

## OLIVE FLY, *DACUS OLEAE* INFESTATION AND ITS EFFECT ON SOME PHYSICAL AND CHEMICAL PROPERTIES AND ORGANOLEPTIC TEST OF OLIVE OIL

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### ABSTRACT

The infestation percentage of olive fruit by olive (*Dacus oleae*) in North Sinai was evaluated. A survey of the natural enemies of *Dacus oleae* was conducted and the percentages of parasitism was determined. In addition, the effect of different percentages of infestation of olive fruits being, 0, 5, 10, 20 and 40% were used to study its effect on the physical and chemical properties and organoleptic test of olive oil of Picual and Manzanello varieties cultivated in El-Ariash only. The results are as follows:

- Infestation by olive fly *D. oleae* caused decrease in oil content of olive fruits, Picual and Manzanello varieties.
- The acid value, peroxide value and U.V absorption at 232 and 270 nm. were increased gradually with increasing infestation percentages, while the refractive index decreased by infestation.
- Infestation at 20 and 40 % showed a highest increase in acid value, peroxide value and U.V. absorption, with highest decrease in oil content.
- There is no appreciable changes in moisture content as a result of infestation.
- The results of organoleptic test indicated that, the olive oil of Picual and Manzanello varieties, could be used up to 10% infested fruits.

**Keywords:** Olive fruit, olive fly *Dacus oleae*, infestation physical and chemical properties and organoleptic test.

### INTRODUCTION

The olive fruit fly, *Bactrocera (Dacus) oleae* (Gmel.) causes considerable losses in olive crop in all olive growing countries. The distribution of this insect is confined to the Mediterranean zone, where it consider as the most important pest of olive either cultivated or located.

Infestation of olive fruits by *D. oleae* begins in early of July in Alexandria, in August in Tora and in September in Fayoum, (El-Hakim *et al.*, 1982).

*D. oleae*, a pest of the olive fruits that causes serious financial damage in all olive oil producing countries, (Mavrogani *et al.*, 1992). Olive fruits are infested by *D. oleae* from mid-July onwards, (Bigler, 1982).

The susceptibility of olive cultivars to the Tephritidae, *D. oleae* (*B. oleae*) was studied in Turkey during 1984- 1988. They studied Tephritidae population density, oil and water content of fruit, (Guusay *et al.*, 1990).

Olive oil from fly infested olives had higher initial values and a higher rate of increase of the Para measured (acid value peroxid value and specific

extinction coefficients at 232 nm. ( $K_{232}$ ) and 270 nm. ( $K_{270}$ ). The only parameter affecting oil quality was  $K_{270}$ . (Kyriakidis and Dourou, 2002).

There were no significant differences in water content (moisture content) between healthy and infested olive fruits by *D. oleae* except for Kheli and Rose'e varieties in late September when healthy fruit had a higher oil content and for Rose's vr. In mid and late October when healthy fruit had a lower oil content, oil extracted from infested fruits of all varieties was more acidic than oil from healthy fruit, (Mostafa *et al.*, 1987).

Infestation of olive fruit by *B. (D.) oleae* Gmel. causes decrease of the oil content and refractive index which were decreased with increasing infestation, the highest peroxide value was at 60% infestation. There is no appreciable change in acidity and moisture content, (Salama *et al.*, 1997).

Therefore, this study was carried out to find the effect of olive fly, *Dacus oleae* on the oil content and moisture of olive fruits, also, its effect on some physical and chemical properties and organoleptic characteristics of olive oils of Picual besides the Manzanello varieties.

## **MATERIALS AND METHODS**

### **A. Biological control methods:**

Survey of common olive pests and associated natural enemies on olive trees was carried out in Ber-El Abd, El-Arish, Rafah and El-Kseama. Sampling starting from July to November, to study the percentage of infestation by *B. oleae* and percentage of parasitism in four above mentioned areas. An olive orchard (5 feddans) was cultivated with different olive varieties was chosen in each locality. Sampling was done in fixed area in the olive orchard in each locality biweekly intervals in the season. Twenty-five olive trees at each orchard were selected randomly for sampling and for data collection. More than 100 fresh olive fruits were collected from the chosen trees and from ground during July- November. Collected samples were kept in paper bags and were transferred immediately to the laboratory for inspection and estimation of percentages of fruit infestation by the olive fruit fly, *B. oleae* and to calculate percentages of parasitism.

