

	**	*	*	**
2003				
)GA <sub>3</sub> ( / 50)	( / 150)	( 2)	2004	
( / 20 30 ) BA GA <sub>3</sub>	( / 20) BA ( / 30		Vapor Gard	
( 0.1) Wax -Oil				
2004				
100				
Vapor gard				
2004	Vapor Gard	2003	(BA+GA <sub>3</sub> )	GA <sub>3</sub> BA
	2003	( 56.7)	2004	( 41.7)
	2003	2004	2003	(BA+GA <sub>3</sub> )
	2003	Vapor Gard	BA	GA <sub>3</sub>
	2004			
2003	BA Vapor gard		(BA+GA <sub>3</sub> )	GA <sub>3</sub>
	( )			

. 2011 / 3 / 28

. 2011 / 4 / 28

- (Rutaceae)
- Hesperidium Berry  
Citrus
- , Subtropical  
(40)
- . (1990 ) (1975 )
- ( 1989 ) 11.664.500
- 2002 ( 361.183)
- ( 18.2 ) 2003 ( 211.944)
- (110) (2003
- / ( 38) ( 2004 Fl. Agri.Stat. Ser.)
- (2002 Foreign Agri.)
- (1985 )
- ( Cu) (Fe) (N)
- ( 1973 Reuther)
- ( )
- .( 1975 )
- (Water stress)
- ( 1991 )
- Antitranspirants
- (1989 Shabaan ) (1972 Albrigo )

(1975 )

- Oil - Vapor gard - Wax

*Citrus sinensis* L. Osbeck  
, 2004 2003

(15) , 2003  
( 265) ( 25.9)  
(5×5)

Randomized Complete

.(RCBD) Block Design

Fe- / 50 CuSO<sub>4</sub> 2 )  
BA+GA<sub>3</sub> / 30 GA<sub>3</sub> / 20 BA / 150 EDDHA  
0.1 Vapor gard 60  
3/25 2003 4/1 ( 0.1 Wax-Oil

. 2004

(10) (1997) (1:8)

. (1969

. (1991) ( 5)

(8) : :1

5/15

(Vernier)

20 7 /1

2004./ 11/15

( / ) :2

: :3

Hand

(T.S.S)

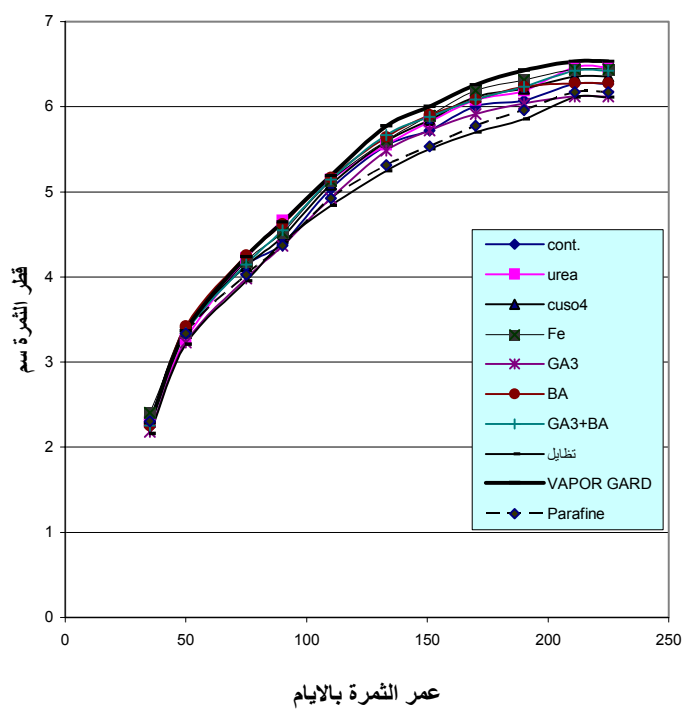
.(1970 A.O.A.C.)

refractrometer

( 2 )  
 (0.1) (NaOH)  
 100/ : (Ascorbic acid) C  
 ( 1977 Rangana ) 2-6-Dichlorophenolendophenol  
 Modified Lane- Eynon proc.  
 : (1980 Zoecklein )  
 B A -:  
 1 0,5 ( )  
 ( ) -:  
 1) HCL (2) (5)  
 N1 ) NaOH 24 ( 1+ )  
 . ( ) -  
 .( )  
 : 1  
 (1) 50  
 BA BA+GA<sub>3</sub> Vapor gard  
 GA<sub>3</sub> 100  
 Vapor gard  
 180  
 11/15  
 (1998 Zeiger Taiz )  
 (1973 Goss)  
 (1972) Albrigo  
 Davenport . Pinolene  
 (1972)

