

ANIMAL INTRUSION DETECTION AND CROP PROTECTION¹G.KARTHIK REDDY, ²K.SATHISH, ³P.MAHESH BABU, ⁴A.LOKESH, ⁵B.INDIRA SAI¹Asst. Prof, Dept. of ECE, CMR COLLEGE OF ENGINEERING & TECHNOLOGY²Asst. Prof, Dept. of MECH, CMR COLLEGE OF ENGINEERING & TECHNOLOGY³Asst. Prof, Dept. of MECH, CMR COLLEGE OF ENGINEERING & TECHNOLOGY⁴⁻⁵B-TECH, Dept. of AIML, CMR COLLEGE OF ENGINEERING & TECHNOLOGY**Abstract:**

With everyone being on the move in a fast-paced world, technologies have been increasing rapidly. As the world gets more and more technologically advanced, we find new technology coming in deeper and deeper into our personal lives that helps us in everyday situations. Technology is a never ending process. To be able to design a product using the current technology that will be beneficial to the lives of others is a huge contribution to the community. This project presents the design and implementation of animal intrusion detection and crop protection which helps in saving large amount of yield. The objective of this project is that we are going to detect the intrusion of any animal that may spoil the crop in order to save the crop. Laser detects the motion of any animal trespassing into the field and with the help of IR sensor and buzzer. The circuit makes the alarm buzz such that the farmers can listen and make the animals go away of the field.

1. INTRODUCTION:

Agriculture is still one of the most crucial sectors of Indian economy. But as in other sectors there are some problems in agriculture also. The farmers whose land in a vast agricultural area and near to the forest are facing a major problem and as a result they bare a huge loss in yield as well as profits. The major problem which the farmers are facing is the intrusion of animals such as pigs and oxes etc., into the crop field.

Some of the reasons for the crop failure due to animals are:

1. The crop field is near to the forest or is in a vast agricultural area.
2. No proper security system or fencing.
3. No person for looking after the field.
4. Cleverness of the intruding animals such as not making any sound when they are intruding the field.

To avoid the intrusion of animals into the field and spoiling the crop, The project “ANIMAL INTRUSION AND CROP PROTECTION” is an optimum solution.

The main objective is to avoid the trespassing of animals into the yield area and to reduce the losses bared by the farmers by introducing a system which alerts the owner of the crop land if any type of animal intruding the field through the alarm buzz such that the farmer can make the intruding animals move away of the crop area.

2. RELATED WORK

To protect the field from the animals entering the field, people use a method of electrical fencing, which may lead the death of the animals and as well as the humans coming in contact with the electrical fence. At the time of power cut, the electrical fencing system fails in terms of protection of crop.

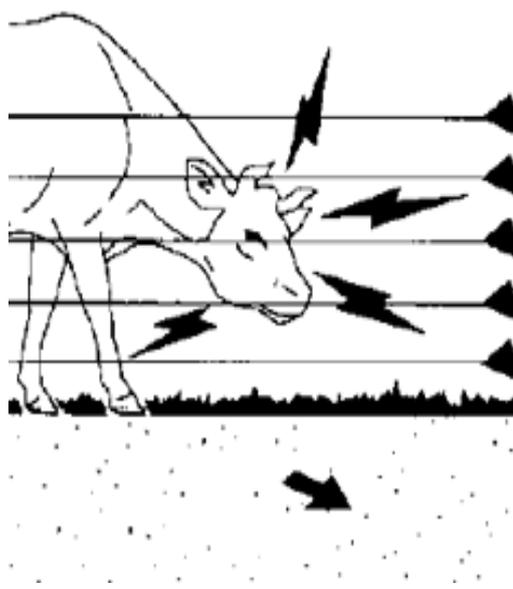


Fig 2.1- Demonstration of electricwire fencing

WORKING OF ELECTRICAL FENCING:

An electrical fence energizer converts battery power into a high voltage pulse. The energizer releases this pulse to an insulated fence line about once every second. When the animal makes contact with the fence the circuit is complete. It is at this point the animal receives a shock. The diagram above shows how the current flows from the energizer down the fence line and the animal. An electrical fence is a psychological barrier rather than a physical one. The animal feels the pain which is a bit harsh, and if the voltage supply of the circuit is more than enough, then the animal may also die.

