

CONTENTS

	Page
ACKNOWLEDGEMENTS	c
ENGLISH ABSTRACT	d
THAI ABSTRACT	e
LIST OF TABLES	h
LIST OF FIGURES	i
CHAPTER 1 INTRODUCTION	
Introduction	1
Research objectives	2
CHAPTER 2 LITERATURE REVIEW	
Tar spot disease	3
Historical review of tar spot diseases.	4
Rhytismatales as causal agent of Tar spot and species concepts	5
Phyllachorales as causal agent of Tar spot and species concepts	6
Historical review of the Phyllachoraceae	15
CHAPTER 3 MATERIALS AND METHODS	
Survey and collecting of Tar spot disease	21
Study morphology of fungi cause Tar spot disease	21
CHAPTER 4 RESULTS AND DISCUSSION	26
CHAPTER 5 CONCLUSION	146
REFERENCES	147
CURRICULUM VITAE	

LIST OF TABLES

	Page
Table 1 Historical review of tar spot diseases.	4
Table 2 Historical review of the Phyllachoraceae.	15
Table 3 Data on Tar spot disease in Chiang Mai.	27
Table 4 Comparison of <i>Phyllachora</i> sp. on <i>Brachiaria reptans</i> .	32
Table 5 Comparison of <i>Phyllachora</i> sp. on <i>Eleusine indica</i> .	39
Table 6 Comparison of <i>Phyllachora</i> sp. on <i>Chloris barbata</i> .	50
Table 7 Comparison of <i>Phyllachora</i> sp. on <i>Cynodon dactylon</i> .	54
Table 8 Comparison of <i>Phyllachora</i> sp. on <i>Digitaria adscendens</i> .	60
Table 9 Comparison of <i>Phyllachora</i> sp. on <i>Ficus religiosa</i> .	66
Table 10 Comparison of <i>Phyllachora</i> sp. on <i>Imperata cylindrical</i> .	72
Table 11 Comparison of <i>Phyllachora</i> sp. on <i>Pterocarpus indicus</i> .	80
Table 12 Comparison of <i>Phyllachora</i> sp. on <i>Vetiveria zizanioides</i> .	133

LIST OF FIGURES

	Page
Figure 1 Tar spot symptoms on different host plant	4
Figure 2 Line drawing morphological characteristics of <i>Rhynchospora umbonatum</i>	6
Figure 3 Linedrawing morphological characteristics of <i>Phyllachora laurinearum</i>	7
Figure 4 Shapes for fruiting body of <i>Phyllachorales</i> .	22
Figure 5 Conidiomatal types.	23
Figure 6 Shapes of Hamathecium subdivided into interascal.	24
Figure 7 Shapes based on the sphere and ellipsoids.	24
Figure 8 Shapes of ascospores and ascus.	25
Figure 9 <i>Phyllachora cynodontis</i> on leaf	34
Figure 10 <i>Phyllachora cynodontis</i> on leaf	36
Figure 11 <i>Phyllachora cynodontis</i> on leaf	37
Figure 12 <i>Phyllachora gloiana</i> on leaf	38
Figure 13 <i>Phyllachora punctum</i> .on leaf	41
Figure 14 <i>Phyllachora punctum</i> .on leaf	42
Figure 15 <i>Phyllachora punctum</i> .on leaf	43
Figure 16 <i>Phyllachora punctum</i> .on leaf	45
Figure 17 <i>Phyllachora punctum</i> .on leaf	47
Figure 18 <i>Phyllachora punctum</i> .on leaf	48
Figure 19 <i>Phyllachora punctum</i> .on leaf	49
Figure 20 <i>Phyllachora koondrookensis</i> on leaf	51
Figure 21 <i>Phyllachora koondrookensis</i> on leaf	53
Figure 22 <i>Phyllachora cynodontis</i> on leaf	55
Figure 23 <i>Phyllachora cynodontis</i> on leaf	56
Figure 24 <i>Phyllachora cynodontis</i> on leaf	58

