

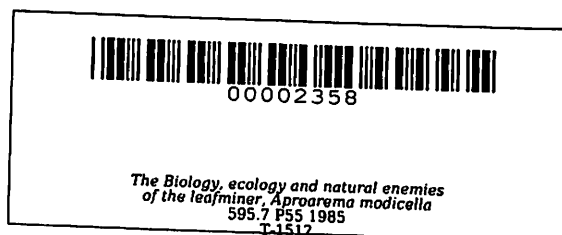
THE BIOLOGY, ECOLOGY AND NATURAL ENEMIES
OF THE LEAFMINER, APROAEREMA MODICELLA
DEYENTER (LEPIDOPTERA: OLECHIIDAE) ON
GROUNDNUT, ARACHIS HYPOGAEA LINN.

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ABSTRACT

SONGYOT PHISITKUL, University of the Philippines
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Enemies of the Leafminer, *Aproaerema modicella* Deventer
(Lepidoptera: Gelechiidae) on Groundnut, *Arachis hypogaea*
Linn.

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The groundnut leafminer completed its life cycle in 24-33 days. Eggs were laid on the lower leaf surface of the host plant and usually hatched in three days. Newly emerged larvae constructed mines in the leaves and continuously fed inside until they developed into the 4th instar larvae. However, the 3rd instar larvae were the most destructive. Pupal stage was spent within the leaves for about 3-4 days. Adults emerged in the evening with males coming out first. Mating occurred early morning and was preceded by a simple courtship. Oviposition took place in the evening about 10-14 hours after mating. More eggs were laid during the 2nd day of oviposition but gradually declined in succeeding days.

The rate of insect development was affected by temperature and the kind of host plant. Development was faster as temperature increased from 25°C to 30°C. Moreover, temperature had a greater effect on longevity of adults than food. Insects reared on soybean had a shorter life cycle (21.10 days) than those on groundnut (23.73 days) and pigeon pea (25.14 days).

Of the 13 leguminous plants tested, the leaves of soybean and groundnut were highly preferred as food by the larvae. Both plants received the highest damage rating and contained the greatest number of larvae that mined into the leaves. These plants were also preferred by the adults for oviposition.

RCM 387 and KAC 51 gave the highest yield and correspondingly low infestation compared to other 14 groundnut varieties. Preferred plants had erect growth habit, large leaves and less leaf trichomes. Non-preferred varieties were of the semi-branched and runner types, which had rough, small leaves with more trichomes.

Groundnut planted during early rainy season produced higher yields than those planted late in season. Early planting

escaped high infestation of leafminer in the field. Late infestation was tolerated by the plant.

A. modicella was observed in the five groundnut growing areas of Northeast Thailand. Infestation was high in KKU, relatively low in Thapra, Kalasin and Roi-Ait and was very low in Mahasarakam. The most common larval parasites encountered were Tetrastichus sp. and Apanteles sp., while the pupal parasites were Brachymeria minuta and B. lasus. However, as a whole, parasitism was low.



TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
I INTRODUCTION	1
II REVIEW OF LITERATURE	6
Taxonomy of the Groundnut Leafminer	6
Distribution	7
Life History, Habit and Behavior	7
Nature of Damage	8
Population Dynamics	9
Host Range	10
Natural Enemies	11
III MATERIALS AND METHODS	12
Taxonomy and Description of the Species	12
Morphological Studies	12
Life History and Habits	13
Life Cycle of <u>Aproaerema modicella</u>	14
Effects of Temperature and Relative Humidity on the Life Cycle of <u>Aproaerema modicella</u>	16
Effects of Different Hosts on the Life Cycle of <u>Aproaerema modicella</u>	17
Host Range	18
Food Preference	18
Ovipositional Preference	21
Host Preference for Larval Adaptation and Development	23
Population Dynamics	25
Varietal Resistance	28
Distribution and Prevalence of Leafminer Infestation in Northeast Thailand	30