LIMITATIONS OF ELECTRICAL FENCING :

The electrical fencing hurt the animal or human whichever comes in contact with the fence and also sometimes may lead to the death of the animal.

This system fails when the power cut occurs.

If any animal enters the field when the power cut occurs, the owner of the field wouldn't know about the incident.

3. IMPLEMENTATION

We have observed that the farmers lose their gains in terms of yield and earning in almost all cases due to the damage caused by the crop predating animals. The owner

of the crop comes to know about the incident atleast after a one day time. The problem is, there is no perfect security system which can help the farmers gains. To avoid this problem our designed system “Animal Intrusion Detection and Crop Protection” can be an optimum solution. To create a security alert system which helps the food producers save their crops from the intruding animals. To help the farmers make more profits than usual.

This project contains an Arduino Uno, lasers, LDRs, buzzers are its main components.

The Arduino is the main micro controller and all the components are connected to this only.

First an connected to the Arduino with appropriate connections then the GSM module and GPS modules are connected and finally the buzzer is connected to the circuit. All the components are interfaced individually and code for those components is obtained and then after completing the interface process for all the components, the code for each individual component is considered and is combined to make the final component. Intrusion detection is the topic of technology and research related to the application in agriculture as a security system. In our world there is a necessity of food for each and every species. And there are some

problems in production of food as well. One of it is the intrusion of animals and spoiling the crop. The need of the proposed system is to save the crop from the intruding animals and spoiling the crop through a security system called intrusion detection system. This system deals with an arduino based intrusion detection system. Intrusion detection system enables the receiving of immediate information of trespassing from the field. This tends to save the crop yield by 30%-40%. This increase the income of farmers. The aim of this project is to ensure that the trespassing can be immediately known to the farmers even in the night by which the crop can be protected from the animals which destroy the crop. This makes the increment of the profits of farmers. An algorithm is implemented to solve the problem of IR sensor which is then written into C. An intrusion detection system constantly monitors the intrusion of any species. A typical intrusion detection system can increase the profits by 30-40 percent from the usual earnings. The prototype is made to solve the above problem. It is completely automated and continuously monitors the trespassing. For the above process one needs to continuously supply the power.

4. EXPERIMENT RESULT

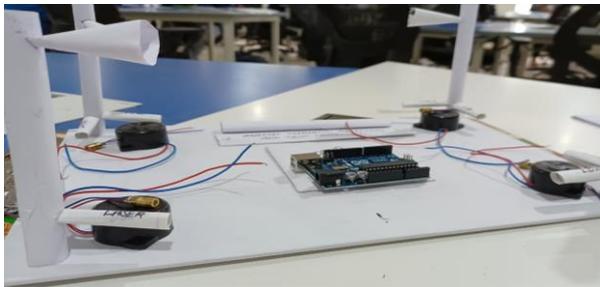
The main controller is the Arduino Uno. All the connections are made from the

breadboard to the respective components. The IR sensors and buzzers are connected to the breadboard. The IR sensor detects the motion of any trespasser. As a result the buzzer activates in case of any motion.

SCHEMATIC DIAGRAM



PROTOTYPE:



5. CONCLUSION:

In a country like India, where agriculture is a crucial sector of economy, there prone to

be a problem of animal destruction too. For such cases a solution like this is suitable wherein if there is an intrusion into the field, the alarm is activated such that the farmer get to know about the intrusion incident occurred. This helps the farmer to make the intruded animal go away of the field. In the crop yield every

grain is important.

6. REFERENCE:

1. <https://www.ijert.org/research/iot-based-wild-animal-intrusion-detection-system-IJERTCONV6IS15015.pdf>
2. <http://www.slideshare.net>
3. <https://aniders.com/2019/04/30/animal-intrusion-detection-repellent-system/>
4. <https://www.circuit.io/>