

Review

Some Examples of the Damage Caused by Birds and Rodent in field Crops and their Control

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This study is just a short review to damage caused by birds and rodent and the development of solutions, Agricultural pests, such as birds and rodents, may cause significant damage to crops and reduce growers' ability to provide agricultural commodities to the market. When this occurs, the broader economy may suffer due to reduced production and fewer commodities for processing and sale. If the agricultural sector plays a major role in the economy, the multiplier effects of this type of damage may be great since the agricultural sector typically provides inputs to almost all other sectors in the economy (e.g., manufacturing, retail trade, and accommodation and food service). The strategies adopted for Managing Birds and Rodent Pests were itemized in this study.

Key words: Agricultural pests; food service; manufacturing; managing birds; rodent pests

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INTRODUCTION

In California, agricultural production is a cornerstone of the state economy, and more broadly, agricultural production in California is important to the nation. California produces nearly \$39 billion worth of agricultural products annually, making it the top producer in the U.S. The state ranks first in the nation for the production of avocados, grapes, processing tomatoes, and many other crops. It is the sole producer of the nation's almonds, artichokes, figs, olives, and walnuts. Bird and rodent pests, such as blackbirds and ground squirrels, consume and damage crops in California, reducing crop yield and quality, and impacting all levels of the economy, not just the individual grower. It was estimated that vertebrates caused \$12.75 million in damage to California crops in 1974, and university researchers estimated the California ground squirrel alone caused between \$8 and \$12 million in damage to California crops in 1998. To combat this

damage, growers often use a variety of pest control measures including pesticides, trapping and exclusionary fencing (CDFA, 2007).

RESULTS

The damage caused by bird and rodent in California

birds and rodent Cause large damaging in the state of California and must find methods to control it. These methods are costly but they reduce damage and they contribute to the general economy, as growers purchase pesticides, fencing material or traps. The California Department of Food and Agriculture's (2006-2009); Vertebrate Pest Control Research Advisory Committee collaborated with the USDA National Wildlife Research

Center's Economics Project on a study to quantify the economic impact of bird and rodent damage to 22 selected agricultural commodities in 10 California counties. The direct cost of bird and rodent damage was estimated as the value of the decrease in yield of each individual crop in each county. An input-output model was used to estimate (1) potential impacts to California's economy related to bird and rodent damage to the 22 crops and (2) pesticide-related expenditures in the selected counties (CDFA, 2007 and Shwiff, 2009). Generally the most important results were:

- 1 - The total estimated revenue lost annually in the 10 counties due to bird and rodent damage to 22 selected crops ranged from \$168 million to \$504 million (in 2009 dollars).
- 2- The total estimated number of jobs lost annually in the 10 counties associated with the occurrence of bird and rodent damage to 22 selected crops ranged from 2,100 to 6,300.
- 3- Monterey County reported the greatest estimated decreases in revenue and jobs from bird and rodent damage, with \$44 million to \$128 million in annual revenue losses, and 515 to 1,514 jobs lost annually.
- 4- The total estimated revenue gained in the 10 counties annually due to pest control expenditures to prevent bird and rodent damage to 22 selected crops was approximately \$38 million (in 2009 dollars).
- 5- The total estimated number of jobs created in the 10 counties annually associated with pest control expenditures to prevent bird and rodent damage to 22 different crops was approximately 692.
- 6 - San Joaquin County reported the greatest estimated increase in revenue from pest control expenditures to prevent bird and rodent damage (\$7.5 million annually).
- 7- Kern County reported the greatest estimated increase in employment from pest control expenditures to prevent bird and rodent damage (152 jobs created annually) (CDFA, 2007 and Shwiff, 2009).

The damage caused by rodent in Asia

Rodents may significantly affect crop production and livelihoods of farmers in both developed and developing countries but their impact as related to the choice and associated costs of management actions is poorly known (Stenseth *et al.*, 2003). In Asia, pre-harvest rice losses are estimated to be between 5 and 10%. A loss of 6% of SE Asia rice production amounts to approximately 36 million t, i.e. enough to feed the population of Indonesia (215 million people) for 12 months Singleton (2003).

The damage caused by rodent in Egypt

Rodents are considered as one of the most important pests in Egypt. They cause great economic loss to farmers (damage the growing crops, stored products, poultry and animals farm); and to food manufactures by damaging the structure and fabric of buildings. Besides, they gnaw through almost any object in their ways to obtain food and shelter, Abdel-Gawad and Maher Ali (1982).

The objectives of this research in bird control

A number of measures can be mentioned as being important and/or potentially useful. These are:

- 1- Preferred distance from the coast with respect to migration patterns and attracting coastal birds
- 2- Behavior of birds (gulls) at and around the study area
- 3- Sea-migration patterns around the study area
- 4- Effects of creating nearby area attractive to birds, to keep them away
- 5- Design of the respect to birds migrating across the sea
- 6- Field tests on the development of (preferred) vegetation under coastal conditions
- 7- Minimizing the creation of sheltered bays or lagoons
- 8- Exclusion measures along shores, buildings and at sheltered sites on and around area
- 2- Management of fresh water (drainage, rain)
- 3- Handling of potential food sources and waste disposal
- 4- Regulations for commercial fishing around the area
- 5- Exclusion measures
- 6- Continuous bird patrol
- 7- Pyrotechnics and bioacoustics
- 8- Shooting
- 9- Discouragement and destruction of breeding attempts (zero tolerance) Desoky (2014a)

Management Strategies for Rodents

- 1- Rodent control strategies must consider economics as well as ecology
- 2- The differences in species composition of rodents depending on locality, habitat type and preferred food.
- 3- Population dynamics must also be taken into account, including intrinsic density-dependent and extrinsic density-independent factors
- 4- The control of rodents depends upon the locality, neighboring and available food.
- 5- Mechanical, biological and chemical control methods can be used effectively in an Integrated Pest Management Approach (IPMA) for the regulation of the rodents population density.
- 6- This approach will allow us to predict rodent outbreaks and the effects of climatic variability more accurately. (Desoky, 2014b).

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