

**Melia azedarach L.**  
**(Lepidoptera: Gelechiidae) Phthorimaea Operculella (Zeller)**

\*

Melia azedarach L.  
 Phthorimaea operculella Age structure Mortality rates  
 .(Zeller)

56.25 % 66.31 %5 2.5 %87.1 76.19  
 %9.23  
 9 / 13.25 11.5  
 13 / 54.25 51.75 %5 2.5  
 (RO) 19 / 99  
 / 3.696 7.011 / 0.518 0.282  
 36.1 , (GT) / 36.396 %5 2.5  
 %5 2.5 32.9 , 30.6 31.9  
 185.9, 118.2 (DT) . 27.2  
 1.55 19.6 , 9.1 %5 2.5  
 (RM)

. Phthorimaea operculella (Zeller)

.1

2001

453435

21243

4.5

Solanum tuberosum L.

) (

)

.(2002

)

.(1986

\*

Phthorimaea

Gelechiidae

operculella (Zeller)

2007/2/15

Lepidoptera

.2007/11/4

/

2008 ©

- 11 -

250µg/mg      Meliaceae

*Spodoptera*

25      8 5 2      *littoralis* (Boisd)      (Ali, 1993)

    % 40           %55 40      :

    .           % 80      .(Davidson and canner, 2003)

    8 5 2

%52           43 45 30

.(EL-Hamaky *et al.*, 1991)      %85

    (Nasseh and Al-Furassy, 1992)

    / 10      Sumithion

*Allium* L.      *M. azedarach*

    10 / 100      *sativum*      .(Myron *et al.*, 2002)

*Ph. operculella*           30 – 25

%91.7 %100      .(Abul-Nasr *et al.*, 1971)      7 – 6

(1995) EL-Lakwah, *et al.*      .      %85

    .

    (Kroschel and Koch, 1996)

.*Ph. Operculella*

    (2000)

    .(White, 1995)

*Tertranychus turkestanii*

    (U. and N.)

*Aphis faba* Scop

    .*Tribolium confusum* (Duval)

    (2001) Yakti and AL-Jouri

    .(Schmutterer, 1988)

*Trogoderma granarium* Everts      .(Jabbar and Strang, 1997)

    .

    .IPM

    (1988) Sharaby

*M . azedarach*      *Ph. operculella*

    .*Ph. operculella*           220µl

    .

    .2

*Melea azedarash* L.

2005/2004 ( )

( 1 )

*Ph. operculella*

-	.( )	X
-	.	DX
-	.	IX
-	:	LX
AM%=Dx1/Ix1*100, Dx2/Ix2 * 100,...	.	AM%
RM%=Dx1/Ix1*100, Dx2/Ix1*100,....	.	RM%
-	./ :	MX
$R0 = \sum Lx * Mx$	.( / )	RO
$Gt = (\sum x * Lx * Mx) / R0$	.( )	GT
$rm = (\text{Log } e^{R0}) / Gt$	.( / / )	RM
$\lambda = e^{rm}$	.( / / )	$\lambda$
$Dt = (\text{Log } e^2) / rm$	.( )	DT

*Phthorimaea*

-1

*Ph. Operculella*

:

*operculella* (Zeller)

*M. azedarach*

- 2

(30 x 40 x60)

( ) .( 12 %5±60 °2±26)

300/ 100

3

%10

72

( )

%5±65

°1±27

12

12

°40

)

1±27

/ 70

°60

/ 50

(

(1)

. 25

%10

- 3

*Melia azedarach* L.

*Phthorimaea operculella* ( Zeller)

%5 2.5

			%5 2.5					
			%5.08 9.23					40
68.57						10		
% 5 2.5	% 4.29 7.14		%77.14					
51.43						4		
	7.14		%58.57	70			10	
	% 4.28 8.57			°2± 26				
						12	%5±60	
(Blaney	( )			( 15		2.5	)	
	.and Simmonds, 1995)					%10		
				:				
(EL-Hamaky, <i>et al.</i>	(Nasseh and Al-Furassy, 1992)							
	. (Yakti and AL-Jouri, 2001) 1991)							
			.2					
	:							
(5 4)				:				-4
<i>Ph. operculella</i>				(Anderwartha and				
								Birch, 1954)
	<i>M.azedarach</i>			:				
	%5 2.5							
						.3		
				<i>Melia azedarach L.</i>				.1
54.25	/	11.5 13.25 Mx						<i>:Phthorimaea operculella (Zeller)</i>
		/ 51.75				(3 2)		
		%5 2.5		%5 2.5				<i>M. azedarach</i>
		/ 99		<i>Ph. Operculella</i>				
Grothe,								
		(1992)						
				%37.5 33.33		%87.1 76.19		
(Serra				%56.25·66.31				
		.and Schmutterer, 1993)				23.8 17.86		