### **B. Preparation of olive samples:**

Olive fruits: Picual and Manzanello cultivars were obtained from El-Arish locality, Egypt.

All fruits were collected by hand at mid and late September and October.

Oil extraction: The fruits of Picual and Manzanello cultivars were crushed and packed in cheese cloth then pressed by using hydraulic laboratory (Carver) press. The extracted oil was dried over anhydrous sodium sulfate, filtered through a whatman filter paper No. 1 and kept in brown glass bottles at 5°C till analysis.

### **C- Analytical Methods:**

#### **Determination of moisture content:**

The moisture content of the crushed olive fruit samples were determined as described in A.O.A.C (1990).

**Determination of total lipids:**

Purified petroleum ether (b.p 60- 80 C) was used for the determination of crude lipids by extracting about 10 g sample in a soxhlet apparatus according to the method described in the A.O.A.C- (1990).

Refractive index at 25 C, free fatty acid (as oleic percent), peroxide value (as milliequivalent / kg oil) were determined according to methods described by the A.O.A.C (1990).

**Absorbency in ultraviolet:**

The U.V. absorption of 1% solution of the oil in cyclohexane in 1 cm curvet was measured according to FAO/WHO (1970), at 232 and 270 nm using Shemadzu spectrophotometer (U.V. Vis 120-02).

**Colour:**

A lovibond tintometer was applied to measure the colour using 6-25 inch cell according to the method of the A.O.C.S. (1985).

**Organoleptic Evaluation:**

The oil samples (15 ml each) were presented in covered blue glasses diameter, 70 mm, capacity, (130 ml) at  $28 \pm 2$  C. The glass was warmed and after removing the cover, the sample was smelled and then tasted by the panelist to judge its flavor. The different attributes of the oils were assessed and their intensities were evaluated, as a mean value of the panelist's score.

The organoleptic assessment of virgin olive oil, were conducted according to the method described by IOOC (1996).

**Statistical Analysis:**

Data of the sensory evaluation were analyzed by the analysis of variance using the general linear model (GLM) procedure within a package program of the statistical analysis system (copyright, 1987, SNS institute znc. carry, NC, 2755128, USA, SAS proprietary software, release 6.03).

Specific differences between treatments were determined by LSD test for each attribute. Results were tested for degree of significant level at  $P < 0.05$ .

## RESULTS AND DISCUSSIONS

**A. Evaluation of biological control agents :**

Samples of fresh infested olive fruits by *B. oleae* were collected from the trees and from fallen olive fruits during the season of investigation gave rise to the following species of parasitoids: 1) *Cyrtotypx* sp. (Hymenoptera : Pteromalidae), 2) *Eurytoma* sp. (Hymenoptera: Eurytomidae) ., 3) *Cyrtotypx latipes* Rondani (Hymenoptera : Pteromalidae), 4) *Opius concolor* Szep. (Hymenoptera : Braconidae), 5) *Pnigalio agraulis* Walker, 6) *Pnigalio agraulis* Walker. (Hymenoptera: Eurytomidae) and 7) *Macroneura* sp.

**Ber El-Abd locality :** The percentage of infestation ranged between 42 % in the second week of July and 100% in the fourth week of July (Table 1) , while the percentage of parasitism ranged between 0% to 40% with average 4.84 % ( Table2).

Table (1): Percentages of infestation by *B. oleae* in olive orchards (25 olive trees and 50 fruits examined Per sample) in Localities ,North Sinai.

