APPLICATION OF ACTIVATED JASMINE OIL ON NAVEL ORANGE TREES
A-INCREASING PRODUCTION AND FRUIT QUALITY

Abd El-Naiem, A. El-Abd*; Ali, E. Zaghloul and Hamdy , E. El-Zayat****

*** Citrus Res., Dept., Hort., Res., Ins., A.R.C., Giza, Egypt**

**** Fruit Handling Res., Dept., Hort., Res., Ins., A.R.C., Giza, Egypt**

Abstract

Two treatments of activated jasmine oil as a spraying were applied on mature trees of Navel orange (*citrus sinensis*, Osbeck) twenty year-old grafted on sour orange rootstock and grown in clay loam soil in a private orchard at north Kafr El-Sheikh Governorate, Egypt during two successive seasons of 2008/2009 and 2009/2010 . Two levels of jasmine oil (0.03 % and 0.06 %) for four times were sprayed in both seasons of this study at full bloom, one month later, one month after the second and 1.5 month pre-harvest. During growth season, fruitfulness measurements were recorded, as fruit set and pre-harvest fruit drop. At harvest time (mid December), average fruit weight as (g), fruit number / tree and yield as kg / tree were calculated. Then fruit samples were transported to the post-harvest laboratory of Horticulture Institute , ARC Giza Governorate to estimate fruit quality parameters .

. Fruit peel color ((hue angle)), and resistance, and juice S.S.C content, acidity (%) and vitamin C content were estimated. The obtained results revealed that, the highest rate of jasmine oil (0.06%) significantly increased yield as number of fruits and weight kg / tree when compared with the other concentration. Moreover, it improved the average of fruit weight (g) and fruit set (%), while it clearly decreased pre-harvest fruit drop during the two seasons. It was clear that, jasmine oil treated fruits had the highest peel resistance, V.C content and maintain peel color than control at harvest time while acidity values were not affected. Untreated (control) fruits recorded the highest values of S.S.C compared to jasmine oil treated fruits in both seasons. So, it seems recommended to use activated jasmine oil on Washington Navel to increase yield, improve fruit quality and delayed ripening.

Introduction

Jasmine oil is a natural alternate to synthetic compounds which had proved its usefulness by practical experiments, in enhancing growth of plants and strengthening their resistance against diseases.

Citrus fruits occupy the first rank among economic fruit crops in Egypt as well as all over the world. Orange is the most important citrus crop in Egypt.

Navel orange is the leading variety followed by Valencia, local "baladi", acidity lees (Saccharine); and other varieties which are also produced locally. Navel oranges enjoy the most significant importance for local market and also for export markets. In Egypt the total acreage cultivated with oranges is 222236 feddans from the whole area of, 126653 feddans, are cultivated by Washington Navel trees. The feddan produces, an average of, 9.38 tons per year*.

Orange is consumed either fresh or as juice. Hence, efforts are exerted for the improving of fruit quality and increasing productivity to recoil the planned objectives in Egypt.

Egyptian oranges can be competitive in foreign and export markets, provided that its quality aspects are well kept. One of the most important quality criteria is color and flavour.

Color of orange fruits is very attractive to consumers. These color changes take place during maturity and result from (green) chlorophyll degradation and the appearance and synthesis of carotenoids and riboflavines in the peel (yellow or reddish color).

Jasmine oil is a source of some hormonal materials, methyl Jasmonate and Jasmonic acid, which exerts certain physiological effect on prolonging juvenility but in some cases enhancing fruit color and other different effects and it can be exploited for the benefit of fruitfulness.

(Paulin, 1986) postulated that, jasmine oil may slow vital processes, such as respiration while enhance juvenility leading to consumption of sugars by handling ethylene action and retarding the quick senescence of plant oranges and in turn the slow utilization of sugar.

