

# Population Density of Old World Date Mite *Oligonychus Afrasiaticus* (McGregor) on Some Date Palm Varieties in Middle Iraqi Orchards (Acrid: Tetranychidae)

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**Abstract-** Population density of Old world date mite *Oligonychus afrasiaticus* was conducted on some date palm varieties in middle Iraqi date palm orchards at season 2016. Results indicated that the highest numerical density of eggs mite stage during of first week of July timing with fruits in Khalal stage and the least numerical density during of mid-August, while the highest numerical density of nymphs mite stage during last week of July timing with green and yellow of Khalal stage. The date palm varieties Barhee and Umrani are resistant to mite, while the varieties Brem and Zahdi are highly susceptible and Maktum, Khadrawi mandli, Tabrzal has moderate resistance. The highest numerical density of eggs were: 338, 255, 197, 70, 0, 0 egg per fruit in variety of Brem, Zahdi, Maktum, Khadrawi mandli, Tabrzal, Barhee and Umrani respectively, during fruits in khalal stage, while the highest numerical density of nymphs were: 746, 452, 447, 309, 108, 0, 0 nymph per fruit respectively during fruits in green and yellow of khalal stage. These results will assist in application of programs management of this pest.

**Keywords-** Old World Date Mite, *Oligonychus Afrasiaticus*, Date Palm, Population Density

## I. INTRODUCTION

Date palms attack *Phoenix dactylifera* many dream types and cause severe damage, the date palm of the ancient world, *Oligonychus afrasiaticus*, is one of the major pests that attack date palm (15, 12). The first to study the life of this type of mite is (13), which showed that the shape of the egg round and color crystal at the first place and then turns into a yellow color waxy at maturity, Larvae are bright green at the beginning of hatching, and have several generations per year and the generation period depends on temperature. The damage of the mite and its danger from nourishing the nymphs on the skin layer of fruit and absorption of juice in the stages before maturity and during which the color of the fruit turns to white gray, which leads to damage to the crop and low quality and marketing value (10,7,2). The role of the larvae and the mobile

nymphs are the harmful phases of this pest, and members of this type of mite characterized by the secretion of large amounts of tissue covering the fruits, which inhibits the phylogenetic processes of fruits, which cause delay in coloration and maturity of fruits (5). He showed (18) that the fruit is infected with creeping nymphs that are transmitted by the air in the bush, but the main injury occurs by air transport. Date palm varieties vary in degree to *Oligonychus afrasiaticus*. It was found (14, 4) that the varieties of spikey and a variety of resistance to the mite, while Sucary and Rutan were high sensitivity to the injury of this mite either Khuthary variety is the average resistance. (6) that the mite *Oligonychus afrasiaticus* attacked all varieties of date palm, but different varieties among them in the degree of resistance to him and were Hamra and Hajri least sensitive to this type of mite in the circumstances of Wadi Hadramout in Yemen, He also studied (17) the density of the mite *Oligonychus afrasiaticus* on the cultivars of Duglla Nour, Al-Burahi and Al-Jadul and found a difference between them and their sensitivity to infection. Previous studies have indicated that the dates of appearance, population density and spread of the mite *Oligonychus afrasiaticus* vary from country to country and from region to region according to temperature and relative humidity and according to palm varieties, When the temperature reaches above 39 Celsius, the mite begins and increases when the humidity is low (19, 18) Under the conditions of Yemen, the Breh species is caught between the end of May and the beginning of July (9) In Saudi Arabia and Tunisia, *Oligonychus afrasiaticus* reaches its highest population density in mid-July and early August (8, 6, 3) In Amman, he found that the varieties Halali, Jabri and Khaznani begin to hit in April. The rest of the items will end at the end of the season (11). He cited (16, 5) the registration of many natural enemies as biological agents this kind of mite,( 1) Several chemical pesticides of natural origin and different action methods were used in its control.

The aim of this research is to determine the population density of the mite *Oligonychus afrasiaticus* and the sensitivity of some date palm varieties to be infected under the conditions of palm groves south of Baghdad.

## II. MATERIALS AND METHODS

The experiments were carried out on trees of date palms: Prim, Zuhdi, Maktoum, Khadraoui Mandali, Tibrzal, Burhi and Omrani in one of the palm groves south of Baghdad during the 2016 season, Three fruit trees were selected from each species and with an average age and trees were identified for each species with colored ribbons. Watchdog 2000 was used to record temperature and humidity in the experimental orchard and air flow data were taken throughout the experiment. The population density of the mite was calculated when the symptoms of the infection were observed at the end of June (6/29) and at the rate of every ten days once and until 8/19. Each time, 15 fruits were randomly collected from each palm tree and from each direction and each palm (single) The number of fruits per class was 45 fruit, The fruits are placed in bags and transferred to the laboratory for the purpose of calculating the numbers of eggs and nymphs for each fruit by washing the fruit with alcohol 70% until the fall of all the mite people and filtering the washing solution using a paper filter and then calculating the preparation of the mite (eggs and nymphs) on the filter paper using a manual meter, The pressure of the thumb and under a simple microscope, The numbers of the mite were calculated on each fruit and each species according to the dates mentioned above. The results were statistically analyzed using the least significant difference of 5% using the statistical program Genstat in the implementation of statistical analysis.