Sampling data	Localities											
	Ber El- Abd			El- Arish			EI-Kseama			Rafah		
	Infested	Un infested	% Infestation	Infested	Un infested	% Infestation	Infested	Un infested	% Infestation	Infested	Un infested	% Infestation
11/7	21	29	42 *	30	20	60	17	33	34 *	14	36	28 *
25/7	50	0	100 *	44	6	88	26	24	52	35	15	70
14/8	49	1	98	46	4	92 *	34	16	68	36	14	72
20/8	45	5	90	35	15	70	24	26	48	47	3	94 *
2/9	48	2	96	42	8	84	35	15	70 *	34	16	68
26/9	32	18	64	24	26	48	32	18	64	32	18	64
17/10	22	28	44	19	31	38 *	19	31	38	20	30	40
8/11	38	12	76	22	28	44	29	21	58	29	21	58
Total	305	95		262	238		216	184		274	153	
Average percentage of infestation			76.25			65.5			54			61.75

Table (2): Percentages of parasitism on *B. oleae* in olive orchards (100 fresh infected olive fruits examined per sample) in localities, "North Sinai."

Sampling data	Localities											
	Ber El- Abd			El- Arish			El-Kseama			Rafah		
	No. of parasite	No. of flays	% Parasitism	No. of parasite	No. of flays	% Parasitism	No. of parasite	No. of flays	% Parasitism	No. of parasite	No. of flays	% Parasitism
11/7	0	0	0*	0	0	0*	0	0	0*	7	2	77.77
25/7	0	0	0	37	1	97.37 *	0	0	0	24	0	100 *
14/8	0	0	0	0	3	0	1	0	100 *	4	6	40
20/8	0	0	0	2	14	12.5	6	11	35.29	0	3	0*
2/9	4	6	40*	1	4	20	0	0	0	1	2	33.33
26/9	1	10	9.9	1	2	33.33	0	9	0	0	9	0
17/10	0	27	0	2	19	9.52	1	18	5.26	3	20	13.04
8/11	0	75	0	0	16	0	3	17	15	2	51	3.77
Total	6	118		44	59		12	55		41	93	
Average percentage of Parasitism			4.84			42.72			17.91			30.60



**Table (4): Changes in moisture content of olive fruits infested by *D. oleae***

Variety	Picual					Manzanello					
	Harvest time	Healthy	(% Infestation)				Healthy	(% Infestation)			
			5	10	20	40		5	10	20	40
Mid. -Sept.	62.96	61.83	61.00	60.56	60.00	57.21	57.21	57.03	56.54	56.21	
Late-Sept.	60.53	60.06	59.32	58.32	57.03	58.23	57.62	57.32	57.32	57.01	
Mid. - Oct.	59.49	58.62	58.80	57.57	56.78	56.4	55.32	55.14	54.93	54.53	
Late-Oct.	58.43	57.83	57.54	57.22	56.32	--	--	--	--	--	

Mostafa *et al.* (1987) found that differences in moisture content between healthy and infested fruits were non significant.

**Changes in refractive index of the oil of infested olive fruits:-**

From data in Table (5), it is obviously that the refractive index of oils extracted from olive fruits varieties Picual and Manzanello mid-and late September and October which infested by olive fly, *D. oleae* were decreased gradually by increasing infestation percent. The decrease in refractive index of oil of infested olive fruits may be due to slight changes in unsaturation of fatty acids (Salama *et al.* 1997). Parlati *et al.* (1986) stated that only after 60 % infestation there was a small increase in the proportion of saturated fatty acids.

**Table (5): Changes in refractive index of olive oil from fruits infested by *D. oleae*.**

Variety	Picual					Manzanello					
	Harvest time	Healthy	(% Infestation)				Healthy	(% Infestation)			
			5	10	20	40		5	10	20	40
Mid. - Sept	1.4678	1.4675	1.4673	1.4670	1.4669	1.4687	1.4683	1.4681	1.4679	1.4677	
Late-Sept.	1.4669	1.4667	1.4664	1.4662	1.4660	1.4685	1.4683	1.4680	1.4676	1.4670	
Mid. - Oct.	1.4668	1.4665	1.4663	1.4662	1.4661	1.4679	1.4676	1.4674	1.4672	1.4771	
Late-Oct.	1.4667	1.4664	1.4662	1.4660	1.4660	--	--	--	--	--	

**Changes in colour units of olive oil in infested fruit olive oleae:**

The color of olive oil is quality indicator since, its intensity used as an indication of ripening stage of olive fruits and the degree of oxidation Azza, (2002).