(1977) Palmer Jackson

(1977) Jackson



. 2004

.1

:2

:1-2

BA / (99.33)  
GA<sub>3</sub> (BA+GA<sub>3</sub>) / (98)  
(43) /  
(2) 2004 .  
/ (137) / (156.33)  
Vapor Gard GA<sub>3</sub> BA  
(91)  
:( ) : 2-2  
( 1 ) 2003  
BA  
/ (12.332) / (12.464) BA  
GA<sub>3</sub> (BA+GA<sub>3</sub>)  
( / 5.357)  
(1 ) 2004  
(BA+GA<sub>3</sub>)  
BA / (20.734) / (19.528)  
2004 2003 / (12.164)  
( )  
Reuther  
(1973)  
111 80 2.54 2.33 2.11  
138  
(1975 )  
/ BA

(1978 Natio)

(1975 Davenport)

(1)

6

. 2004 2003 / .1

وزن الحاصل ( كغم / شجرة )		عدد الثمار / شجرة		المعاملة
2004	2003	2004	2003	
e12.164	d 5.357	91.00 e	43.00 f	المقارنة
abc 19.314	a 12.332	137.00 ab	99.33 a	اليوريا
abcd15.827	bcd 7.867	111.00 cde	60.00 def	النحاس $CuSO_4$
bcd16.275	bcd 8.053	116.00 bcd	62.00 cdef	الحديد المخلبي Fe-EDDHA
abc17.415	abc 9.087	bc121.67	71.67 bcde	الجبرلين $GA_3$
ab19.528	a 12.464	133.00 b	98.00 ab	البنزول ادنين BA
cde14.826	ab 10.351	104.33 cde	78.67 abcd	$GA_3 + BA$
de13.439	cd 6.427	99.67 de	47.00 ef	التظليل Shading
abc17.320	cd 6.546	120.00 bcd	50.00 ef	مانع النتج Vapor gard
a20.734	a 12.225	156.33 a	abc 88.00	شمع البارافين السائل Wax-Oil
3.746	3.418	21.536	27.289	انظر لفرق معنوي %5 L.S.D

\*

:3  
:1-3

Vapor (2 ) 2003 ( 1.397) ( 1.429) gard  
(3 ) 2004 ( 1.241)  
BA ( 1.548) ( 1.532)  
( 1.26)

:2-3

(2 ) 2003 ( 11.167) ( 11.133)  
(10.2) GA<sub>3</sub> (BA+GA<sub>3</sub>)  
(3 ) 2004 ( 11.1) ( 10.85)  
(BA+GA<sub>3</sub>) ( 10.25)  
( 10.1)

( 2.1) (1973 Reuther) ( 2.6) (1988)  
Bose) (BA+GA<sub>3</sub> ) GA<sub>3</sub>

BA (1979 Wilkins)

(1968 Reuther)

(1992)

(2000) Josan Monga



. 2003

.2

المعامــــــــــــــــلات	الحموضة الكلية %	T.S.S %	فيتامين C ملغم/100 مل عصير	السكرات الكلية %	السكرات المختزلة %	السكرات غير المختزلة (السكروز) %
المقارنة	1.280 a	10.200 c	46.050 de	5.184 e	3.281 a	1.903 e
اليوريا	1.248 a	11.167 a	52.162 ab	7.621 a	3.584 a	4.037 a
النحاس CuSO <sub>4</sub>	1.237 a	10.950 ab	46.918 de	5.581 de	3.563 a	2.018 de
الحديد المخلبي Fe-EDDHA	1.397 a	11.133 a	47.787 cde	7.271 ab	3.303 a	3.968 a
الجبرلين GA <sub>3</sub>	1.259 a	10.834 ab	49.970 bcd	6.085 cde	2.854 a	3.231 abc
البنزول ادنين BA	1.269 a	10.167 c	52.162 ab	6.256 cd	4.666 a	1.59 bcde
GA <sub>3</sub> +BA	1.291 a	10.996 ab	49.093 bcde	6.059 de	3.021 a	3.038 abcd
التظليل	1.376 a	10.067 c	45.104 e	5.476 de	3.209 a	2.267 cde
مانع النتح Vapor gard	1.429 a	10.500 bc	51.732 abc	6.391 bcd	3.459 a	2.932 abcde
شمع البارافين الساقل	1.376 a	10.617 abc	54.184 a	7.06 abc	3.563 a	3.497 ab
اقل فرق معنوي 5 %	N.S	0.558	4.039	0.991	N.S	1.116

