ECOLOGICAL STUDY OF RODENTS INFESTING AGRICULTURAL AREAS AND NEW CONTROL APPROACHES

BY

FATMA MOUSTAFA METWALLY MOUSTAFA

B. Sc. Agric., (Plant Protection), Ain Shams University, 1978

A Thesis Submitted in Partial FulfIllment
of
The Requirment for the Master Degree
In
Environmental Sciencee
Department of Agricultural Science

Under the supervision of :

Prof. Dr. Amged M. K. Sobeiha

Professor of Chemistry & Toxicity of Pesticides., Faculty of Agriculture, Ain Shams University.

Prof. Dr. Mahmoud E. A Tharwat

Professor of Agricultural Zoology, Plant Protection Dept., Faculty of Agricultural, Ain Shams Universty.

Prof. Dr. Aly H. EL- Sherbiny

Director, Central Laboratory for Agricultural Climate Agricultural Research Center

APPROVAL SHEET

ECOLOGICAL STUDY OF RODENTS INFESTING AGRICULTURAL AREAS AND NEW CONTROL APPROACHES

BY

FATMA MOUSTAFA METWALLY MOUSTAFA

B. Sc. Agric., (Plant Protection), Ain Shams University, 1978

This thesis for M. Sc. degree has been approved by:

Prof. Dr. Sohail Samy Soliman……...

Prof. of Mammology, Faculty of Science, Ain Shams University

Prof. Dr. Mohamed Said Saleh El-Zemaity ……

Professor of Chemistry & Toxicity of Pesticides, Faculty of Agriculture, Ain Shams University.

Prof. Dr. Mahmoud E. A Tharwat……

Professor of Agricultural Zoology, Faculty of Agricultural, Ain Shams University.

Prof. Dr. Amged M. K. Sobeiha

Professor of Chemistry & Toxicity of Pesticides, Faculty of Agriculture, Ain Shams University.

Date of examination: 27/6 / 2005

ECOLOGICAL STUDY OF RODENTS INFESTING AGRICULTURAL AREAS AND NEW CONTROL APPROACHES

BY

FATMA MOUSTAFA METWALLY MOUSTAFA

B. Sc. Agric., (Plant Protection), Ain Shams University, 1978

A thesis submitted in partial fulfillment
of
the requirements for the Master Degree
in
Environmental Science

Department of Agricultural Science
Institute of Environmental Studies & Research
Ain Shams University

2005

ACKNOWLEDGMENT

The authoress is very indebted to ***Prof. Dr. Amged M. K. Sobeiha,*** Head of Pesticide& Pest control, Plant Protection Dept., Faculty of Agriculture, Ain Shams University, for supervising this work, without him, this work could not be completed.

Thanks are due to ***Prof. Dr. Mahmoud E. A. Tharwat*** Prof. of Agricultural Zoology, Plant Protection Dept., Faculty of Agriculture, Ain Shams University, for his valuable assistance and helpful suggestions during the preparation of this manuscript and for contributing an enormous amount of time in supervising this work.

Thank are due to ***Prof. Dr. Aly Hasan A. El- Sherbiny,***Professor of Vertebrate Ecology, Director, Centeral Laboratory for Agricultural Climat, Agricultural Research Center, for his kind advice and continuous help and encouragement throughout all the stages of this investigation.

Words cannot also express my gratitude to ***Prof. Dr. Karima Azam***, Assistant Prof. of Harmful Animals, Plant Protection Research Institute, for her keen interest, continuous encouragement, offering facilities and valuable guidance.

Thanks are also due to ***Dr. Waheed Gabr,*** Assistante Prof. of Harmful Animals, Plant Protection Research Institute, for his encouragement and help during the course of this work.

God bless every kind hand that helped to make this work of value.

ABSTRACT

The main objectives of the current research were to study the protection of the environment and the balance by using compounds that have no harmful effect on the none target species, with high efficiency against harmful rodents, to stop the outbreak problem which happens in some areas with ecological pressures.

Questionnaire studies of residents using a prepared questionnaire showed no significant differences between both regions, between houses with and without animal rooms, methods of control and between current and 1-6 month ago infestation. LSD test showed significant differences between day and night as a factor and night and day and between houses with birds, cats, sheep and cattle. Differences between regions, burned red bricks, hard surface, paved floor, houses without animal rooms and fairly clean houses were significant. For Kafer Hakim village shows difference between burned red bricks, sun dried bricks and unclean houses.

The roof rat, (*Rattus rattus*) and the Norway rat (*Rattus norvegicus)* were the main rats caught from Shalakan village. Norway rat had the highest number for animal room locations in all months. Location and seasonal variations showed no effect except for food store.

Laboratory studies showed that Santonic (Worm seed) "sheah" had the highest repellency effect among other soaking plant water with no significant difference.

Another laboratory study showed that the addition of carbon disulphide (10ppm) to crushed maize attracted rats to the food (the acceptability increased by 14% over control). Carbon disulphide had more attractance effect than ethyl acetate. The high trapping success was recorded in the case of traps treated with carbon disulphide.

The effect of Librax^{R} (0.001%) as antistomachache added to zinc phosphide (1% and 0.5%) increased food consumption and acceptability with higher mortality for 0.25%. Statistical analyses showed no

significant differences. In free choice tests, second day consumption increased by 2.72 and1.29 fold for treated and untreated with zinc phophide Librax^{R} group than the first day, respectively.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Page