LIST OF FIGURES (Continued)

	Page
Figure 25 <i>Phyllachora cynodontis</i> on leaf	60
Figure 26 <i>Phyllachora oryzopsidis</i> on leaf	62
Figure 27 <i>Phyllachora oryzopsidis</i> on leaf	64
Figure 28 <i>Phyllachora oryzopsidis</i> on leaf	66
Figure 29 <i>Phyllachora fici-orbispora</i> on leaf	68
Figure 30 <i>Phyllachora infectoria</i> .on leaf	71
Figure 31 Coelomycetes	71
Figure 32 <i>Phyllachora oxyspora</i> on leaf	73
Figure 33 <i>Phyllachora oxyspora</i> on leaf	75
Figure 34 <i>Phyllachora oxyspora</i> on leaf	77
Figure 35 <i>Phyllachora leucospila</i> on leaf	74
Figure 36 <i>Phyllachora pteracarpi</i> on leaf	82
Figure 37 <i>Phyllachora pteracarpi</i> on leaf	84
Figure 38 <i>Phyllachora pteracarpi</i> on leaf	85
Figure 39 <i>Phyllachora pteracarpi</i> on leaf	87
Figure 40 <i>Phyllachora amphibola</i> on leaf	88
Figure 41 <i>Phyllachora bulbosa</i> on leaf	90
Figure 42 <i>Phyllachora ischaemi</i> on leaf	92
Figure 43 <i>Phyllachora imnutissima</i> on leaf	93
Figure 44 <i>Phyllachora oryzopsidis</i> on leaf	94
Figure 45 <i>Phyllachora ramosii</i> on leaf	96
Figure 46 <i>Phyllachora oryzopsidis</i> on leaf	97
Figure 47 <i>Phyllachora cantonensis</i> on leaf	98
Figure 48 <i>Phyllachora glycinicola</i> on leaf	100
Figure 49 <i>Phyllachora dolichogena</i> on leaf	102
Figure 50 <i>Phyllachora ficuum</i> on leaf	104
Figure 51 <i>Phyllachora cantonensis</i> on leaf	105
Figure 52 <i>Phyllachora</i> sp.on leaf	107
Figure 53 <i>Phyllachora</i> sp.on leaf	108

LIST OF FIGURES (Continued)

	Page
Figure 54 <i>Phyllachora queenslandica</i> on leaf	110
Figure 55 <i>Phyllachora tumatumeriana</i> on leaf	112
Figure 56 <i>Phyllachora oryzodsidis</i> on leaf	114
Figure 57 <i>Phyllachora cantonensi</i> on leaf	116
Figure 58 <i>Phyllachora callistemonis</i> subsp. <i>callistemonis</i> on leaf	118
Figure 59 <i>Phyllachora callistemonis</i> subsp. <i>similis</i> on leaf	120
Figure 60 <i>Phyllachora cllistemonis</i> on leaf	121
Figure 61 <i>Phyllachora</i> sp.on leaf	123
Figure 62 <i>Phyllachora</i> sp.on leaf	124
Figure 63 <i>Phyllachora bauhiniae</i> on leaf	126
Figure 64 <i>Phyllachora</i> sp. on leaf	128
Figure 65 <i>Phyllachora glycinicola</i> on leaf	130
Figure 66 <i>Phyllachora glyriana</i> on leaf	131
Figure 67 <i>Phyllachora</i> sp. on leaf	132
Figure 68 <i>Phyllachora fimdristylidis</i> on leaf	135
Figure 69 <i>Phyllachora fimdristylidis</i> on leaf	137
Figure 70 <i>Phyllachora fimdristylidis</i> on leaf	138
Figure 71 <i>Ophiodothella syzygii.</i> on leaf	140
Figure 72 <i>Guignardia</i> on leaf	141
Figure 73 <i>Rehmiodothis osbeckiae</i> on leaf	143
Figure 74 <i>Rehmiodothis osbeckiae</i> on leaf	145