(Schmutterer, 1988) 9 %5 2.5  
13  
19

(Kroschel and Kuch, 1996)

(EL-Lakwah *et al.*, 1995) (Sharaby, 1988)

Corpora Cardiaca Corpora Allata

الجدول رقم (2)  
تأثير مستخلص البتروليوم ايثر لثمار نبات الأزدراخت *M.azedarach* على نسبة الموت الظاهري والحقيقي  
لعثة درنات البطاطا *Ph operculella*

5%													2.5%	
56	59	65	70	16	21	62	70	23	28	64	70	Ix		
3	6	5		5	41	8		5	36	6	Dx			
	5.08	9.23	7.14		23.8	66.31	11.43		17.86	56.25	8.57	AM%		
	4.28	8.57	7.14		7.14	58.57	11.43		7.14	51.43	8.57	RM%		

الجدول رقم (3)  
تأثير المستخلص الأسيثوني لثمار نبات الأزدراخت *M.azedarach* على نسبة الموت الظاهري والحقيقي  
لعثة درنات البطاطا *Ph operculella*

5%													2.5%	
56	59	65	70	5	8	62	70	10	15	63	70	Ix		
3	6	5		3	54	8		5	48	7	Dx			
	5.08	9.23	7.14		37.5	87.1	11.43		33.33	76.19	10	AM%		
	4.28	8.57	7.14		4.29	77.14	11.43		7.14	68.57	10	RM%		

= AM

= RM

= Ix

=Dx

36.1 31.9

.3

(R)

-1-3

*M.azedarach*

6

*M. azedarach*

32.9 30.6

27.2

0.518

/ 0.282

/ 3.696 7.011

-3-3

%5 2,5

/ 36.396

6

(GT)

-2-3

*M.azedarach*

6

/ / 0.56

1.007

/ / 1.045 1.10 / / 1.005 / / 0.005 0.007

%5 2.5 0.095

/ / 1.75 / / 0.044

%5 2.5

**الجدول رقم (4)**

يوضح تأثير مستخلص البترولويوم ايتير لثمار الأزدرخت *M.azedarach* بتركيز (2.5 و 5 %) على معدلات البقاء  $L_x$  والكفاءة التناسلية  $M_x$  لعتة درنات البطاطا *Ph.operculella* مقارنة مع الشاهد

$L_x \cdot M_x \cdot X$			$L_x \cdot M_x$			$M_x$			$L_x$			$I_x$			$X /$			
%	2.5		%	2.5		%	2.5		%	2.5		%	2.5		%	2.5		
												70	70	70	4	4	4	
												65	62	64	12	16	13	
												59	21	28	7	11	10	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.400	0.114	0.171	28	8	12	24	32	28	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.400	0.100	0.143	28	7	10	25	33	29	
401.14	0.00	0.00	15.429	0.00	0.00	40.00	0.00	0.00	0.386	0.086	0.143	27	6	10	26	34	30	
262.96	60.00	110.71	9.739	1.714	3.571	25.25	20.00	25.00	0.386	0.086	0.143	27	6	10	27	35	31	
139.20	39.86	62.74	4.971	1.107	1.961	14.50	15.50	15.25	0.343	0.071	0.129	24	5	9	28	36	32	
106.89	7.93	23.34	3.686	0.214	0.707	10.75	3.00	5.50	0.343	0.071	0.129	24	5	9	29	37	33	
47.14	14.11	19.55	1.571	0.371	0.575	5.00	6.50	5.75	0.314	0.057	0.100	22	4	7	30	38	34	
22.14	8.36	3.75	0.714	0.214	0.107	2.50	5.00	1.50	0.286	0.043	0.071	20	3	5	31	39	35	
9.14	3.00	3.21	0.286	0.075	0.089	1.00	1.75	1.25	0.286	0.043	0.071	20	3	5	32	40	36	
0.00	0.00	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.229	0.029	0.057	16	2	4	33	41	37	
0.00	0.00	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.171	0.029	0.057	12	2	4	34	42	38	
0.00	0.00	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.143	0.029	0.014	10	2	1	35	43	39	
0.00	0.00	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.114	0.014	0.014	8	1	1	36	44	40	
0.00	0.00	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.114	0.000	0.000	8	0	0	37	45	41	
0.00			0.000			0.00			0.100			7			38			
0.00			0.000			0.00			0.057			4			39			
0.00			0.000			0.00			0.057			4			40			
0.00			0.000			0.00			0.043			3			41			
0.00			0.000			0.00			0.014			1			42			
0.00			0.000			0.00			0.000			0			43			
988.62	133.26	223.31	$R_0 =$			36.396	$R_0 =$			7.011	99.00	51.75	54.25					
						3.696												
Gt=27	Gt=36	Gt=31				.16												

