INTRODUCTION

The agriculture sector is essential to India's economic and social development, with significant contributions to employment generation, food security, export earnings, and rural development. It employs around 50% of the country's workforce, contributes around 17-18% to GDP, and is the largest employer, providing livelihoods to millions of people. Additionally, it plays a vital role in ensuring food security and meeting the nutritional needs of the population and is a major contributor to the country's export earnings.

The existing pesticide sprayers in agriculture have a number of notable problems that can impact their effectiveness and sustainability. They may not be efficient in their application, which can result in uneven distribution of pesticides and ineffective pest control. Also, traditional sprayers often lack the necessary security features to prevent misuse or theft of pesticides, which can pose risks to both human health and security. These issues highlight the need for more advanced solutions, such as an IoT-based security system or pesticide sprinklers, which can address these problems and improve the overall effectiveness and sustainability of pesticide use in agriculture.

The use of pesticides in agriculture can have negative health effects on humans and the environment. Exposure to pesticides through inhalation, skin contact, or ingestion can cause various health problems, including acute poisoning, respiratory problems, cancer, birth defects, neurological disorders, and hormonal imbalances. Pesticides can also enter the food chain and accumulate in soil, water, and food, posing a risk to both humans and wildlife. Long-term exposure to low levels of pesticides can have a cumulative effect, increasing the risk of chronic diseases. To minimize the health effects of pesticides, farmers and pesticide handlers should follow safety guidelines, and governments should regulate the use of pesticides and promote sustainable agriculture practices.

Pesticides can be very harmful to human health. The chemicals in the pesticides can cause short-term or long-term health effects for humans.

The short-term or acute effects include: Nausea , Dizziness , Diarrhoea , Itching of the skin , Rashes , Blisters , Colds/Flu , etc.,

Long-term or chronic health effects include: Tumors , Cancer , Damage to the brain or nervous system, Infertility , Damage to certain organs of the body such as kidneys, lungs or liver , etc.,

Pesticide sprinklers with IoT-based security systems are a new and innovative way to manage pest control and enhance crop growth in agriculture. With advancements in technology, traditional pest control methods have become less efficient and can cause harm to the environment. Therefore, it has become increasingly important to develop sustainable and eco-friendly solutions for pest management. A pesticide sprinkler with an IoT-based security system offers a smart and efficient approach to addressing this challenge. It uses IoT sensors to detect and analyze the growth of crops and the presence of pests and diseases. With this data, it can automatically trigger the

spraying of pesticides and other chemicals only where and when necessary, which leads to precise and targeted application. Moreover, it can also send alerts to farmers if any issues are detected, such as malfunctioning or lack of pesticides, allowing them to take corrective actions in real-time. In short, the pesticide sprinkler with an IoT-based security system is a promising solution to improve the yield and quality of crops while minimizing the use of harmful chemicals and their impact on the environment.

The main motive of the project is to prepare a BOT that will be useful in the field of agriculture. Spraying pesticides is the main task in agriculture to save crops from pests and insects. Farmers nowadays are spraying pesticides manually, which causes many problems for the farmers. Usage of manual techniques can harm them, like lifting heavy tanks can cause harm to shoulders, skin diseases, and many more. India is agrarian economies and most of rural populations depend on agriculture to earn their livelihood. The farming methods at present are manual or semi-automatic with high involvement of labourers . In the recent years, the number of labour availability is reducing continuously along with increase in their wages. There is a requirement of higher productivity. Hence the device is to be designed which helps farmers to overcome the stated problem. Automated Robots can provide us the solution.