



BIRDS AND ANIMALS DAMAGE TO AGRICULTURAL YIELD, CURRENT REPELLING TECHNIQUES, AND THEIR IMPACTS

AMISHA H MALVIYA ¹, MINHAJ AHMED REHMAN ²

P.G.Scholar¹, Associate Professor², Department of Mechanical Engineering

St. Vincent Pallotti College of Engineering and Technology , Nagpur

amishamalviya2299@gmail.com, mrehman@stvincentngp.edu.in

Abstract : Domestic birds are a huge hazard to agriculture all around the world, causing damage to valuable field crops, storage facilities, and even contaminating human living places. House crows (*Corvus*), Abundant myna, Jungle myna, Brahminy starling, Whitecheeked bulbul, *Acridotterstritis*, and other pest birds are common in many regions. As technology advances, different electronic repellers are being used for bird control in agricultural fields. An efficient bird and animal repellent technique is discussed in this study. Different noises that discourage different types of birds were also identified and investigated. Our most crucial finding was that the scarer's success that mostly determined by the predator sound type, volume, quality, and repetition. Automatic scarecrow technique is a simple and effective approach to keep birds and other animals out of avian crops. By distributing birds in a safe and humane manner, this Scarecrow reduces crop damage.

Keywords : Agriculture yield ; pest bird ; bird repeller ; repelling techniques ; environmentally friendly .

I. INTRODUCTION

Birds exist in our natural environment . Though some of these birds are beneficial to man , a few species of them can be determined to human beings. Birds can be a nuisance when they cause damage and health problems [1]. Bird scaring is the dispersal of birds using stimuli that makes them uncomfortable . The most common domestic birds are crows , pigeons , sparrow , starlings , and blackbirds in India as in many countries in the world. These birds not only give damage to the agricultural area but also

makes dirty the human life area . In order to protect these areas against bird damage , some studies about mechanical and chemical fighting methods have been made up to now [2]. Animals attack in India are a common story nowadays . Due to the unavailability of any detection system these attacks kill villagers and also destroy their crops, Due to the lack of proper safety measures, the villagers are left helpless to their fate . Therefore a proper detection system could help save their lives and also to the preservation of the crops . Also the crops of villagers are destroyed due to the frequent

interference of animals , The crops and the paddy fields cannot be always fenced. So the possibility of crops being eaten away by cows and goats are very much present . This could result in huge wastage of crops produced by the farmers . To make the best use of mobile communication technology , therefore utilizes global system for mobile communication (GSM) and provide short message service . This systems helps us to keep away such wild animals and birds from the farmlands as well as provides surveillance functionality . It has been found that the odour of rotten egg helps to keep the wild pigs and deer from destroying the crops, hence the farmers manually spray the rotten eggs solution to their fields, and firecrackers are used to ward off the wild elephants that destroy the crops.

II. METHODS OF BIRD / ANIMALS REPELLENT

Crop damaged by animals and birds attack is one of the major threats in reducing crop yield . Crops are mainly damaged by local animals like buffaloes, crows, pigs , goats , birds and fire , etc. This leads to huge losses for the farmers. Agriculture farming is the main source of livelihood for many people in different parts of the world. Unfortunately , farmers are still reliant on traditional methods that have evolved hundreds of years ago. Due to this , the crop yield becoming low. Also ,several reasons contribute to the low yield of crops animals intrusion is also one among them . Wild animals are special challenge for farmers throughout the world in recent years .

Strategies to Protect Crops from Wild Animals :

- Agricultural fences like Wire fences , Wood fences, and Electric fences.

- Natural repellents like Smoke , Fish or garlic natural emulsion , Chilli peppers , Lavender and Beans , Eggs –based repellent .
- Chemical repellent .
- Biophysical barriers
- Electronics repellent

Prevent animals entry through the use of fences ,noise cannons ,and another type of deterrents. Animals controls and deterrents can be used when problems are identified or needed based on observation done on the farm.

Birds are damage different types of crops during vulnerable stages in different agro ecological regions of the country. The extent of damage to crops depends on several factors such as the concentration of local bird population, total area under the crop, cropping pattern habitat of the area, season and physiological status of the birds.

There are various off the rooftops out from under the eaves of the home and out of the garden is necessary as well. Spring and summer is their favorite time of year to roost, look for a mate. And nest in the eaves of the home or any other hidden areas as well as, away from their predators and the elements. It is important to get control over the pest bird before the nests are eggs in them. There is a migratory bird treaty that prohibits the removal of the nest once the nest is occupied. There are various products that wiencesll secure the home and get rid of birds. Bird netting is repellent device that will block the bird from entering an area. It is a product that offers total exclusion. Bird slopes and spikes can be placed under the eave to stop the birds from landing on the area. Other visuals and sounds bird deterrents can be placed throughout the area to scare the birds away.