:  $= L_x$  ( ) = X

( / ) :  $R_0 = \sum L_x \cdot M_x$  =  $I_x$

الجدول رقم (5)

تأثير المستخلص الأسيوني لثمار الأزدرخت M.azedarach بتركيز (2.5 و 5 %) على معدلات البقاء Lx والكفاءة التناسلية Mx لعثة درنات البطاطا Ph.operculella مقارنة مع الشاهد

Lx.Mx.X			Lx.Mx			Mx			Lx			Ix			X /		
%5	%2.5		%5	%2.5		%5	%2.5		%5	%2.5		%5	%2.5		%5	%2.5	
												70	70	70	4	4	4
												65	62	63	12	12	11
												59	8	15	7	12	10
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.400	0.043	0.071	28	3	5	24	28	26
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.400	0.043	0.057	28	3	4	25	29	27
401.14	0.00	0.00	15.429	0.00	0.00	40.00	0.00	0.00	0.386	0.043	0.057	27	3	4	26	30	28
262.96	0.00	0.00	9.739	0.00	0.00	25.25	0.00	0.00	0.386	0.029	0.057	27	2	4	27	31	29
139.20	3.657	9.321	4.971	0.114	0.311	14.50	4.00	7.25	0.343	0.029	0.043	24	2	3	28	32	30
106.89	4.007	3.986	3.686	0.121	0.129	10.75	4.25	3.00	0.343	0.029	0.043	24	2	3	29	33	31
47.14	0.243	2.286	1.571	0.007	0.071	5.00	0.50	2.50	0.314	0.014	0.029	22	1	2	30	34	32
22.14	1.000	0.236	0.714	0.029	0.007	2.50	2.00	0.50	0.286	0.014	0.014	20	1	1	31	35	33
9.14	0.386	0.000	0.286	0.011	0.000	1.00	0.75	0.00	0.286	0.014	0.014	20	1	1	32	36	34
0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.00	0.00	0.229	0.000	0.000	16	0	0	33	37	35
0.00			0.00			0.00			0.171			12			34		
0.00			0.00			0.00			0.143			10			35		
0.00			0.00			0.00			0.114			8			36		
0.00			0.00			0.00			0.114			8			37		
0.00			0.00			0.00			0.100			7			38		
0.00			0.00			0.00			0.057			4			39		
0.00			0.00			0.00			0.057			4			40		
0.00			0.00			0.00			0.043			3			41		
0.00			0.00			0.00			0.014			1			42		
0.00			0.00			0.00			0.000			0			43		
988.62	9.293	15.829	R0=	R0=	R0=	99.00	11.50	13.25									
			36.396	0.282	0.518												
Gt=	Gt=	Gt=															
27.16	32.94	30.57															

$$: \quad = Lx \quad ( ) \quad = X$$

$$( / ) \quad : R0 = \sum Lx * Mx \quad = Ix$$

(DT) -4-3  
6

185.9 118.2 M .azedarach  
19.5 9.1  
%5 2.5

(Volkonsky, 1967; Broer,

.1984; Pederson et al., 1987)

