

A Survey on Pest Detection Systems

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Abstract: *Agriculture is backbone of India. With the growth in technology, several implements are being designed and developed to help the farmers to get better yields. Be it harvesting machines or sowing and tilling machines, major players of the industry are giving their best to develop innovative products for these farmers. Similarly, research is being conducted to identify pests and eliminate them. A survey on such methods is discussed in this paper.*

Keywords: *Agriculture, Pest, Elimination, Survey*

I. INTRODUCTION

The primary occupation in developing country like India is Agriculture. But nowadays number of people involving in the agriculture sector. Agriculture is declining due to various reasons. Agriculture yields about 8 to 10% of our national income. Pest attacks poses to be. Threat in agriculture. Hence the proposed pest detection robot system is essential for the efficient and effective for pest attack. In order to improve the quality of crops farmers use excessive pesticides. So, in order to prevent this, we have come up with our project. In this project we propose algorithm to detect and count the number of pests using image processing. Due to overuse of pesticides crops and cost gets affected.

So according to the number of pests it will spray required amount of pesticides to the crops. As temperature and soil moisture affects the crops because they vary suddenly, so temperature and soil moisture sensor are taken into consideration for measuring and monitoring. In order to protect farm fields from grazing and intruders motion sensor is used to alert the farm.

II. LITERATURE SURVEY

“Solar powered automated multi-tasking agriculture robot” by Jerosheja BR and Dr Mythili C, have developed a robotic prototype which uses Raspberry-pi 3 mode processor. It uses image processing algorithm to detect the pests and spray the pesticide on the plant. Movement of robot can be controlled manually by app and self-locomotion is possible by using sign boards in fields. All

the sensor data is uploaded to the cloud. Live monitoring of field and all sensor is possible by app.

“Population estimation of white fly for cotton plant using image processing approach” by Monica N Jige and Varsha R Ratnaparkhe. This paper presents the algorithm for automatic detection and counting the whiteflies using image processing in MATLAB. The RGB image is converted into HSV image using color space conversion. In this the algorithm cannot recognize the pest other than white pest and they are not killing or controlling the pest.

“Smart pest control system in agriculture” by B Vijayalakshmi, S Niveda, C Ramkumar, S Chenthur Pandian. In this paper Raspberry-pi is used for image processing. This prototype detects pest and disease caused by it. It considers temperature, humidity, soil moisture and image for detection process. Here it does not count number of pests and pest control is not possible.

“Pest detection system for agricultural crops using intelligent image analysis” by A G Mazare, D Visan, N Belu, A I Lita. This paper proposes an intelligent method for real time monitoring of pests in crops. The system has a pheromone trap which traps the pest. The camera fetches the information of the pest. Data which is collected is analyzed by two network-one determines the type and number of pests and other identifies the evolution of pest population. Here it only analyses one pest at a time and it does not control and distinguish pest.

“IOT based pest controlling system for smart agriculture” by K Saranya, P Uva Dharini, P Uva Darshini, S Monisha. In this paper they have used IOT and image processing technology to control pest. Infrared sensor (PIR) is used to detect presence of pest by heat radiation from their body. The pests in the field are repelled by generating ultrasonic sound. Small pests are not detected and pests are not effectively controlled.

“Research on plant diseases and insect pest monitoring technology under the background of IOT technology” by Linqun Fang. In this paper they have used IOT and 5G technology for diagnosing plant disease. Aerial drones are used to get the pictures of pest. Artificial intelligence is used for data analysis and open

CV technology for data processing. The captured RGB images is converted to grey scale image and then to histogram. Aerial drone does not perform effective detection of pest and are costly. Here they are not controlling the pests.

III. CONCLUSION

Capturing the image of the pest and processing those images for more information would help farmer in the field of agriculture. The experiment showed that the robot can basically complete the work of automatic controlled and meet spraying requirement in the farm field. This prototype system proved reliable for rapid detection of pest and also it is effective in identifying the different pest (like Yellow, White). The robot has the environmental concern regarding the overuse of pesticide so instead of spraying the pesticide randomly it sprays according to the count of pest. In the current condition of rapid development of precision farming technology, further research is still needed to improve the robustness of the robot.

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