

BIOLOGICAL STUDIES ON THE MANGO RED MITE, *OLIGONYCHUS MANGIFERUS* (R&S) ON TWO MANGO CULTIVARS

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(Manuscript received 13 September 2009)

Abstract

The biology of the mango red mite, *Oligonychus mangiferus* (R&S) was carried out under laboratory conditions ($25\pm 2^{\circ}\text{C}$ and $65\pm 5\%$ R.H.). Incubation period averaged 6.30 days for female and 6.3 days for male on Ewais and Alphonso cultivars at $25\pm 2^{\circ}\text{C}$ and $65\pm 5\%$ R.H. The life cycle lasted 12.65 and 12.95 days for female, while were 12.05 and 12.30 days for male on the two cultivars, respectively.

INTRODUCTION

The biology of the mango red mite, *Oligonychus mangiferus* (R&S) was investigated by Zaher and Shehata (1972) on sweet potato leaves for a whole year under natural climatic conditions in a wire insectary. They also reported *O. mangiferus* as an important pest of mango in Egypt. All stages of the mite were described. Pairing occurred soon after the female had completed the final moult, and eggs were laid singly, usually on the upper surface of the leaf. Mite gave 21 generations per year. Some biological & ecological aspects of this mite were also studied by Flechtman (1982), Sirsakar & Nagabhushanam (1989) and Abdallah (2001).

The present study was undertaken on leaves of two cultivars under laboratory conditions ($25\pm 2^{\circ}\text{C}$ and $65\pm 5\%$ R.H.) to give some confirmation about the mite biology and its host preference.

MATERIALS AND METHODS

Rearing the mite on leaves of Ewais and Alphonso mango cultivars were conducted under laboratory conditions ($25\pm 2^{\circ}\text{C}$ and $65\pm 5\%$ R.H.). Leaves were placed on cotton wool in Petri dishes of 12.5 cm diameter. Suitable moisture was maintained by adding few drops of water when needed. Newly hatched larvae were confined singly to leaves and left to continue development. Newly emerged females were copulated with males and left to deposit their eggs. Examination was made twice daily and different biological aspects were recorded.

RESULTS AND DISCUSSION

Duration periods in days of different developmental stages of *O. mangiferus* are shown in Table (1). Incubation period averaged 6.30 days for female and male on leaves of both Ewias and Alphonso cultivars.

Duration of total immature stages of females and males were 6.35 & 6.65 and 5.75 & 6.00 days for Ewias and Alphonso, respectively.

The life cycle lasted 12.65 and 12.95 days, for females and 12.05 and 12.30 days for males on Ewias and Alphonso, respectively.

Generation period followed similar trend averaging 14.85 and 12.25 days on Ewias and Alphonso, respectively.

The oviposition period averaged 18.5 and 18.0 days during which average female laid 34.4 and 32.1 eggs on Ewias and Alphonso, respectively.

Longevity of females reared on Ewias and Alphonso cultivars averaged 23.40 and 23.20 days, while that of males was 17.1 days on both previous cultivars.

Some results were found statistically significant.

Similar results were found by Sirsakar and Nagabhushanam (1984) who reported that when *O. mangiferus* reared on discs of mango leaves at 23-28 degrees °C, 50-72% RH and LD12:12, and placing females at the rate of 1, 5 or 10/leaf, number of eggs per female during a 7-day observation period was 13.60±0.54 for isolated female, and 9.88±0.55 and 5.32±0.45 for females kept at the rate of 5 and 10/leaf disc, respectively. The hatching rate (100%) was not affected by crowding. However, crowding effect was independent of the amount of food available.

Table 1. Life cycle of the mango red mite, *Oligonychus mangiferus* (R&S) on Ewias and Alphonso mango cultivars at 25±5°C and 65±5% R.H.