The obtained results of oil under investigation are shown in Table (6). From these results it could be noticed that the values of colour (red and blue) in the variety Picual and Manzanello tended to decrease during ripening. Also it could be noticed that the colour values were increased (red and blue) these increases in colour after infestation may be due to oxidation of oil content of infested fruits. These data are in agreement with those of Kiritsakis (1990).

**Table (6): Changes in colour of olive oil from fruits infested with *D.oleae***

Variety		Picual					Manzanello				
Harvest time	colour	Healthy	(% Infestation)				Healthy	(% Infestation)			
			5	10	20	40		5	10	20	40
Mid. -	Red	3.9	4.1	4.5	4.9	5.3	3.9	4.2	5.4	5.4	5.8
Sept.	Blue	3.9	4.2	4.5	4.8	4.9	1.9	2.3	4.1	4.5	4.9
Late-	Red	2.6	2.8	2.9	3.4	3.9	2.9	3.1	3.4	3.6	3.9
Sept.	Blue	1.2	1.9	2.9	3.2	3.8	0.9	0.9	1.0	1.2	1.4
Mid. -	Red	1.9	2.5	2.9	2.9	3.0	2.6	2.7	2.9	3.3	3.6
Oct.	Blue	0.7	1.3	1.8	2.0	2.2	0.6	0.6	0.8	1.0	1.4
Late-	Red	1.7	2.4	2.9	3.3	3.9	--	--	--	--	--
Oct.	Blue	0.4	0.9	1.9	2.3	2.5	--	--	--	--	--

\* Color at 3.5 Yellow.

**Changes in acid value and peroxide value of olive fruit oil infested by *D.oleae*:-**

Data in Table (7) indicated that the oil extracted from infested olive fruits of Picual and Manzanello are more acidic than oil from healthy fruits. At the same time, the results in Table (8) indicated that the peroxide values of previous samples increased compared to healthy fruits free fatty acid and peroxide value of oil of infested fruits recorded higher increase in mid-and late September and October at 40% infestation.

**Table (7): Changes in acid value of olive oil from fruits infested with *D.oleae*.**

Variety		Picual					Manzanello				
Harvest time	Healthy	(% Infestation)				Healthy	(% Infestation)				
		5	10	20	40		5	10	20	40	
Mid. - Sept.	0.38	0.46	0.58	0.84	1.34	0.55	0.67	0.85	1.50	1.82	
Late-Sept.	0.35	0.54	0.70	0.95	1.56	0.53	0.69	0.9	1.3	1.91	
Mid. - Oct.	0.38	0.58	0.68	0.94	1.75	0.50	0.65	0.87	1.2	1.93	
Late-Oct.	0.41	0.50	0.65	0.99	1.89	--	--	--	--	--	

**Table (8): Changes in peroxide value of olive oil from fruits infested with *D.oleae*.**

Variety		Picual					Manzanello				
Harvest time	Healthy	(% Infestation)				Healthy	(% Infestation)				
		5	10	20	40		5	10	20	40	
Mid. - Sept.	5.40	9.92	14.58	16.32	20.41	7.63	10.56	15.09	22.56	27.31	
Late-Sept.	6.5	10.35	14.79	17.42	19.06	6.31	11.72	15.92	21.75	29.34	
Mid. - Oct.	6.36	9.14	13.14	16.76	18.23	5.98	10.91	14.32	20.61	24.52	
Late-Oct.	7.9	8.87	14.87	17.05	20.56	--	--	--	--	--	

The increase in free fatty acid and peroxide value of the oil of infested fruits may be due to the presence of the fungi as a result of infestation by olive fly (*D.oleae*), which caused the deterioration and

decomposition of the oil extracted from infested olive fruits. Similar results were also reported by Kyrianidis and Douron, (2002).

