

CONTENTS

	Page
ACKNOWLEDGEMENTS	c
ENGLISH ABSTRACT	d
THAI ABSTRACT	f
LIST OF TABLES	j
LIST OF FIGURES	k
 CHAPTER 1 INTRODUCTION	 1
1.1 General background of Chilli Thrips	1
1.2 Protected cultivation in the tropics	2
1.3 Insect and the nature of UV light	2
1.4 The scope of the experiments	3
1.5 Rationale and Hypothesis	4
1.6 The objectives of research	4
 CHAPTER 2 REVIEW OF RELATED LITERATURE	 5
2.1 Life cycle of <i>S. dorsalis</i>	5
2.2 Characteristics of chilli thrips on chill plant	7
2.3 Sampling methods of chilli thrips	8
2.4 Insects and responses to UV light	9
2.5 Importance of pest control in protected cultivation systems	11
2.6 History	13
 CHAPTER 3 RESEARCH METHODOLOGY	 14
3.1 Studies location	14
3.2 Host plants preparation	15
3.3 Experiment I: Greenhouses Experiments	18

CONTENTS (Continued)

	Page
3.4 Experiment II: Multiple choice experiments in the Laboratory and Outside conditions	24
CHAPTER 4 RESULTS	27
4.1 Experiment I: The Result of responses to chilli thrips with three different treatments at 12 different days	27
4.2 Experiment 2: Multiple choice experiments	33
CHAPTER 5 DISCUSSION	35
CHAPTER 6 CONCLUSIONS	39
REFERENCES	40
APPENDIX	48
Appendix A1 Summarized data of the number of chilli thrips in the UV opaque greenhouse	49
Appendix A2 Summarized data of the number of chilli thrips in the UV block greenhouse	49
Appendix A3 Summarized data of the number of chilli thrips in the UV opaque greenhouse	49
Appendix B Summarized data of the number of Chilli thrips in the experiment II	55
Appendix C1 Chiang Mai monthly weather data from weather meteorological department	58
Appendix C2 The weather data for the duration of the 12 day experiment	
Appendix C3 Chiang Mai monthly temperature and rainfall during the experiment	
Appendix D Indoor temperature and humidity in the greenhouse	61
Appendix E Additional elaborations	62
CURRICULUM VITAE	73

LIST OF TABLES

		Page
Table 4.1	The number of chilli thrips per trap caught in 12 days in screen house covered with UV opaque, UV open plastic and outside screen house. Means in each row and column followed by the same letters are not significantly different ($P < 0.05$)	28
Table 4.2	Means (\pm SD) of number of chilli thrips in three different treatments (UV light, Warm White, Yellow light) caught by sticky traps)	33

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
 Copyright© by Chiang Mai University
 All rights reserved

LIST OF FIGURES

		Page
Figure 2.1a	Generalized Scirtothrips's life cycle	6
Figure 2.1b,c	The adult of <i>S. dorsalis</i> under the microscope	6
Figure 2.2a,b	Symptoms of <i>S. dorsalis</i> on chilli plants	7
Figure 2.2c	Chilli plants infested by <i>S. dorsalis</i> in the greenhouse	8
Figure 2.3a,b	The yellow sticky trap used in the experiment (a) and the yellow sticky trap with 16 square grids to count the number of thrips (b)	9
Figure 2.4	Different types of wavelengths of the electromagnetic energy spectrum	10
Figure 3.1a,b	UV open greenhouse (a) and UV opaque greenhouse and outside in the open air (b) in the greenhouse experimental sites in Chiang Mai University	15
Figure 3.2a,b	The seedlings trays in the nursery (a), the seedlings covered by fine net in the nursery (b)	16
Figure 3.2c,d	Young red devil chilli seedlings in the protected screenhosue	17
Figure 3.3a	The greenhouses from the experiment. The one on the right is UV opaque and the left is UV open greenhouse	18
Figure 3.3b,c,d	The replications of chilli plants from treatment 1 (UV open greenhouse) (b), treatment 2 (UV opaque greenhouse) (c) and the treatment 3 (outside) (d).	20
Figure 3.3e,f	The fertilizer solution for plant nutrition	21
Figure 3.3g,h	Materials used in the experiment for yellow sticky traps (glue, yellow perforated plastic, clear plastic bags, tapes, bamboo sticks) (g) and Yellow sticky trap placed in the experiment to attract chilli thrips (h)	22

LIST OF FIGURES (Continued)

	Page
Figure 3.3i,j,k	23
The mature chilli plants in the UV opaque, UV block and outside conditions	
Figure 3.4a	24
Multiple choice experiments with three different lighting treatments (UV light, Warm White and Yellow light) under the laboratory conditions	
Figure 3.4b,c,d	25
Three kinds of light conditions, UV light (b), warm white (c) and yellow light (d)	
Figure 3.4e	26
Multiple choice experiments with three different lighting treatments (UV light, Warm White and Yellow light) under outside conditions)	
Figure 4.1a,b	29
Effects of aphid on the chilli plants in the UV open greenhouse (a) and Aphid (<i>Myzus</i> spp.) infestation on the chilli plants under the microscope (b)	
Figure 4.1c	29
Chilli thrips under the microscope	
Figure 4.1.1a	31
The influence of weather data (temperature, rainfall* and wind*) on the number of chilli thrips in three different environmental conditions	
Figure 4.1.1b	32
Daily amount of relative humidity (%) during the experimental period	

ลิขสิทธิ์ © โดย Chiang Mai University
All rights reserved