<u>CHAPTER</u>		<u>PAGE</u>
IV	RESULTS AND DISCUSSIONS	32
	Morphological Description of the Different Stages of Development	32
	Life History and Habits	40
	Effects of Food on the Oviposition and Longevity of Adults	53
	Effects of Temperature on the Development of <u>Aproaerema modicella</u>	54
	Comparative Development of <u>Aproaerema modicella</u> on Three Different Hosts: Groundnut, Pigeon Pea and Soybean Under Greenhouse Condition	60
	Mortality Rate of <u>Aproaerema modicella</u>	63
	Host Range Studies	64
	Food Preference of <u>Aproaerema modicella</u>	64
	Ovipositional Preference of <u>Aproaerema modicella</u>	74
	Host Preference for Larval Adaptation and Development of <u>Aproaerema modicella</u>	82
	Varietal Resistance	88
	Population Dynamics	92
	Leafminer Population During the Early Rainy Season: KKU Campus	93
	Leafminer Population During the Early Rainy Season: Thapra	98
	Leafminer Population During the Late Rainy Season: KKU Campus	103
	Distribution and Prevalence of Leafminer Infestation in Northeast Thailand	107
	Factors Associated with Prevalence and Distribution of the Leafminer	110
	Parasites and Degree of Parasitism	113
	Survey on the Levels of Larval Parasitism in Five Locations in Northeast Thailand	114

CHAPTER

PAGE

Parasitism During the Different
Cropping Seasons

119

V SUMMARY AND CONCLUSION

128

LITERATURE CITED

134

LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
1	Leguminous plants tested for food, oviposition and larval development of <u>Aproaerema modicella</u>	19
2	Planting schedules of groundnut in three locations for monitoring population and natural enemies of <u>Aproaerema modicella</u>	27
3	Groundnut varieties tested against <u>Aproaerema modicella</u>	29
4	Measurements of groundnut leafminer <u>Aproaerema modicella</u> at different stages of development	33
5	Duration (days) of the various developmental stages of groundnut leafminer, <u>Aproaerema modicella</u> in groundnut under laboratory conditions	41
6	The incubation period and viability of eggs	44
7	Duration of the different types of behavior of adult groundnut leafminer, <u>Aproaerema modicella</u>	53
8	Ovipositional behavior of adult female leafminers without food and fed 10 percent honey solution	55
9	Comparison in the duration (days) of various developmental stages of groundnut leafminer, <u>Aproaerema modicella</u> , on groundnut under three levels of temperature	58

<u>TABLE</u>		<u>PAGE</u>
10	Duration (days) of various developmental stages of groundnut leafminer, <u>Aproaerema modicella</u> , on three hosts: groundnut, pigeon pea and soybean	61
11	Average mortality of the different stages of development	63
12	Average damage rating and number of third-instar larvae that mined into the different test plants (selective feeding)	67
13	Average damage rating and number of third-instar larvae that mined into the individual test plant (forced feeding)	69
14	Ovipositional preference of <u>Aproaerema modicella</u> on different test plants (selective oviposition)	75
15	Ovipositional preference of <u>Aproaerema modicella</u> on different test plants (forced oviposition)	77
16	Comparison of the developmental stages of the leafminer on the different test plants infested with first-instar larvae of <u>Aproaerema modicella</u>	83
17	Larval infestation and yield performance of the different groundnut varieties	89
18	Larval infestation and yield performance of groundnut planted at KKU during the early rainy cropping season	94
19	Average larval infestation and parasitism at KKU during the early rainy season as influenced by temperature, rainfall and relative humidity	97

<u>TABLE</u>		<u>PAGE</u>
20	Larval infestation and yield performance of groundnut planted at Thapra during the early rainy cropping season	99
21	Average larval infestation and parasitism at Thapra during the early rainy season as influenced by temperature, rainfall and relative humidity	102
22	Larval infestation and yield performance of groundnut planted at KKU during the late rainy cropping season	105
23	Average larval infestation and parasitism at KKU during the late rainy season as influenced by temperature, rainfall and relative humidity	108
24	Average infestation and parasitism of <u>Aproaerema modicella</u> in five locations in Northeast Thailand	110
25	Average temperature, rainfall and relative humidity in the five locations in Northeast Thailand	114
26	Parasites and degree of larval parasitism at Kalasin, Roi-Ait, Mahasarakam, KKU and Thapra	116
27	Parasites and degree of pupal parasitism at Kalasin, Roi-Ait, Mahasarakam, KKU and Thapra	118
28	Degree of parasitism determined from larval and pupal samples taken from three locations during different planting dates	120
29	Relative abundance of larval and pupal parasites of <u>Aproaerema modicella</u>	122

LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
1	Map of Northeast Thailand showing the four provinces where the field experiments were conducted	5
2a	Collection of newly hatched larvae from eggs laid on the fine screen cloth	15
2b	Infestation of groundnut (Tainan # 9) by first instar larvae	15
3a	Transparent plastic plate used to test food preference of third-instar larvae (selective feeding)	22
3b	Third instar larvae of <u>Aproaerema modicella</u> confined in plastic box containing individual test plant (forced feeding)	22
4a	Setup for the ovipositional preference of <u>Aproaerema modicella</u> on the different test plants	24
4b	Aluminum screen cage used to test ovipositional preference of <u>Aproaerema modicella</u> on individual test plant	24
5	Experimental areas where studies on population dynamics of <u>Aproaerema modicella</u> was conducted	26
6	Eggs of <u>Aproaerema modicella</u>	35
7a	First-instar larva	35
7b	Second-instar larva	35

<u>FIGURE</u>		<u>PAGE</u>
16a	Leaf damage showing the "beak-like" symptom from feedings of the late-instar larvae	50
16b	Late-instar larvae damage characterized by a "cup-shaped" appearance of the leaves	50
16c	Groundnut severely damaged by larvae of <u>Aproaerema modicella</u>	50
17	Cage used for mating	52
18	Ovipositional period and number of eggs laid/female/day among adults without food and with 10 percent honey solution	56
19	Comparison in the duration (days) of various developmental stages of groundnut leafminer <u>Aproaerema modicella</u> in groundnut under three levels of temperature: 25°C, 28°C and 30°C	59
20	Comparison of the duration of various developmental stages of the groundnut leaf-miner <u>Aproaerema modicella</u> on three hosts: groundnut, pigeon pea and soybean in the greenhouse condition	62
21	Average mortality of <u>Aproaerema modicella</u> at different stages of development	65
22	Extent of leaf damage done by <u>Aproaerema modicella</u> on the different host plants	71
23	Leaf structure of some test plants used to observed ovipositional behavior of <u>Aproaerema modicella</u>	80

<u>FIGURE</u>		<u>PAGE</u>
24	Three common hosts of <u>Aproaerema modicella</u> (soybean, groundnut and pigeon pea) supporting the different stages of development	84
25	Representative samples of test plants which partially supported larval development of <u>Aproaerema modicella</u>	86
26	Growth habits of groundnut,	91
27	Characteristics damage of <u>Aproaerema modicella</u> larvae at various stages of development of groundnut	95
28	Average percent infestation on groundnut (Tainan # 9 variety) among different planting dates at KKU and Thapra during early rainy season	100
29	Comparative larval infestations on groundnut (Tainan # 9 variety) planted at different dates during the late rainy season (KKU campus)	106
30	Average percent of infestation on groundnut (Tainan # 9 variety) at five different locations of Northeast Thailand	111
31	Average percent larval parasitism at five different locations of Northeast Thailand	117
32	Larval parasites of the groundnut leafminer in Thailand	124
33	Pupal parasites of groundnut leafminer in Thailand	127

CHAPTER I

INTRODUCTION

Groundnut or peanut, Arachis hypogaea Linn. is an annual crop grown in many tropical and subtropical countries. It is grown for its seeds which contain up to 50 percent oil and about 35 percent protein (Feakin, 1973). From the seeds, the important products derived are vegetable oil, groundnut meal and other protein-rich food preparation for human consumption such as fried-groundnut, butter, cookies, cakes and animal feed. Groundnut is one of the most economically important leguminous crops in Thailand (especially in the Northeast). While the demand for this crop is increasing annually, the growing areas are, however, limited.

One of the important factors that limit high yields of groundnut are insect pests. The most common insect pests that attack groundnut are leafminers, leafhoppers, thrips, aphids, leafhoppers and cutworms.

Among these insect pests, the groundnut leafminer, A. modicella, is the most serious. The leafminer usually attacks the leaves and growing points of the plant. The caterpillar mines