(Ueda, 1991) reported that, the application of jasmonates compounds as pre-harvest treatments (Methyl Jasmonates and Jasmonic acid) stimulated peach color and enhanced fruit quality. Nojiri *et al.*, (1992) found that, JA promoted bulb formation and development in onion plants. Tamari *et al.*, (1995) observed that, Jasmonates induced the pigmentation and flavonoid expression in *Petunia hybrida* corollas. In this concern, Beale and Ward (1998) demonstrated that, jasmonates play a significant role in the defence response of plant, as they observed that, jasmine oil may activates some enzymatic systems in plant tissue which affected the biosynthesis of some immunity constituents. Jasmonates stimulated potato tuberization (Koda *et al.*, 1998). In this connection, Yan (2002) recorded that, treatment of tomato plants with (MJA) induced the accumulation of a defensin

---

According to Agriculture Directorates of governorates. Economic Affairs Sector, Ministry of Agric. &Soil Reclamation of Egypt (2008).

(a protein of immunity) that fights against late blight disease. Kondo and Yazama (2004) reported that, JA promoted the thocyanin accumulation in apple skin. Jasmine oil-treated fruits of peach had the highest firmness after picking and relatively higher acidity , and that presents an evidence for a certain effect for delaying maturity (El-Zayat and Allam , 2006).and (Garnsey and Lawes , 1999) on apple fruits and (Feng *et al.* , 2003) with the use of jasmonates on peaches , also Zaky and El-Zayat (2008) detected that , dipping of carnation cut flowers in activated jasmine oil at 0.03 % was the most effective for enhancing flower quality and reducing depletion of sugars content and pigments in the leaves . Similar results was defected by (Ahmed, 2010) who demonstrated that, jasmine oil treatment caused a marked increment in *Latania Lontaroides* leaves content of chlorophylls a, b carotenoids, total carbohydrates and in doles.

Another physiological effects were detected by Kondo et al., (2000) who concluded that, jasmonates were associated with fruit ripening and senescence in climacteric fruit, but it had no such role in non climacteric fruit like mangosteens, Kondo and Fucuda, (2001) stated also a delaying maturity of banana fruits after the application of activated jasmine oil . The proven effects of JA were encouraging for fruit development and growth and for delaying internal ethylene production in fruits.

This work aims at examining the effect of two concentrations of activated jasmine oil, on the yield, and quality parameters of Navel orange fruits when applied at pre-harvest time.

Materials and Methods

The present investigation was carried out during the two successive growing seasons of 2008/2009 and 2009/2010 on Navel orange (*Citrus sinenis* Osbeck) trees (twenty years old) which budded on sour orange (*Citrus aurantium* , L) as a rootstock, grown in a loamy clay soil a private orchard in at north Kafr El Sheikh Governorate , Egypt . Trees were selected in a good healthy condition and uniform in both vegetative growth and fruit load. Fifteen trees were selected in this study and divided randomly into three groups; each group was subjected to one of the following treatments:

1- Foliar sprays that covered thoroughly all the tree branches and leaves (or fruits)
With tap water (control).
2- Foliar sprays that covered thoroughly all the tree branches and leaves (or fruits) with (0.03 %) of activated jasmine oil.
3- Foliar sprays that covered thoroughly all the tree branches and leaves (or fruits) with (0.06 %) of activated jasmine oil.

Foliar sprays were carried out four times during the two study seasons as follows: .

a- At full bloom.
b- After one month from the first time.
c- After one month from the second time.
d- At one month and half before harvest date.

Activated jasmine oil preparation:-

Jasmine oil (commercial solution) obtained from arrow company- a public sector company related to El Hawamdia Company for sugar refinement.

- A concentration of 0.03% was prepared directly by dissolving 1.5 cm jasmine oil in 5 liters of water.
- A second concentration of 0.06% was prepared on the same basis.

Fruit set was calculated seasonally after June drop at the end of June. Pre-harvest fruit drop was calculated at 15 or 30 days intervals, starting from 1Sept. till the first week of December.