•  
•

2004

.3

المعامــــــــــــــــلات	الحموضة الكليــــــــة %	T.S.S %	فيتامين C ملغم/100 مل عصير	السكربت الكليــــــــة %	السكربت المختزلة %	السكربت غير المختزلة (السكروز) %
المقــــــــارنــــــــة	1.308 a	10.250 b	49.115 cd	6.038 a	3.132 a	2.906 a
اليوريا	1.260 a	11.100 a	53.580 ab	5.922 a	3.372 a	2.55 a
النحاس CuSO4	1.484 a	10.365 b	57.545 a	7.794 a	3.732 a	4.062 a
الحديد المخلبي Fe-EDDHA	1.308 a	10.450 b	53.620 ab	7.692 a	3.372 a	4.32 a
الجبرلين GA3	1.436 a	10.360 b	49.066 cd	7.776 a	3.144 a	4.632 a
البنزيل ادئين BA	1.532 a	10.365 b	51.348 bc	7.728 a	3.432 a	4.296 a
GA3 +BA	1.340 a	10.850 a	48.545 cd	6.612 a	4.092 a	2.52 a
التظــــــــــــــــليل	1.548 a	10.100 b	46.598 d	6.534 a	3.492 a	3.042 a
ماتع النتج Vapor gard	1.404 a	10.450 b	51.063 bc	7.068 a	3.192 a	3.876 a
شمع البارافين السائل	1.500 a	10.310 b	48.500 cd	8.04 a	3.372 a	4.668 a
اقل فرق معنوي 5 %	N.S	0.397	4.115	N.S	N.S	N.S

\*

**: 3-3 ( Vitamin C )**

( 2 ) 2003

100/	(54.184)			
Gard		(52.162)	BA	
	(46.05)		(51.732)	Vapor
		(3)	2004	
			(57.545)	
(49.115)			100 /	(53.58) (53.62)

(2004) El-Otmani

2004

BA

BA

(3 )

(1975) Bacha

(1968)

Aiyappa

2003

Suryanarana

(1978) Venkateswarlu

: :4-3

: : 1-4-3

(2 ) 2003

BA

Vapor gard

(7.271)

( 7.621)

( 5.184)

(3 ) 2004

( 7.794)

( 8.04)

.( 5.922)

: 2-4-3

. 4 3

: ( )

: 3-4-3

(2 ) 2003

Vapor gard

( 3.968)

( 4.037)

.( 1.903)

2004

(3 )

.( 2.52)

(BA+GA<sub>3</sub>)

( 4.668)

(1982)

80-70

BA

Natio )

( 1978

. 1997 .

. 2003 .

. 1990.

.1991 .

- 2,4-D . 1982 .  
*Citrus sinensis* ( L. Osbeck )  
 . 1975 .  
 . 1992.  
 .1985.  
 ( *Citrus sinensis* )  
 .18-7 3 3  
 .1969.  
 (2)  
 . 12-8 : (2) 47  
 ( 1 ) .1991.

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## RESPONSE OF LOCAL ORANGE TREES TO SHADDING AND SPRAYS OF SOME NUTRIENTS , GROWTH REGULATORS AND ANTITRANSPIRANTS UNDER DIYALA CONDITIONS

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### ABSTRACT

This study was conducted in unshaded local orange orchard located in Diyala Province during the years of 2003 and 2004 . Afoliar sprays at full bloom from Urea (2%), Iron ( 150 mg/L) , Copper (50 mg/L), GA<sub>3</sub> ( 30 mg/L), BA (20 mg/L) , (GA<sub>3</sub>+BA) (30+20 mg/L), Vapor gard (0.1%), Wax-Oil (Liquid paraffin) (0.1%) were used and shading .The objectives of this treatment was to determine the effect of these treatments on yield and fruit quality , and fruit growth in 2004 . A randomized Complete Block Design (RCBD) was used with three replications , The results of this study can be summarized as follows :

Shading and Liquid paraffin treatments slowed fruit growth after full bloom by 100 day up to ripening . while treatments Vapor gard increased fruit growth after full bloom by 100 day up to ripening. Urea, BA , GA<sub>3</sub>, and Liquid paraffin treatments increased fruit number and yield weight / tree for the two years of study during 2003, (GA<sub>3</sub> + BA ) treatments increased fruit number and weight, and in 2004 , Vapor gard treatments increased fruit number and weight. Urea and (GA<sub>3</sub> + BA) treatments increased total soluble solids ( T.S.S) percentage for the two years of study . Fe , CuSO<sub>4</sub> and GA<sub>3</sub> treatments increased T.S.S during 2003 only .Urea, Paraffin, BA, and Vapor gard treatments increased Ascorbic acid (Vitamin C ) in 2003. Urea and Fe treatments increased Vitamin C in 2004. Urea, Fe, paraffin , Vapor gard, and BA treatments increased total sugars in 2003 . Urea , Fe , GA<sub>3</sub> , and (GA<sub>3</sub> + BA) treatments increased non reducing sugar in 2003 .