**Change in UV Absorption at 232 and 270 nm. of olive fruit oil infested by *D. oleae*:-**

As shown in Table (9), the results indicated that UV. Absorption at 232 and 270 nm. of oils from fly infested olive fruits (Picual and Manzanello varieties ) picked at mid- and late- September and October recorded a higher increase with increasing infestation. The obtained results are in agreement with that of Kyrianidis and Douron. (2002).

**Table (9):Changes in absorption spectra of olive oil from fruits infested with *D. oleae*.**

Variety		Picual					Manzanello				
Harvest time	wave length.	healthy	(% Infestation				healthy	(% Infestation			
			5	10	20	40		5	10	20	40
Mid. - Sept.	232	0.468	0.562	0.584	0.632	0.777	0.406	0.583	0.625	0.695	0.731
	270	0.07	0.09	0.10	0.105	0.113	0.033	0.056	0.097	0.113	0.139
Late- Sept.	232	0.524	0.586	0.697	0.715	0.726	0.484	0.563	0.633	0.692	0.709
	270	0.061	0.092	0.114	0.123	0.145	0.07	0.0852	0.089	0.134	0.183
Mid. - Oct.	232	0.669	0.731	0.825	0.901	0.908	0.566	0.575	0.599	0.634	0.682
	270	0.09	0.105	0.121	0.125	0.137	0.052	0.058	0.069	0.083	0.158
Late-Oct.	232	0.576	0.649	0.667	0.696	0.884	--	--	--	--	--
	270	0.08	0.101	0.107	0.122	0.147	--	--	--	--	--

**Changes in organoleptic characteristics of olive oil from infested fruits with *D. oleae*:-**

The results in Table (10) showed the effect of infestation with olive fly, *D. oleae* on the organoleptic evaluation.

From these data, it could be observed that changes was noticed a gradual by increasing infestation (5 and 10%) of green fruits, bitter change of organoleptic characteristics taste and pungent taste. The median of the defects (Grubby) ranged between 1.8-5.5 in picual cultivars and 1.75- 5.90 in Manzanello cultivars and the median of the fruity attribute is more than zero in all varieties under investigation.

Therefore, infestation with *D. oleae* of olive fruits oil (picual and Manzanello varieties) showed a significant influence in organoleptic evaluation, and these results, can be divided to:

Oil from healthy olive fruit was Extra-virgin olive oil because the defect properties equal to zero and positive properties equal to more than zero.

Oil from infested olive fruits (5%) was virgin olive oil because defect properties (Grubby) more than zero (equal to 2.5) and positive properties (fruity) equal to more than zero.

Oil from infested olive fruits (10%) was ordinary olive oil because defect properties (Grubby) more than 2.5 and less than 6 and positive properties (fruity) equal to more than zero. These results agree with those reported by Ismaeil *et al.* (2001) and IOOC (1996).

Table (10): Sensory characteristics of olive oil of two varieties under investigation by statistical analysis.