## III. RESULTS AND DISCUSSION

The results of the research in table (1) indicate that Brim and Zuhdi varieties are the most sensitive varieties of the mite

*Oligonychus afrasiaticus* either Berhi and Amrani varieties were the most resistant to the mite, show Maktoum, Khadrawi mandli, Tabrzal medium resistance, The results in table 1 show that the highest number of eggs was in the first week of July (7/8) and in all the studied varieties: 338.0, 255.2, 197.6, 135.6, 70.6, 0.0, 0.0 eggs /fruit, Brem, Zuhdi, Maktoum, Khadrawi Mandali, Tizzer, Burhi and Omrani, respectively, After that, the population density of the eggs began to decline until it reached zero at the third week of August 8/19. The numerical density of nymphs and adults table (2) reached their highest density during the third and final week of July (7/28, 7/18) and in all the varieties table 2 where the average rate was 746.2, 452.8, 447.8, 309.2, 108.0, 0.0, nymphs and adults / fruit respectively Then the numbers went down to zero, except for the Primus, which was 5 nymphs, whole / fruit, during the third week of August 8/19. The results of the statistical analysis indicate significant differences in the population density of the mite among the dates palm cultivars examined. The population density of *Oligonychus afrasiaticus* may vary according to regions and the difference in climatic conditions of temperature and humidity, as indicated by (19, 18). We recorded an average temperature and relative humidity of 40.2, 37.8, 40.0, 37.3, 36.9 and 34.7 Celsius during the population density calculation dates of 6/29, 7/8, 7/18, 7/28, 8/9, 8 / 19 respectively, And relative humidity: 19.5%, 24.5%, 18.5%, 27.3%, 22.5%, 27.0%, respectively. The results of the study agree with the findings of (4, 6, 14, 17) that there are differences between date palm varieties in the degree of resistance to the mite *Oligonychus afrasiaticus* It was observed in the orchard of the experience that there was a great difference between the species in the degree of the mite where the cultivar Berhi is free of injury Compared with the Brem-sensitive group.



Figure 1. Bunch of date palm infected *Oligonychus afrasiaticus*

## IV. CONCLUSION

1. Palm varieties differ among themselves in terms of sensitivity to *Oligonychus afrasiaticus*
2. *Oligonychus afrasiaticus* mite reaches the highest density of the egg stage during the second week of July according to climatic conditions.
3. *Oligonychus afrasiaticus* mite reaches the highest population density of the stage of nymphs and adults during the last week of July and according to climatic conditions.

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TABLE I. THE NUMERICAL DENSITY OF MITE PALM (EGG STAGE) *OLIGONYCHUS AFRASIATICUS* ON THE FRUITS OF SOME VARIETIES OF PALMS GROVES IN CENTRAL IRAQ DURING THE SEASON 2016

Number of mite eggs																	
History and maturity of fruits																	
Species	29/6/2016			8/7/2016			18/7/2016			28/7/2016			9/8/2016			19/8/2016	
	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	Maturity stage
Brem	13221	293.0	Green Khalal	15210	338.0	Green Khalal	7893	175.4	Green Khalal	7173	159.4	Pink Khalal	5490	122.0	Pink Khalal	0	Damply Khalal
Zahdi	10377	230.6	Green Khalal	11484	255.2	Green Khalal	5328	118.4	Green Khalal	3717	159.4	Yellow Khalal	3177	70.6	Yellow Damply	0	Yellow Khalal
Maktum	6975	155.0	Green Khalal	8892	197.6	Green Khalal	2907	64.6	Green Khalal	2808	62.4	Green Khalal	2664	59.2	Yellow Khalal	0	Yellow Khalal
Khadrawi mandli	4068	90.4	Green Khalal	6102	135.6	Green Khalal	2448	54.4	Green Khalal	1629	36.2	Green Khalal	1368	30.4	Green Khalal	0	Light Green
Tabrzal	2124	47.2	Green Khalal	3177	70.6	Green Khalal	2691	59.8	Green Khalal	3348	74.4	Green Khalal	2610	58.0	Yellow Khalal	0	Light Green
Barhee	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	Yellow Khalal
Umrani	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	0	Damply Khalal	0	0	Damply Khalal	0	Damply Khalal
LSD 0.05		24.44			36.52			22.43			21.61			19.31		0.0	

TABLE II. THE NUMERICAL DENSITY OF MITE PALM OLIGONYCHUS AFRASIATICUS (NYMPH AND ALDULT ) ON THE FRUITE OF SOME VARIETIES OF PALM GROWER IN IRAQ DURING THE SEASON 2016 .

Number of nymphs and adults of mite																	
History and maturity of fruits																	
Species	29/6/2016			8/7/2016			18/7/2016			28/7/2016			9/8/2016			19/8/2016	
	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	In one fruit	Maturity stage	Total in 45 fruit	Maturity stage
Brem	14679	326.2	Green Khalal	19548	434.4	Green Khalal	31446	698.8	Green Khalal	33597	746.2	Pink Khalal	33129	736.2	Pink Khalal	0	Damply Khalal
Zahdi	10854	241.2	Green Khalal	16434	365.2	Green Khalal	23292	517.6	Green Khalal	20376	452.8	Yellow Khalal	20907	464.6	Yellow Damply	0	Yellow Khalal
Maktum	6183	137.4	Green Khalal	12141	269.8	Green Khalal	19413	431.4	Green Khalal	20151	447.8	Green Khalal	20574	457.2	Yellow Khalal	0	Yellow Khalal
Khadrawi mandli	6354	141.2	Green Khalal	8199	182.2	Green Khalal	13707	304.6	Green Khalal	13914	309.2	Green Khalal	14229	316.2	Green Khalal	0	Light Green
Tabrzal	2304	51.2	Green Khalal	3483	77.4	Green Khalal	4752	105.6	Green Khalal	4860	108.0	Green Khalal	4869	108.2	Yellow Khalal	0	Light Green
Barhee	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	Yellow Khalal
Umrani	0	0	Green Khalal	0	0	Green Khalal	0	0	Green Khalal	0	0	Damply Khalal	0	0	Damply Khalal	0	Damply Khalal
LSD 0.05		39.13			44.26			60.44			71.32			66.56		2.13	