IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 5, March 2025

Crop Protection and Detection from Animals

Aditya Ramesh Alhat, Dhananjay Dhansing Jadhav, Lalit Uday Rathod,
Yash Somnath Datir, Prof. P. P. Dadhich
Department of Electronic and Telecommunication
Guru Gobind Singh Polytechnic, Nashik, India

Abstract: *Agriculture plays a pivotal role in feeding the world's population, but farmers face significant challenges in protecting crops from a wide range of threats. One of the key threats comes from wildlife and domesticated animals, which can cause extensive damage to crops. Damage from animals can lead to crop loss, economic hardship, and reduced yields. These losses can be particularly devastating for smallscale and subsistence farmers.*

Keywords: Agriculture

I. INTRODUCTION

Farmers face significant challenges in protecting their crops from damage caused by animals, including wild species (e.g., deer, wild boars) and roaming livestock. These animals can cause substantial crop loss, affecting food security and farmers' incomes, particularly in areas where wildlife and agriculture overlap. Existing protection methods, such as fences, traps, and chemical deterrents, are often expensive, ineffective, and environmentally harmful. Currently, farmers lack reliable, cost-effective tools for early detection of animal presence and timely intervention. This leads to unpredictable crop damage, especially during key growing periods, and escalates economic losses. Moreover, many existing methods are not scalable, labor-intensive, or ethically questionable. The core problem is the lack of affordable, sustainable, and efficient solutions for detecting and mitigating animal-induced crop damage.

Proposed Project Work:

Shock modules are widely used in agriculture as a non-lethal and cost-effective solution for deterring animals from damaging crops. These devices deliver mild electric shocks to animals when they come into contact with a boundary, which discourages them from entering protected areas. Studies, such as those by Baker etal. (2017) and Roper et al. (2020), have shown that shock modules are effective in reducing crop damage from species like wild boars and deer, with animals quickly learning to avoid electrified areas.

The effectiveness of these modules depends on factors like voltage, shock duration, and the species being targeted

System Architecture:

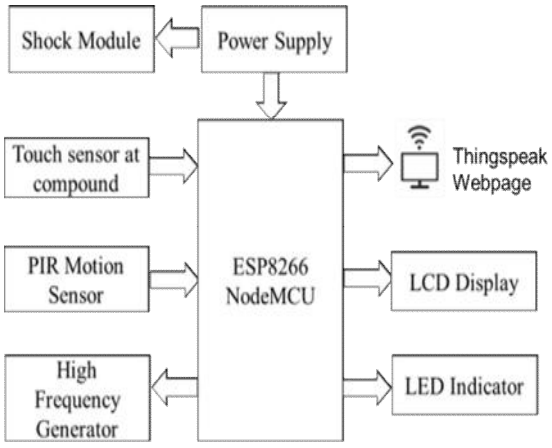

Fig: System architecture

Copyright to IJARSCT
www.ijarsct.co.in
DOI: 10.48175/IJARSCT-24182

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 5, March 2025

Stage 1: In this system PIR motion sensor is used to detect the internal motion and piezo buzzer is used to generated high frequency noise

Stage 2: Were as touch detection sensor is used to compound wires. also thread break detection is implemented at compound wires. To control all the process, ESP8266 Node MCU board is used.

Stage 3: Output module are Buzzer, LED indicator, LCD indicator, Node mcu processor and Regulator power supply.

Stage 4: The data is uploaded to cloud using through thinkspeak.

Overall, the system architecture of the system with Node mcu involves the design and assembly of hardware components, programming of the Node mcu for control and monitoring, and testing and optimization for efficiency and performance.

Advantages:

1. Enhanced Crop Safety
2. Cost-Effective Solution
3. Compact and Easy to Install
4. Real-Time Detection
5. Customizable Threshold Levels
6. Visual And Auditory Alerts

Applications:

1. This project is useful for protection of crop-field from birds and animals as well as theft.
2. To protect cornfields
3. For green houses
4. For secured areas like airport runways where birds and animals can make difficulties

II. CONCLUSION

This crop protection system effectively combines multiple sensors—PIR, touch, shock, and wire break—to monitor the field for any animal disturbances or damage to the wire. When any sensor is triggered, it activates the buzzer and uploads real-time data to the cloud, allowing farmers to remotely monitor and receive alerts. This proactive approach ensures crops are better protected, and farmers can respond quickly to any potential threats.

REFERENCES

[1]. For Node MCU (ESP8266) tutorials, documentation, and hardware details.
[2]. https://www.arduino.cc/ , https://docs.espressif.com/
[3]. http://www.learningaboutelectronics.com