At mid. December (was chosen) for both seasons orange fruits of each replicate were picked separately by a clipper to reduce any mechanical injuries and packed in plastic boxes. The number of fruits per tree was counted and weighted. The total yield of each replicate and treatment were recorded. A sample of 10 nearly uniform fruits was taken from each replicate of harvest to be used for experimental purposes, were directly transported to the laboratory of fruit Handling Research Department, Agriculture Research Institute, A. R .C , Giza. Selected uniform fruits of each replicate were washed, air dried and used to determine physical and chemical measurements.

1- Fruit quality parameters:

A- Physical criteria:

A- 1Average of fruit weight (g):

Fruit weight (g) was recorded.

A-2 Fruit peel color (hue angle):

Peel color of the fruit was measured by averaging two measurements taken on two opposite points of each equator with a Minolta colorimeter (Minolta Co .ltd. Osaka, Japan) on the basis of the CIELAB color system. Color was represented by L (lightness, a (green-red) and b (blue-yellow) scale reading. The hue angle (h°) was calculated from arctangent b/a. The hue was represented as 0° = red purple, 90° = yellow, 180° = bluish – green and 270° = blue. (Mc Guire, 1992 and Voss, 1992).

A-3 Peel punctures resistance:

Fruit firmness of the skin was recorded by Ifra texture analyzer instrument using Penetrating Cylinder of 5 mm of diameter to a

constant distance 1 Cm inside the skin (and penetrating the flesh), using a constant speed at 0.3 mm/sec, and the results were expressed as the resistance force to the penetrating tester in units of pressure gm/cm² (Harold, 1985).

B- Chemical parameters:

B-1- Soluble solids content (S.S.C) percentage:

S.S.C was determined by using Carl Zeiss hand Refractometer.

B- 2- Total acidity percentage:

It was determined in fruit juice as citric acid according to (A.O.A.C, 1985).

B-3- Ascorbic acid (Vitamin C) content:

It was calculated as mg/100 ml juice according to (A.O.A.C, 1985).

Statistical analysis:

Experiment was designed as a complete randomized design and all data obtained throughout this study were tested by analysis of variance (Little and Hills, 1978). Duncan's multiple range tests were used for comparison among the treatments means (Duncan, 1955).

Results and Discussions

1- Effect of pre-harvest spray of activated jasmine oil on productivity of Washington Navel orange trees :

1-1- Fruit set percentage :

From data in table (1) it is obvious that, fruit set of Washington Navel was affected by spraying of activated jasmine oil during the two seasons of study. Jasmine oil improved fruit set when compared with the control. Results showed that the highest concentration of jasmine oil enhanced fruit set more than the other concentrations in both seasons. It recorded 8.62 and 9.32 % compared with 7.51 and 8.15 % and 6.22 and 4.31 % with the lowest concentration and control, respectively in the two seasons.

1-2- Pre-harvest fruit drop percentage :

Data in table (1) indicate clearly a stimulatory effect of both activated jasmine oil treatments on pre-harvest fruit drop percentage compared with control during the two seasons, whereas, control trees recorded the highest percentage in this parameter. Jasmine oil treatments reduced fruit drop significantly during the two seasons , the lowest percentage of fruit drop resulted in response to the highest concentration of jasmine oil (0.06 %) which gives 7.47 % compared with 8.45 % in jasmine oil treatment at (0.03 %) and 12.61 % fruit drop in control during the first season. These values were 6.96 %, 8.45 % and 13.17 % in the second season for the three treatments, respectively. Jasmine oil may slow some vital processes, such as respiration while

enhance juvenility and retarding the quick senescence of plant organs (Paulin, 1986).