Harvest Time	Varieties and % infestation	Organoleptic determination			
		Perception of positive attributes			Perception of defects
		Fruity	Bitter	Pungent	Others (specify) (Grubby)
mid. Sept.	1-Picual				
	Healthy	5.72 <sup>a</sup>	1.95 <sup>a</sup>	4.59 <sup>a</sup>	--
	5	2.35 <sup>d</sup>	1.55 <sup>a</sup>	2.86 <sup>bc</sup>	1.80 <sup>ef</sup>
Late. Sept.	10	1.54 <sup>e</sup>	1.13 <sup>b</sup>	2.25 <sup>c</sup>	4.00 <sup>d</sup>
	Healthy	5.45 <sup>a</sup>	1.76 <sup>b</sup>	4.07 <sup>a</sup>	--
	5	2.04 <sup>d</sup>	1.26 <sup>b</sup>	2.05 <sup>c</sup>	2.10 <sup>e</sup>
Mid. Oct.	10	1.32 <sup>ef</sup>	1.02 <sup>b</sup>	1.57 <sup>d</sup>	4.7 <sup>b</sup>
	Healthy	5.36 <sup>a</sup>	1.500 <sup>a</sup>	3.85 <sup>b</sup>	--
	5	1.85 <sup>e</sup>	1.04 <sup>b</sup>	1.73 <sup>cd</sup>	2.35 <sup>e</sup>
Late Oct.	10	1.26 <sup>e</sup>	1.02 <sup>b</sup>	1.57 <sup>d</sup>	5.30 <sup>a</sup>
	Healthy	5.36 <sup>a</sup>	1.20 <sup>b</sup>	3.65 <sup>b</sup>	--
	5	1.54 <sup>e</sup>	0.92 <sup>c</sup>	1.50 <sup>e</sup>	2.50 <sup>d</sup>
Mid. Sept.	10	0.95 <sup>f</sup>	0.63 <sup>d</sup>	1.02 <sup>a</sup>	5.50 <sup>a</sup>
	2-Manzanallo				
	Healthy	4.60 <sup>b</sup>	1.12 <sup>b</sup>	4.03 <sup>a</sup>	--
Late Sept.	5	2.02 <sup>d</sup>	0.83 <sup>c</sup>	2.73 <sup>bc</sup>	1.75 <sup>ef</sup>
	10	1.42 <sup>ef</sup>	0.84 <sup>d</sup>	2.07 <sup>c</sup>	4.94 <sup>ab</sup>
	Healthy	4.45 <sup>b</sup>	1.01 <sup>b</sup>	3.90 <sup>b</sup>	--
Mid. Oct.	5	1.95 <sup>e</sup>	0.76 <sup>d</sup>	2.00 <sup>c</sup>	2.05 <sup>e</sup>
	10	1.04 <sup>ef</sup>	0.600 <sup>d</sup>	1.53 <sup>d</sup>	5.44 <sup>a</sup>
	Healthy	4.03 <sup>b</sup>	0.91 <sup>c</sup>	3.72 <sup>b</sup>	--
L. S. D.	5	1.30 <sup>ef</sup>	0.63 <sup>d</sup>	1.59 <sup>d</sup>	2.42 <sup>d</sup>
	10	0.85 <sup>f</sup>	0.55 <sup>e</sup>	1.19 <sup>e</sup>	5.93 <sup>a</sup>
		0.5837	0.3917	0.7351	0.8071

The mean scores of the same letter or letters are not significantly different at the < 0.05.

## REFERENCES

- Ajjan, I. (1962). Biology and control the olive fruit fly *Dacus Oleae* Gmel. M.Sc. Thesis, Fac. Agric, Cairo Univ. Egypt.
- A.O.A.C. (1990). official methods of analysis of the official Analytical chemists fifteenth ed. published by association of official analytical chemists arlington, virginia, USA.
- A.O.C.S (1985). official and tentative methods of American oil chemists society 3rd ed. published by American oil chemists society 508, south six street, champaign, Illinois, 6182. USA.
- Azza abd- Alla, A.A. (2002). Iffect of extraction system and processing techniques on the quality of virgin olive oil. Ph.D. thesis Fac. Of Agric. Cairo Univ.
- Bigler, F. (1982). The impact of oleasters on olive infestations by the olive fly, *Dacus oleae* Gmel.(Dipti Tephritidae), in Western Crete. Z.ANGEW. ENTOMOL. 94 (2). Pp. 199- 208.