Strategies to protect the crops from Birds :

- Agricultural fences
 - Wire fences
 - Plastic fences
 - Electric fences
- Natural repellents
 - Smoke
 - Fish or garlic natural emulsion
 - Chilli peppers
 - Lavender and beans
 - Egg based repellent
- Chemical repellent
- Biophysical barriers
- Electronic repellent
- Ultrasonic Electronic repellent
- Sonic electronic repellent

III. EVOLUTION OF BIRD REPELLENT

The development of technology is getting faster and more sophisticated nowadays. Its sophistication is closely related to the development of supporting technologies as sensors and actuators devices .The use of technology in agriculture is an important factor in the development of the food sector . Like reducing harvest time , technology also offers convenience provided by several research teams. The techniques of repelling birds has actually been applied in the field . [3]

Efforts that have been made by farmers are using traditional tools such as ringing clappers by going around rice field , making scarecrow , then installing nets and detection devices of bird presence and how to expel them .

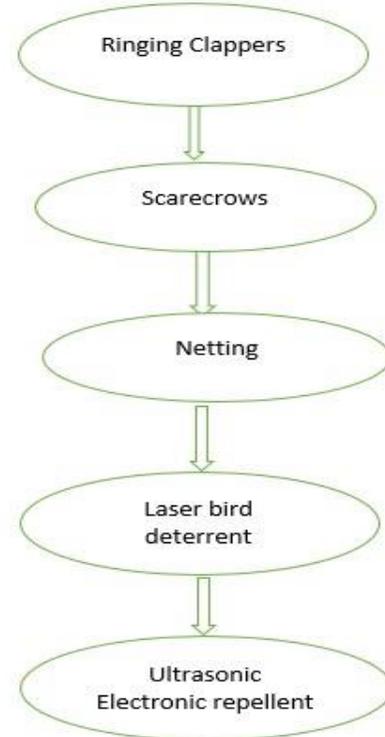


Fig. 1 Evolution of bird repellent
Ringing clappers to scare away the bird is the olden technique used by the farmers in the field .

Scare crow, device posted on cultivated ground to deter birds or the other animals from eating or otherwise disturbing seeds , shoots, and fruits its name derives from its use against the crow .

Bird netting is a very low tech solution that works best for preventing birds accessing areas of roofs and building nests. Netting is the most suitable option for covering small spaces. However, nets are costly and cannot be used in large field.[5]

Bird laser have a number of control applications but are especially useful for moving birds from their roosts. Laser are particularly useful in situations where it is not possible to use other more invasive audio

deterrents. Benefits : Long range – max 12km² from one position , Non lethal – birds are not harmed , chemical free . The laser wavelength is 532nm(green),and has a variable power(50-499mW).The laser has a horizontal projection range of 360°.

Ultrasonic electronic control devices are electronically designed devices used to keep away pests from vicinity where they are deployed. They have the advantage of being safe, cheap, environmentally and ecosystem friendly, especially when compared with chemical pest control method.



Fig. 4 Laser Bird deterrent



Fig. 2 . Scare crow



Fig.5 Ultrasonic Electronic bird repellent



Fig. 3 Netting

**IV. METHOD OF BIRD /ANIMALS REPELLENT :
ADVANTAGE AND
LIMITATIONS**

Methods	Advantage	Limitations
Bird Netting	<ul style="list-style-type: none"> • Nets are easily available • Easy to installed. • Long lasting – resistant to the elements 	<ul style="list-style-type: none"> • Expensive installation . • Requires regular maintenanc e .

	for at least 10 years.	
Bird Spikes	<ul style="list-style-type: none"> • Easy Installation • Long lifespan 	<ul style="list-style-type: none"> • Unattractive • The spikes can gather feathers and dropping which can be unhygienic.
Anti-bird Wire	<ul style="list-style-type: none"> • A cost effective • Aesthetically pleasing 	<ul style="list-style-type: none"> • Bird with long legs can learn to step over the wire. • If the ledge is wide enough, the birds can fit in against the wall.
Ultrasonic	<ul style="list-style-type: none"> • Environmental friendly • Cheap • Easy to use 	<ul style="list-style-type: none"> • Not effective on the hearing range of birds (which is roughly the same as humans).

V. CONCLUSION

Based on the findings, the study concludes that various methods for chasing birds. We identified and explored many ways for repelling birds, as well as distinct sounds that deter birds, as well as their benefits, drawbacks, and application. With this information, we ascertain that there is need to come up with better and effective methods of chasing these birds from farms. This research will aid in the reduction of crop

damage by dispersing birds in a safe and humane manner.

VI. REFERENCES

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