. 1.55

(6)

*M.azedarach*

*Ph. operculella*

DT	λ	rm	MGT	R0	%	
a118.1591	c1.0074	d0.0074	c30.6	d 0.518	2.5	
185.8952 a	1.0047 c	0.0047 d	32.9 b	d0.282	5	
9.1009 b	1.1001 b	0.0954 b	31.9 c	7.011 b	2.5	
b19.5526	b1.0454	c0.0444	a36.1	c3.696	5	
1.5498 b	1.7513 a	0.5604 a	27.2 d	a 36.396	0	
75	0.065	0.031	0.96	0.393		LSD0.05
0.001>	0.001>	0.001>	0.001>	0.001>		Fpr.
5.6	0.6	2.8	1.6	2.2		C.V

. ( ) \*

.( ) =MGT . ( / ) =R0

.( / / ) =Rm

.( ) = DT .( / / ) =λ

(1997)

*M.azedarach*

*Tetranychus*

(Saxena, 1987)

*.turkestani*

(Nasseh and EL-Furassy, 1992)

( )

*Ph. Operculella*

% 91.7

10/ 100

(Yakti *M. azedarach*

and Al-Jouri, 2001)

)

(Chandramoban and Nanjan, 1992 2001

*Trogoderma granarium*

(Evert)

.(Kaethner, 1990)

( )

Meliantriol

Lavie et al., (1967)

*M.*

*M. azedarach*

( )

*azedarach*

(El-Hamaky, et al., 1991)

Juvenile hormones

250

µg/mg body weight

(CC)

*Spodoptera littoralis* (Boisd)

Carpora Alata (CA) Carpora cardiaca

8 5 2

%55 40 25

45 30

50 30

8 5 2

%43

.*Salix* sp

%70



- 1987) Zhu and Schmutterer, 1993 1997 )  
 .(Anwar *et al.*, 1992;  
 (1991) Lee *et al.* (1996) Kroschel and Koch  
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**Biological Effectiveness of *Melia Azedarach* L., Fruits Extract on Potato Tuber Moth, *Phthorimaea Operculella* (zeller), (Lepidoptera: Gelechiidae) under lab. Conditions**

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**ABSTRACT**

The bioagents effect of *Melia azedarach* L. mature fruits acetonic and Ether petroleum extracts on potato tuber moth, *Phthorimaea operculella* (Zelle) natural mortality rates and age structure was tested under laboratory conditions .

Results showed that acetonic extracts was more effective than Ether petroleum and there was a linear relationship between bioagents effect and concentrations .

- Apparent dying rates for larvae which fed on tuber treated with acetonic extract were 76.19 and 87.1% at 2.5 and 5% concentrations; whereas this values at the same concentrations for petroleum extract equal to 56.25 and 66.31%, respectively compared with 9.23 % for control .

- The total fecundity (  $M_x$  ) values were 13.25 & 11.5 and 54.25 & 51.75 egg/female at 2.5 & 5% concentrations, when larvae were fed on tubers treated with acetonic and petroleum extracts at same concentration, respectively. on this respect the age specific survival were 9 and 13 days, respectively. for control this values were 99 eggs /female and 19 days.

- Net reproductive rate values ( $R_o$ ) in F2 was 0.518 and 0.282 female / female for acetonic extract and 7.011 and 3.693 female / female for petroleum extracts at 2.5 and 5 % concentrations respectively ; it was 36.396 female / female for control .

- Generation time (  $G_t$  ) was increased to 31.9 and 36.1 and 30.6 and 32.9 days for acetonic and petroleum extracts respectively at 2.5 and 5 % compared with 27.2 days for control.

- Population Doubling time (  $D_t$  ), the Population of *Ph. operculella* had the capacity to be doubled once every 118.2 and 185.9 days when larvae were fed on tubers treated with acetonic extract at 2.5 and 5% concentrations respectively compared with 9.1 and 19.6 days for petroleum at same concentration respectively and 1.55 for control. The intrinsic rate of increase ( $R_m$ ) which means ability of sum total to increase free from outside factors was decreased.

**Keywords:** Life Tables; Plant Extracts; *Phthorimaea operculella* ( Zeller).

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