

شبكة المعلومات الجامعية







شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار في درجة حرارة من ١٥-٥٠ مئوية ورطوبة نسبية من ٢٠-٠٠% To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%



بعض الوثائـــق الإصليــة تالفــة



بالرسالة صفحات لم ترد بالإصل

B ENVE

STUDIES ON EFFECTIVENESS OF CERTAIN METHYL BROMIDE ALTERNATIVES AGAINST SOME STORED PRODUCTS INSECTS IN GASTIGHT BINS

BY WESAM MOHAMED KAMAL ELDIN EBRAHIM

M. Sc., Fac. Of Agric. (Plant protection-Economic Entomology) Moshtohor, Zagazig University (1996)

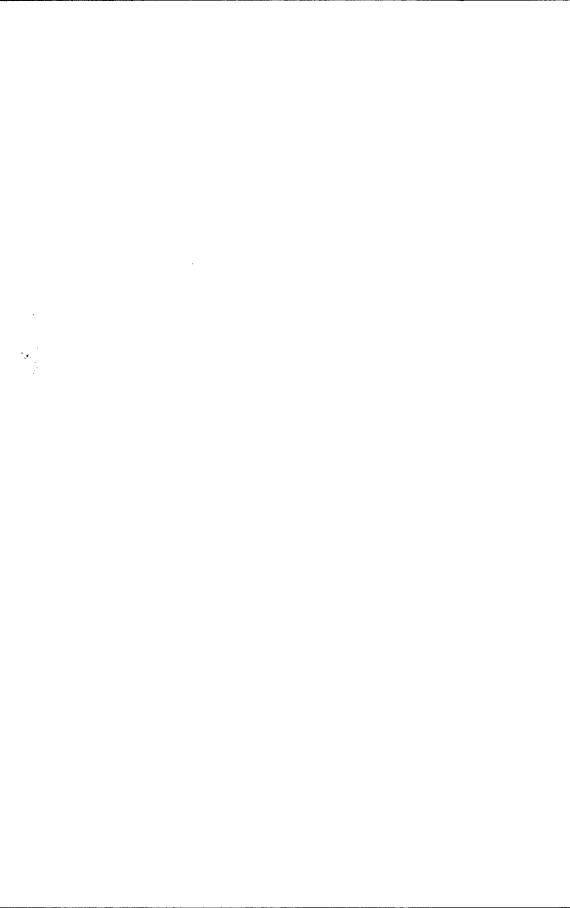
A DISSERTATION

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

IN (Economic Entomology)

PLANT PROTECTION DEPARTMENT. FACULTY OF AGRICULTURE, MOSHTOHOR, ZAGAZIG UNIVERSITY, BENHA BRANCH, EGYPT

2002



STUDIES ON EFFECTIVENESS OF CERTAIN METHYL BROMIDE ALTERNATIVES AGAINST SOME STORED PRODUCTS INSECTS IN GASTIGHT BINS

BY WESAM MOHAMED KAMAL ELDIN EBRAHIM

M. Sc., Fac. Of Agric. (Plant protection-Economic Entomology) Moshtohor, Zagazig University (1996)

Under the Supervision of:

Prof. Dr. Faris Amin Mohamed El-Lakwah, Prof. of Economic Entomology and control of stored product pests at the Plant Protection Dept. Fac. of Agric. Moshtohor, Zagazig University.

Prof. Dr. Ahmed Abdel-Wahab Abdel-Gawaad, Prof. of Economic Entomology at the Plant Protection Dept. Fac. of Agric. Moshtohor, Zagazig University.

Dr. Refaat Abdel-Shafy Mohamed, associate Prof. of Economic Entomology at Plant Protection Research Institute Agric., Res., Center, Ministry of Agriculture. į

STUDIES ON EFFECTIVENESS OF CERTAIN METHIL BROMIDE ALTERNATIVES AGAINST SOME STORED PRODUCTS INSECTS IN GASTIGHT BINS

BY

WESAM MOHAMED KAMAL ELDIN EBRAHIM

B. Sc. Fac. of Agric. Moshtohor, Zagazig University (1992)
M. Sc. Fac. of Agric. (Plant protection-Economic Entomology) Moshtohor,
Zagazig University (1996)

This thesis for Ph. D degree has been

Approved by:	T PO 11
Prof. Dr. Faris A	amin Mohamed El-Lakwah Farry El. Lehurs
	Prof. of Economic Entomology at Fac. of Agric.
	Moshtohor, Zagazig University.
Prof. Dr. Ahmed	Abdel-Wahab Abdel-Gawaad.
	Prof. of Economic Entomology. Fac. of Agric.
	Moshtohor, Zagazig University.
Prof. Dr. Mawah	neb Mahmoud Zewar. M. M. Zewe
	Chief Researcher on Stored Product divesion at
	Ministry of Agriculture.
Dr. Metwaly Mo	stafa Khttab. M. Khallul.
•	Assestant Prof. of Economic Entomology at Fac.
	of Agric. Moshtohor, Zagazig University.
Dr. Refat Abdel-	Shafy Mohamed . K. Jalan Mondal
	Associate Prof. of Economic Entomology at

Ministry of Agriculture.

