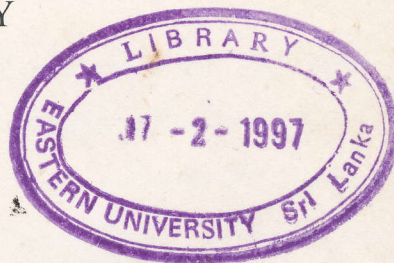


EFFICACY OF FOUR SELECTED BOTANICALS AND
ACTELIC ON THE MORTALITY OF *sitophilus oryzae* (L)

BY
THILAGAVATHY APPUDURAI

A RESEARCH REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE ADVANCED COURSE
IN
AGRICULTURAL BIOLOGY
FOR
THE DEGREE OF THE BACHELOR OF SCIENCE IN AGRICULTURE
FACULTY OF AGRICULTURE
EASTERN UNIVERSITY
SRI LANKA .
1996



APPROVED BY

S. Raveendranath.....

SUPERVISOR
DR. S. RAVEENDRANATH
SENIOR LECTURER
DIVISION OF AGRIC. BIOLOGY
FACULTY OF AGRICULTURE
EASTERN UNIVERSITY
CHENKALADY
SRI LANKA

DATE : - 30/10/96

T. Mahendran.....

HEAD / AGRONOMY
DR. (MRS) . T. MAHENDRAN
HEAD/ AGRONOMY
FACULTY OF AGRICULTURE
EASTERN UNIVERSITY
CHENKALADY
SRI LANKA

DATE : - 01/11/96

4364



FAG75

Project Report
Library - EUSL

PROCESSED
Main Library, EUSL

ACKNOWLEDGEMENT

ABSTRACT

A study was conducted to evaluate the efficacy of the botanicals such as *Ocimum* leave powder, lakada leave powder, *Eucalyptus* leave powder, lakada flower bud powder and Actellic in the survival of *S. oryzae*.

Findings from this study showed that *S. oryzae* significantly preferred red broken rice over white broken rice ($P > 0.0001$). Significant weight losses were observed in all the forms of rice varieties. But the degree of preference and weight losses remarkably high towards red broken rice. Overall weight losses in red and white rice were 61.3% and 43.3% respectively. Red broken rice was significantly preferred by *S. oryzae* to unpolished and polished rice.

All botanicals used in this study substantially reduced the pest population over control. This indicates that all these botanicals are effective protectants for stored grains. Among the botanicals tested in this study *Ocimum* leave powder was found to be very effective. As the finding from this study showed that *Ocimum* leave powder is very efficient in reducing *S. oryzae*, this botanical may be recommended as an alternative to chemical to control this pest in the Eastern region of Sri Lanka.

CONTENTS	PAGE
ABSTRACT	I
ACKNOWLEDGEMENT	II
CONTENTS	III
LIST OF TABLES	VI
LIST OF FIGURES	VII
LIST OF PLATES	VIII
1 INTRODUCTION	1
1.1 IMPORTANCE OF STORAGE	01
1.2 PESTS IN STORAGE	02
1.3 AN IMPORTANT INSECT PEST OF RICE	02
1.4 DAMAGE	03
1.5 CONTROL OF PEST	04
1.6 AGRO ECOLOGY OF STUDY AREA	04
1.7 OBJECTIVES OF STUDY	05
2 REVIEW OF LITERATURE	06
2.1 CLASSIFICATION	06
2.2 ORIGIN AND DISTRIBUTION	06
2.3 MORPHOLOGY	06
2.4 LIFE HISTORY AND VARIATION IN DEVELOPMENT	07
2.5 HOST RANGE OF S ORYZAE	08

2.6 DAMAGE	10
2.6-1 FOOD LOSS	11
2.6-2 HUMIDITY	11
2.6-3 FOOD PREFERENCE OF S ORYZAE	12
2.7 CONTROL OF PEST WITH CHEMICALS	13
2.8 PROTECTION OF RICE GRAIN BY NON CHEMICAL METHODS	16
2.9 PHYSICAL METHOD OF PROTECTION	17
2.10 USE OF PLANT PRODUCTS AND OIL	18
2.11 USE OF VAPOURS OF VOLATILE SUBSTANCES	20
3 MATERIALS AND METHODS	22
3.1 COLLECTION OF MATERIALS	22
3.1-1 INSECT	22
3.1-2 PREPARATION OF CULTURE MEDIA	22
3.1-3 COLLECTION OF BOTANICALS	22
3.1-a FLOW CHART	23
3.2 PREPARATION OF RICE GRAIN	24
3.2-1 FORMS OF RICE	24
3.3 MASS CULTURE OF S ORYZAE	24
3.4 COLLCECTION OF ONE DAY WEEVIL	24
3.5 ORIGINATION OF EXPERIMENTS	24
3.5-1 BOTANICALS	24
3.6 PREPARATION OF FORMS OF RICE	25

3.6-1 UNPOLISHED	25
3.6-2 POLISHED GRAINS	25
3.6-3 BROKEN RICE	25
3.7 EXPERIMENT-1	25
3.8 EXPERIMENT-2	25
3.9 ANALYSIS OF DATA	27
4 RESULTS AND DICUSSION	27
4.1 PRELIMINARY STUDY	27
4.2 EXPERIMENT-1	27
4.3 EXPERIMENT-2	29
4.4 EFFECTIVENESS OF BOTANICALS	31
5 CONCLUSION	36
BIBILIOGRAPHY	37
APPENDIX	