

FIELD EVALUATION OF SOME CONTROLLING COMPOUNDS AGENT FOR FRUIT FLY *Ceratitis capitata* (WIEDEMANN) IN ISMAILIA GOVERNORATE, EGYPT

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ABSTRACT

In the present study two experimental trails were carried out to evaluate the efficacy of the food attractant (Buminal 5%) mixture with Dimethoate 40% E.C for controlling the fruit fly, *Ceratitis capitata* (Wiedemann) on mango orchard at Ismailia Governorate, Egypt during 2009 and 2010 by food attractant traps (traps baited) and partial spray for trees trunk in the experimental trails. Results showed that the mean reductions percentages by using Henderson and Tilton (1955) formula for both periods were 55.1 & 64.7 & 72.5 & 90.4 and 63.5&71.8& 73.1 & 82.5 respectively. Mean percentage of reductions during the same periods 2009 and 2010 were 70.7 and 72.7 %, respectively. Regarding the second experiment data showed that the total number of percent reduction for both years 2009 and 2010 were 56.5 & 71.0&80.6 & 78.3 and 60.9 & 64.0& 69.8 & 89.8% respectively, the mean percent of reduction were 71.6% and 71.1%, respectively.

The statistically analysis L.S.D.0.05 ($P \leq 0.05$) showed that a positive significant and highly significant correlation for traps baited which values were 10.16 and 15.57 during the same periods. Also, a positive highly significant effect for partial spray were 9.06 and 11.22 during 2009 and 2010, respectively.

Keywords: Field evaluation, compounds agent, *Ceratitis capitata*, Ismailia.

INTRODUCTION

The Mediterranean fruit fly (medfly), *Ceratitis capitata* (Wiedemann) (Diptera : Tephritidae) is a serious economic pest infesting more than 350 species of fruits and vegetables throughout the world most of which are of high commercial value causes considerably damage and significant economic losses in fruit (Attalla & Hassan, 1981; Ahmed *et al.*, 1984; El-Hakim & Basily 1986; Liquido *et al.*,1991; Hanafy *et al.*, 2001 and Hanafy and Awad 2002). *Ceratitis capitata* is a species of Afrotropical origin which has adapted to the climatic conditions of the Mediterranean basin, where it has been present for many years causing great damage to citrus and other fruits (Delrío, 1986; Fimiani,1989; Franco *et al.*, 2006).

During of the last harmful pest, fruit fly infesting different fruit trees, In Egypt, several trails were previously conducted to evaluate of different types of trap (Zaki, A.M. 1999).

The present investigation was designed to evaluate the efficacy of attractant Buminal mixture with Dimathoate 40% E.C. against *C. capitata*.

MATERIALS AND METHODS

Fifteen mango trees *Mangifera indica* L. (3 row × 5 trees for every row) were selected for both experiments. These trees were similar in size, age, vegetation and variety (Zabda). The first experiment traps baited pest in central mango trees after dipping in solution containing of Dimethoate 40% at the rate of 75 ml + Buminal 5% per 20 liter of water. The second experiment (partial spray) of 15 mango trunk trees by the same solution. Also the same numbers for control without treatments.

The experiments were carried out during four week inspections (30/6 to 28/7) for both years 2009 and 2010. Total samples; five fruit mango for every mango trees for with two experiments and control examination on trees and marked for mango fruits infestation. Numbers of insect alive (*C. copitata*) stages were counted and recorded.

The reduction percentage of total alive insect fruit fly *C. copitata* were estimated according to Henderson and Tilton (1955). Results were statistically analyzed using L.S.D. 0.05 ($P < 0.05$) with the COSTAT program (2005).

RESULTS AND DISCUSSION

The first experiment traps baited during five weeks four examinations of inspections (30/6 to 28/7) were carried out for both years 2009 and 2010 at Ismailia Governorate, Egypt.

Data in Table (1) showed that the total numbers of stages of fruit fly *C. copitata* during these periods were 26, 14, 11, 8 & 2 and 23, 12, 8, 5 and 4 in 2009, while there were 44, 22, 16, 14 & 8 in 2010, while there were 25, 30, 30, 28 and 20 in 2009 and 38, 52, 49, 45 and 40 in 2010 sample/in untreated trees. The reduction percentage of fruit fly stages were 55.1, 64.7, 72.5 and 90.41 % in 2009 and 63.5, 71.8, 73.1 and 82.5 % in 2010 sample. Mean reduction were 70.7 and 72.7 % for both years 2009 and 2010, respectively.