Date of Examination: 2/4/2002



ACKNOWLEDGEMENT

This work is a main part of the work plan of the National project of integrated pest management for post-harvest pests. Therefore, this present study was carried out and supported by the above mentioned project, financed by EEC- Counterpart funds through the Egyptian Ministry of Agriculture and Land Reclamation.

The authors is highly indebted to the authorities of this National project.

Meanwhile, I want to express my deep thanks and gratitude to **Prof. Dr. Faris Amin Mohamed El-Lakwah**, Prof. of Economic Entomology and Control of Stored Product pests at the Plant Protection Dept., Fac. of Agric. Moshtohor, Zagazig University for his supervision; suggesting the subject, valuable assistance and reviewing the manuscript.

My deep cordial thanks also extended to Prof. Dr. Ahmed Abdel-Wahab Abdel-Gawaad, Prof. of Economic Entomology at the same Department for his supervision and helpful advice.

My deep thanks also to Dr. Refaat Abdel-Shafy Mohamed, associate Prof. of Economic Entomology at Plant Protection Research Institute Agric., Res., Center, Ministry of Agriculture for his supervision and valuable assistance.



CONTENTS

	Page
l-Introduction.	1
II_Review of Literature.	5
dioxide concentrations on stored product pests.	5
nitrogen content/or pure nitrogen on stored product	
necto	33
p. Fee and of phosphine on stored product pests.	36
4-Efficacy of combinations of phosphine and carbon	
dioxide against stored product pests.	62
III-Materials and Methods.	73
1-Insects.	73
2 Import guiltures	73
3-Methods of obtaining the developmental stages of the	
and insect species	77
4-Preparation of the test-insects for various treatments.	78
5 Caree wood	78
6-Exposure procedure of the insects inside the bins.	79
7-Purging of the gases inside the bin.	79
8-Determination of gas concentrations.	80
a D' Lasta	81
10-Calculation of the joint action of the combined	
treatments.	82
11-Statistic analysis.	82
TV Devolts and Discussion	83
of controlled atmospheres (CA) of certain	
carbon dioxide concentrations against the tested	
e et vorious grain fembelalule.	
insect species at various grain comparing CO_2 at grain 1.1. Efficacy of CA of CO_2 at grain CO_2	
temperature of $26 \pm 2^{\circ}$ C.	83

	Page
.2.Efficacy of CA of 60 ± 5% CO ₂ at grain	
temperature of $26 \pm 2^{\circ}C$.	89
.3.Efficacy of CA of 30 ± 5% CO ₂ at grain	
temperature of $15 \pm 2^{\circ}$ C.	94
1.4.Efficacy of CA of $60 = 5\%$ CO ₂ at grain	
temperature of $15 \pm 2^{\circ}$ C.	100
1.5.Efficacy of CA of $80 \pm 5\%$ CO ₂ at grain	
temperature of $15 \pm 2^{\circ}$ C.	105
2-Efficacy of controlled atmospheres (CA) of high	
nitrogen content (99% N ₂) against the tested insect	
species.	110
2.1.Efficacy of CA of 99% N_2 at grain temperature of	
$26 \pm 2^{\circ}$ C.	110
2.2.Efficacy of CA of 99% N ₂ at grain temperature of	
$21 \pm 2^{\circ}$ C.	116
3-Efficacy of 100 ppm phosphine against the various	
insect species at $26 \pm 2^{\circ}$ C, $55 \pm 5\%$ R. H. and	
varying exposure periods.	126
4-Efficacy and combined action of phosphine with	
carbon dioxide against the tested insect species at	121
varying temperatures.	131
4.1.Efficacy and combined action of 100 ppm PH ₃ with $30 \pm 5\%$ CO ₂ at grain temperature of 26 ± 2 °C and	
$30 \pm 5\%$ (O_2 at grain temperature of 20 ± 2 C and	121
varying exposure periods. 4.2.Efficacy and combined action of 100 ppm PH ₃ with	131
$60 \pm .5\%$ CO ₂ at 14 ± 1 °C	134
4.3. Efficacy and combined action of 100 ppm PH ₃ with	134
$60 \pm 5\%$ CO ₂ at 18 ± 2 °C	143
4.4. Efficacy and combined action of 100 ppm PH ₂ with	1.47.
$60 \pm 5\%$ CO ₂ at 20 ± 1 °C	143
4.5. Efficacy and combined action of 100 ppm PH ₃ with	i → -,
$60 \pm 5\% \text{ CO}_2 \text{ at } 24 \pm 2^{\circ}\text{C}$	148
4.6.Efficacy and combined action of 100 ppm PH ₃ with	,
$60 \pm 5\% \text{ CO}_2 \text{at } 26 \pm 2^{\circ} \text{C} \text{ and}$	148