1-3- Fruit weight (g) :

Data of fruit weight were presented in table (1) which showed the effect of activated jasmine oil in this parameter. Results indicated that, there was an increase of fruit weight with the use of jasmine oil in compared with control during the two seasons. Untreated fruits scored 275.74 and 277.01 g fruit weight. The first season both concentration of jasmine oil have almost similar results (302.3 – 303.3 gm) but in the second season the higher concentration resulted in a relatively bigger fruit weight (325.3 gm) than the lower concentration (293.8 gm) respectively in both seasons. In this concern, Mira and Baldwin (2001) demonstrated that jasmine oil was encouraging for fruit development and growth.

1-4- Fruit number / tree :

The obtained results in table (1) showed the effect of activated jasmine oil treatments on fruit number /tree. A significant difference between the highest and the lowest concentrations treatments of oil in the two seasons were clearly noted. Jasmine oil treated trees with (0.06 %) recorded the highest number of fruits/tree compared with treated trees with (0.03 %) jasmine oil and control during the two seasons. It numbered 418 and 390 fruit / tree (0.06 %) compared with 375 and 370 fruit / tree (0.03 %) while control trees recorded 370 and 365 fruits / tree during both seasons, respectively. The highest value of fruit number / tree in the third treatment may be due to the effect of jasmine oil in increasing fruit set and decreasing pre-harvest fruit drop during the two growing seasons.

1-5- Yield (kg / tree) :

In data presented in table (1), showed that, yield of Washington Navel orange treated trees as average kg / tree was higher than the untreated trees during the two seasons. The highest percentage of activated jasmine oil (0.06 %) showed the highest average yield (kg / tree) compared with the second treatment and control in the two studies seasons, it had significant differences among the studied treatments. It recorded 126.39 kg / tree compared with 113.72 and 102.02 kg / tree for the other treatment and control in the first season and 126.89 kg / tree compared with 108.70 and 101.11 kg / tree for the other treatment and control in the second season .

2- Effect of jasmine oil application on quality criteria of oranges:

2-1- Peel color " hue angle " :

The obtained data listed in table (2) showed values of the hue angle of color of the Washington Navel orange fruits treated and nontreated with activated jasmine oil. There was a significant difference among jasmine oil treatments and untreated fruits during both seasons. Control fruits had the lowest values of hue angle during the two seasons at harvest time. Jasmine oil treated fruits maintained the green rind color in a less developed way compared to control as hue angle were 78.18 and 71.11 compared to 55.85 in the first season and 76.61 and 71.57 for jasmine treated fruits compared to 53.82 in the second season . That may be due to the effect of jasmine oil on delaying maturity because of the hormonal effect of jasmine application as observed by Scbroder (1998) and Mira and Baldwin (2001). On the other hand Ueda (1991), Desmond *et al.*, (2001) and El-Zayat and Allam (2006) mentioned that, jasmine oil application in other instances stimulate peach color.

2-2- Peel resistance :

It is obvious from data in table (2) peel resistance as affected by jasmine oil application, that fruits of the biological treatment (with jasmine oil) had the highest peel resistance. There was a significant difference among treated fruits and control. In general jasmine oil at (0.06 %) gave the higher peel resistance comparing to the other treatment and control in both seasons. It recorded values of 71.07 and 69.89 compared to 44.30 and 50.49 for control during the two seasons respectively. These showed that biological-treated fruits had the highest firmness at harvest time. Jasmine oil treatment proved that it was effective in delaying maturity rate which is in complete accordance with (Garnsey and Lawes, 1999), Kondo and Fucuda (2001), Feng et al. (2003) and El-Zayat and Allam (2006).

2-3- Soluble solids content (S.S.C) percentage :

The results of S.S.C % as shown in table (2) indicated that, both jasmine oil treatments employed in this work contained less of S.S.C when compared to control at harvest time in both seasons. The high rates of (JO) had a lower level of S.S.C than the others. It contained 10.90 % and 10.77 % S.S.C compared to 11.70 % and 11.80 % in control in the first and second seasons, respectively. There was a significant effect of (JO) treatment at (0.06 %) on S.S.C % in the two seasons. A relatively delaying maturity effect by biological treatment (jasmine oil), was noticed and supported by Paulin, (1986), Scbroder (1998), Garnsey and Lawes, (1999) and El-Zayat and Allam (2006).