The second experiment partial spray for trunks for the same periods 2009 and 2010 data summarized in Table (2) showed that the total number of alive fruit fly stages were 23, 12, 8, 5 and 4 in 2009 and 28, 15, 13, 10 and 3 in 2010 sample in treated trees, while there were 25, 30, 30, 28, and 20 in 2009 and 38, 52, 49, 45 and 40 in 2010 sample in untreated trees.

The reduction percentages were 56.5, 71.0, 80.6, and 78.3 in 2009 and 60.9, 64.0, 69.80 and 89.8 % in 2010. Mean of reduction percentages were 71.6 and 71.1 % during the two tested years 2009 and 2010 respectively.

The statistically analysis (L.S.D.) showed that a positive significant effect for those experiments Table (3).

These results are in harmony with El-Hakim and Hasily 1986, Zaki 1999, Hassan et al. 2000 and Hanfy et al. 2001, Hanfy and Awed 2002. Conclusively, this studies clarified the mean percentage of reduction for both

years 2009 and 2010 were 70.7 and 72.7 % in the first method while were 71.6 and 71.1 % for the second one, respectively.

Table (1): Weekly counts of alive stages of fruit fly *Ceratitis capitata* by traps baited on mango trees during period of summer 2009 and 2010.

		Number of alive insect stages/sample fruit mango and rates of reduction									
		2009									
Treatment	Rates application	Pre-treatment count	Post-treatment after								Geeral % of reduction
			One week	% reduction	Two week	% reduction	Three week	% reduction	Four week	% reduction	
Dimethoate 40 % E.C+ Bumenal	75cm/20 L + 5%	26	14	55.1	11	64.7	8	72.5	2	90.4	70.7
Control		25	30		30		28		20		
		2010									
Dimethoate 40 % E.C+ Bumenal	75cm/20 L + 5%	44	22	63.5	16	71.8	14	73.1	8	82.5	72.7
Control		38	52		49		45		40		

L.S.D. 0.05 = 9.946**

Table (2): Weekly counts of alive stages of fruit fly *Ceratitis capitata* by partial spray on mango trees during period of summer 2009 and 2010.

		Number of alive insect stages/sample fruit mango and rates of reduction									
		2009									
Treatment	Rates application	Pre-treatment count	Post-treatment after								Geeral % of reduction
			One week	% reduction	Two week	% reduction	Three week	% reduction	Four week	% reduction	
Dimethoate 40 % E.C+ Bumenal	75cm/20 L + 5%	23	12	56.5	8	71.0	5	80.6	4	78.3	71.6
Control		25	30		30		28		20		
		2010									
Dimethoate 40 % E.C+ Bumenal	75cm/20 L + 5%	28	15	60.9	13	64.0	10	69.8	3	89.8	71.1
Control		38	52		49		45		40		

L.S.D. 0.05 = 9.946**

Table (3): Statically analysis based on L.S.D. 0.05

Treatment	Control		Traps baits		Oriented spray (partial spray)	
	2009	2010	2009	2010	2009	2010
1	25	38	26	44	23	28
2	30	52	14	22	12	15
3	30	49	11	16	8	13
4	28	45	8	14	5	10
5	20	40	2	8	4	3
L.S.D.			10.16*	15.57**	9.06**	11.22***

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التقييم الحقلى لبعض المركبات فى مكافحة ذبابة الفاكهة - محافظة الاسماعيلية - مصر

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ذبابة فاكهة البحر الابيض المتوسط *Ceratitis capitata* من أهم آفات الفاكهة محدثة ضررا بالغا بالإنتاج كما ونوعا ولقد أجريت تجارب التقييم الحقلى لمركب Dimethoate 40% E.C ٧٥ سم/٢٠ لتر ومخلوط بـ ٥% بومينال كمادة جاذبة للآفة على محصول المانجو- بمحافظة الاسماعيلية عامى ٢٠٠٩، ٢٠١٠ وذلك بطريقتين:
التجربة الأولى :

المصائد المعلقة والمبللة بالمحلول السابق حديث التحضير للفترة من ٦/٣٠ حتى ٧/٢٨ لعامى ٢٠٠٩، ٢٠١٠ وكانت النتائج فى عام ٢٠٠٩ متوسط نسبة الخفض للتعداد ٧٠.٧% بينما كانت فى موسم ٢٠١٠ كانت ٧٢.٧%.

التجربة الثانية:
الرش الجزئى لمنطقة الجزرع بنفس التركيزات وكانت النتائج المتحصل عليها لنسبة الخفض فى التعداد لعام ٢٠٠٩ هي ٧١.٦% بينما فى عام ٢٠١٠ كانت ٧١.١%. ويمكن الاستفادة بهذه النتائج ضمن برامج مكافحة المتكاملة للآفة.

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