

Sun. Agri.: e- Newsletter, (2023) 3(8), 19-21

Article ID: 217

# **Comprehensive Management of Rodents and Birds in Agriculture: Strategies and Precautions**

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Available online at <a href="http://sunshineagriculture.vitalbiotech.org/">http://sunshineagriculture.vitalbiotech.org/</a>

#### Article History

Received: 7.08.2023 Revised: 12.08.2023 Accepted: 15.08.2023

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### INTRODUCTION

The coexistence of agriculture and wildlife brings both benefits and challenges. Rodents and birds, while playing vital ecological roles, can also pose threats to crops. Effective management is essential to minimize crop losses while preserving the delicate balance of ecosystems. To combat this damage, growers often use a variety of pest control measures including pesticides, trapping and exclusionary fencing (Shwiff, 2009). This article explores various methods—cultural, mechanical, biological, and chemical—for managing rodents and birds in agricultural settings. Additionally, it emphasizes the importance of precautions to ensure the sustainability of these management strategies.

### Cultural Methods

Cultural practices involve modifying agricultural practices to create an environment less conducive to rodent and bird activities:

Some key cultural strategies include:

- 1. **Crop Diversity and Rotation**: Planting a variety of crops and changing their arrangement disrupts pest feeding habits and life cycles, reducing their impact on crops.
- 2. **Timing and Synchronization**: Early planting and timely harvesting help crops establish themselves before pest populations peak, minimizing vulnerability.
- 3. **Habitat Modification**: Clearing debris and creating barriers like hedgerows limit hiding spots for pests, reducing their access to fields.
- 4. **Visual Deterrents**: Scarecrows and reflective materials create illusions of human presence, discouraging pests from approaching crops.



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- 4. Noise and Disturbance: Using devices like propane cannons or predator calls disrupts pest activities and prompts them to avoid the area.
- **5. Sanitation**: Properly managing crop residues and removing potential nesting sites minimizes habitats for rodents and birds.

# Mechanical Methods

Mechanical methods involve physical barriers or devices that prevent pests from accessing crops:

- 1. **Fencing**: Installing fences or netting around fields can deter birds and rodents, effectively protecting crops.
- 2. **Traps**: Live traps capture pests without causing harm, allowing for their relocation away from crops.
- 3. **Scare Devices**: Visual and auditory deterrents, such as scarecrows, reflective materials, or noise makers, startle pests away from fields.
- 4. **Physical Barriers:** Using mulches, row covers, or screens creates obstacles that prevent pests from reaching plants and damaging crops.

### **Biological Methods**

Biological control involves using natural predators to manage pest populations:

- 1. **Predatory Birds**: Encouraging raptors like owls and hawks can help control rodent populations.
- 2. **Predatory Insects**: Introducing beneficial insects that feed on pests can help maintain pest levels.
- 3. Use of Biological Agents: Employing biological agents like nematodes or pathogens that specifically target pests can provide effective control without harming non-target species.
- 4. **Conservation of Natural Enemies:** Creating habitats that attract and sustain natural enemies of pests, such as planting flowers to attract beneficial insects, contributes to long-term pest management.

5. **Biodiversity Enhancement:** Maintaining diverse habitats, including hedgerows and cover crops, supports a variety of natural predators that help regulate pest populations.

# Chemical Methods

Chemical methods involve using pesticides to manage pests, but they should be used judiciously and responsibly:

- 1. **Rodenticides**: Rodenticides are chemicals designed to control rodent populations. Use them carefully and only as a last resort due to their potential risks to non-target animals and the environment.
- 2. Avian Repellents: Chemical avian repellents deter birds from crops. Choose products with low toxicity and apply them according to label instructions.
- 3. **Selective Pesticides:** Choose pesticides that are specific to the target pest, minimizing harm to non-target species and beneficial organisms.
- 4. **Low Toxicity:** Opt for chemicals with lower toxicity levels to reduce risks to the environment, wildlife, and human health.
- 5. **Minimal Residue**: Select pesticides that break down quickly or leave minimal residues, ensuring food safety and reducing long-term environmental impacts.
- 6. **Application Precision**: Apply chemicals using precise equipment and techniques to minimize drift and ensure effective pest control.
- 7. Monitoring and Thresholds: Regularly monitor pest populations and apply chemicals only when pest levels exceed established thresholds, avoiding unnecessary use.
- 8. **Regulatory Compliance:** Adhere to regulations and label instructions when using pesticides to ensure safe and responsible application.



9. Alternatives Consideration: Explore non-chemical methods first and use chemicals only when other strategies prove ineffective.

### Precautions for Sustainable Management

Effective management of rodents and birds requires precautions to ensure that the methods employed are both effective and environmentally responsible:

- 1. **Targeted Application**: Use control methods that specifically target the problematic species while sparing non-target organisms.
- 2. **Integrated Approach**: Employ a combination of methods for comprehensive pest management, reducing the reliance on any single method.
- 3. Monitoring and Evaluation: Regularly assess the effectiveness of management strategies to make necessary adjustments.
- 4. Follow Label Instructions: When using chemical methods, strictly adhere to label instructions to minimize unintended consequences.
- 5. Environmental Impact: Consider the potential impact of management methods on the environment, choosing those with minimal ecological repercussions.
- 6. **Community Engagement**: Involve local communities and stakeholders in the management process to ensure support and compliance.

#### CONCLUSION

Managing rodents and birds in agriculture requires a multi-faceted approach that balances the need for crop protection with ecological sustainability. Cultural. mechanical, biological, and chemical methods offer a range of options, each with its own benefits and challenges. By combining these methods, exercising caution, and prioritizing the wellbeing of both crops and the environment, agriculture can thrive while coexisting harmoniously with wildlife. Sustainable management not only preserves crops but also contributes to the conservation of ecosystems and the species that inhabit them.

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