- El-Hakim-AM; El-Sayed, S.; and A. El-Hakim(1982). Studies on the infestation of olive fruits with the fly *Dacus olea* Gmel. in Egypt (Tephritidae: Diptera J. Bulletin- de-La-Societe-Entomologique-d'Egypte. 1982-1983, publ. 1985, No.64, 221- 225.
- F A0/WHO (1970). Recommend international standard for olive oil virgin and retind and for retinal olive residae oil. Codex Alimentary commission CAC/RS 33-197. food and Argriculture organization, World health Organization, Rome Italy, 1970
- Guusay, B.; U. Ozilloey; G. Ertem; A. Oktra (1990). Studies on the susceptibility of some important table and oil olive cultivars of the Aegean region olive fly (*Dacus Oleae* Gmel.) in Turkey. Act a Horticulture, No.286, 359- 362.
- International olive oil council (IOOC), (1996). Organoleptic Assessment of virgin olive oil- 20 November. French
- Ismaeil, A. I.; A. H. Badawy and M. M. Nahed (2001). Improvement the organoleptic characteristics and olive oil quality, the 3 th international conference and Exhibition for food industries quality contial. Comibassal, Alex., 17-19 June,35- 49. A. K. Kiritsakis (1990). Olive oil American oil chemist's society, champargan, ItUSA chapt.(14) pp. 132- 144.
- Kyrianidis, N.B.; Dourou, E (2002); Effect of storage and *Dacus* infection of olive fruits on the quality of the produced virgin olive oil. Journal offood-lipids., 9 (1): 47-55.
- Mavragani -Tsipidou, p.; G. Karamanlidou; A. Zacharopolou; S. Koliais; C. Kastritsis (1992). Mitotic and polytene chromo some analysis in *Docus Oleae* (Diptera: Tephritidue). GENOME,. vol. 35, No.3, pp. 373-378.
- Mustafa, TV; N. Al-Zaghal; M. Humeid; K. AL. Jaghal (1987). Influence of *Docus Oleae* (Gmel) infestation on some characteristics of olive fruits. Actes- de- L Institute- Agromomique- et- Veterinaire- Hassan-II. 1987,7: 1-2,51-57.
- Parlati, M. V.; G. Petruccioli and D. Turco (1986): Effects of *Docus* attack on oil quality. Ammalidell'Istituto sperimentale per l'Olivicoltura, 7,21-29. (Cf. Rav. Appl, ent., 75 (9) 552, 1987)
- Salama, R. A. N.; N. A. Elneary and F. F. Mostafa (1997); Influence of olive fly, *Bactrocera* (*Dacus oleae* Gmel.) Influence on some physical and chemical characteristics of NI1v~ fnl1t~ :1nci their virgin oil. RQ:vnt .T. Food sci 25. No. 1- DD. 99-106.

## الإصابة بذبابة ثمار الزيتون وتأثيرها علي الخواص الطبيعية والكيميائية والحسية لزيت الزيتون

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تم حساب نسبة الإصابة بذبابة الزيتون داكس اولياي في شمال سيناء كما تم عمل حصر للأعداء الطبيعية علي الذبابة. هذا بالإضافة إلى انه تم استخدام نسب مختلفة من الإصابة بذبابة الزيتون *Dacus oleae* (صفر، ٥، ١٠، ٢٠، ٤٠%) لدراسة تأثيرها علي بعض الخواص الطبيعية والكيميائية والحسية لزيت الزيتون صنف مكوال ومنز انيلو المنزرعة بالعريش وقد تم أخذ العينات في منتصف ونهاية شهري سبتمبر وأكتوبر وكانت النتائج كالاتي:-  
- الإصابة بذبابة الزيتون سببت نقص في المحتوى الزيتي لثمار الزيتون في كلا الصنفين.  
- رقم الحموضة ورقم البيروكسيد والقياس في المنطقة الفوق بنفسجية على درجتى ٢٣٢، ٢٧٠ نانوميتر زادت تدريجيا بزيادة نسبة الإصابة في حين انخفض معامل الانكسار.  
- أدت الإصابة بنسبة ٢٠، ٤٠% الى ارتفاع كبير في رقم البيروكسيد والحموضة والامتصاص في منطقة ال U.V. في حين حدث انخفاض كبير في المحتوى الزيتي لثمار الزيتون.  
- لم يكن هناك تغير واضح في المحتوى الرطوبي لثمار كلا الصنفين بالإصابة.  
دلت نتائج الاختبارات الحسية لزيت زيتون كلا الصنفين على أنه يمكن استخدام لزيت الناتج من الثمار المصابة بنسبة ٥، ١٠% فقط.