesticides include plant growth regulators, defoliant, and desiccants. Pesticides Are Required

The agriculture sector's industrialisation has raised the chemical load on natural ecosystems. Pesticides are a class of agrochemicals that are applied to agricultural fields, public health initiatives, and urban green spaces to protect plants and people from illness. Pesticides are primarily used in agriculture to prevent, eliminate, or control pests, including unwanted species of plants or animals that cause harm or interfere with crop production, or in public health programmes to protect humans from vector-borne diseases such as malaria, dengue fever, and schistosomiasis.

The word "pest" is often used to refer to animals that cause harm to crops, cattle, and forests. Typical examples include insecticides, fungicides, herbicides, rodenticides, and plant growth regulators.

These products are also utilised for non-agricultural applications, such as the enhancement and upkeep of public urban green spaces and sports grounds. Additionally, these chemical compounds are used in less-known applications like as pet shampoos, construction materials, and boat bottoms to remove or prevent the existence of undesirable species.

METHODOLOGY

In today's world, we rely on manual sprayers, which are hazardous to human life. With the assistance of the above-mentioned system, we can resolve the issue. The gadget is fueled by a storage battery, and by transmitting instructions to the receiver portion through Bluetooth, the prototype operates. It is composed of five relays, four of which are used to power the DC motors and one of which is used to power the diaphragm pump used to spray the vines. We can overcome previous obstacles with the assistance of this system, and it has a bigger edge in the future with this sophisticated technology.

ROBOT-BASED PESTICIDE SPRAYER

DESIGN AND ASSEMBLY



PROTOTYPE

RESULT

- Because this can be managed remotely, without labouring in the field or being exposed to pesticides, the farmer will benefit.
- He will remain oblivious to his medical state.
- Farmer and pesticide applicator safety.
- Effort savings and simplicity of usage.
- Efficient performance by spraying an area with the least quantity of insecticide possible.

- Provides superior coverage of tough targets as compared to traditional spraying.
- Pesticides used in the conceptual model with the electrostatic sprayer are up to tenfold less than those used in traditional spraying.
- Using fewer pesticides per acre improves worker safety and mitigates the risk of environmental harm.
- Increased spray efficiency, reduced economic expenses, increased safety, and less environmental impact

CONCLUSION

The existing system does not meet basic criteria for human needs such as pesticide protection, solar energy consumption, zero fuel consumption, and zero pollution, to name a few. The aforementioned criteria are met in this project via the use of modern technology through the transmission of instructions through Bluetooth device, and this project offers a larger benefit in the future.

The prototype's suggested system demonstrated that it was capable of effectively meeting the human demand for pesticide spraying in vines. When compared to earlier pesticide sprayers, this is more efficient and allows us to avoid health risks.

FUTURESCOPE

Solar sprayers are mostly used to apply liquid insecticides. Additionally, it may be utilised as an automated spray painting robot. The designed method may be utilised for fertiliser and fungicide spraying. The pesticide sprayer emits a negligible amount of pollutants. The same method and technology may be used to other kinds of power sprayers, giving us a larger edge in the future.

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