Developmental stages	Average in days			
	Ewias		Alphonso	
	Female	Male	Female	Male
Egg incubation	6.30±0.48	6.3±0.48	6.30±0.48	6.30±0.48
Active larva	1.75±0.26	1.7±0.26	1.85±0.34	1.85±0.24
Quiescent larva	0.80±0.26	0.8±0.26	0.85±0.24	0.80±0.26
Active protonymph	1.10±0.21	0.9±0.21	1.20±0.26	0.90±0.21
Quiescent protonymph	0.85±0.24	0.7±0.26	0.80±0.26	0.75±0.26
Active deutonymph	1.10±0.21	0.85±0.24	1.15±0.24	0.90±0.21
Quiescent deutonymph	0.75±0.26	0.8±0.26	0.8±0.26	0.80±0.26
Total immature stages	6.35±0.71	5.75±0.63	6.65±0.67	6.00±0.67
Life cycle	12.65±0.53	12.05±0.60	12.95±0.69	12.30±0.53

Life cycle	15°02±0°23	15°02±0°00	15°02±0°00	15°30±0°23
Total immature stages	6°32±0°31	5°32±0°03	6°02±0°03	6°00±0°03
Quiescent larva	0°32±0°30	0°8±0°30	0°8±0°30	0°80±0°30
Active larva	1°10±0°31	0°82±0°34	1°12±0°34	0°80±0°31
Quiescent protonymph	0°82±0°34	0°3±0°30	0°80±0°30	0°32±0°30
Active deutonymph	1°10±0°31	0°8±0°31	1°30±0°30	0°80±0°31
Quiescent deutonymph	0°80±0°30	0°8±0°30	0°82±0°34	0°80±0°30
Active mite	1°32±0°30	1°3±0°30	1°82±0°34	1°82±0°34
Total life cycle	6°30±0°40	6°3±0°40	6°30±0°40	6°30±0°40

Table 2. *Oligonychus mangiferus* adult female longevity and oviposition on Ewias and Alphonso mango cultivars at 25±5°C and 65±5% R.H.

	Average in days ±SE			
	Ewias		Alphonso	
	Female	Male	Female	Male
Pre-oviposition	2.20±0.42	-	2.30±0.48	-
Oviposition	18.50±0.85	-	18.00±0.47	-
Post-oviposition	2.70±0.48	-	2.90±0.74	-
Longevity	23.40±1.26	17.1±0.74	23.20±0.63	17.10±0.74
Total No. of eggs	34.40±0.97	-	32.10±1.60	-
Daily No. of eggs	1.86±0.09	-	1.79±0.11	-
Life span	36.05±1.14	29.15±0.75	36.15±0.75	29.40±0.61
Generation	14.85±0.53	-	15.25±0.98	-

REFERENCES

1. Abdalla A.A. 2001. Studies on mites infesting mango trees. M.Sc. Thesis Fac. Agric. Al-Azaher Univ., 178 pp.s
2. Flechtmann, C.H.W. 1982. Karyotypes of tetranychid mites of Brazil (Acari . Prostigmata. Tetranychidae). Anais da Escda Superior de Agri., Luis de Queiroz, 39 (2). 803-808.
3. Sirsakar, A.N. and R. Nagabbushanam. 1989. Oviposition behaviour and longevity of unfertilized female of *Oligonychus mangiferus* on different mango varieties. Indian Botanical Report, 8 (1). 67-68.
4. Zaher, M.A. and K.K. Shehata. 1971. Biology of red spider mite, *Oligonychus mangiferae* (R. & S.) (Acarina : Tetranychidae). Bull. Soc. ent. Egypté, 55 . 393-401.

دراسات بيولوجية علي أكاروس الماتجو الأحمر *OLIGONYCHUS MANGIFERUS*
علي صنفين من الماتجو

علاء محمد حلاوة وممدوح محمد السباعي

معهد بحوث وقاية النباتات - مركز البحوث الزراعية - الدقي - جيزة - مصر

تم عمل دراسات بيولوجية للعنكبوت الأحمر *Oligonychus mangiferus* تحت الظروف
المعملية علي درجة حرارة $25 \pm 2^\circ\text{C}$ ورطوبة نسبية $65 \pm 5\%$. وتشير النتائج المتحصل عليها أن
فترة حضانة البيض قد استغرقت 6,30 يوما للإناث والذكور علي كل من الصنفين العويسي
والفونس. وقد استغرقت دورة حياة الأنثي الكاملة 12,65، 12,95 يوما علي كل من الصنفين
العويسي والفونس علي الترتيب بينما دورة الحياة للذكر استغرقت 12,00، 12,30 يوما علي كل من
الصنفين العويسي والفونس علي الترتيب.