2-4- Acidity percentage :

According to data presented in table (2) it is clear that, there was no regular pattern to the effect of jasmine oil on percentage of acidity in Navel orange fruits in both seasons. Differences among all average treatments and control were not significant. Also, it was observed that, jasmine oil treatment maintained a marked increment of acidity percentage.when compared with the control during the two seasons. Jasmine oil at (0.06 %), at (0.03 %) and control recorded 1.03, 0.99 and 0.95 % acidity in the first season, respectively. The previous results are in line with those obtained by Paulin, (1986) and El-zayat and Allam (2006), indicating a certain effect for this biological substance in delaying maturity.

2-5- Vitamin C content (mg /100 ml juice) :

Concerning the effect of jasmine oil supplied in fruit juice V.C, it was evident from table (2) that, in both seasons of study, jasmine oil-treated scored the highest content of Vitamin C followed by the control in the two seasons. Vitamin C increment was corresponding with the highest rate of jasmine oil treatment, thus the highest content in both seasons was produced by (JO) at (0.06 %). There was a highly significant difference among all treatments in both seasons. Jasmine oil at (0.06 %) recorded 62.52 and 61.01 mg /100 ml juice during the two seasons, respectively. In this concern , (JO) treatment at (0.03 %) recorded 57.91 and 55.50 compared with 52.87 and 51.04 mg / 100 ml juice in the two seasons , respectively . The highest value in jasmine oil treatment may be due to the effect of (JO) on delaying ripening, and maintaining fruit quality.

Conclusion

From this study for we can conclude that using activated jasmine oil as a biological compound for spraying of Navel orange fruits caused a distinct maintain of rind color, delayed maturity and kept fruit in a good resistance, there by improving and keeping fruit quality. These applications are the alternative way for spraying with chemicals which are considered unsafe for human health, and more acceptable to consumers.

Table (1): Effect of pre-harvest spray of activated jasmine oil on some fruit fullness measurements of Navel orange trees during 2008/2009 and 2009/2010 seasons.

Measurements	Fruit set (%)	Pre-harvest Fruit drop	Fruit weight (g)	Fruit number / tree	Yield (kg /tree)
1st season					
control	6.22 B	12.61 A	275.74 B	370.0 B	102.02 B
*J. 0.03 %	7.51 AB	8.45 B	303.28 A	375.0 B	113.72 AB
J. 0.06 %	8.62 A	7.47 B	302.36 A	418.0 A	126.39 A
Means	7.45	9.51	293.79	387.67	114.04
LSD at 5%	1.48	2.68	25.54	45.81	20.32
2nd season					
control	7.31 A	13.17 A	277.01 B	365.0 B	101.11 B
J. 0.03 %	8.15 A	8.45 B	293.79 AB	370.0 B	108.70 AB
J. 0.06 %	9.32 A	6.96 B	325.33 A	390.0 A	126.89 A
Means	8.26	9.53	298.71	375.0	112.23
LSD at 5%	2.34	3.44	40.32	22.53	23.25

In a column under each data, means followed by a common letter are not significantly different at the 5 % level by DMRT.
* Jasmine oil

Table (2): Effect of pre-harvest spray of activated jasmine oil on some fruit quality parameters of Navel orange during 2008/2009 and 2009/2010 seasons.

Fruit quality	Peel color "hue	Peel resistance	S.S.C (%)	Acidity (%)	V.C mg/100 ml juice
1st season					
control	55.85 B	44.30 C	11.70 A	0.95 A	52.87 C
*J. 0.03 %	71.11 A	66.50 B	10.93 B	0.99 A	57.91 B
J. 0.06 %	78.18 A	71.07 A	10.90 B	1.03 A	62.52 A
Means	68.38	60.62	11.18	0.99	56.88
LSD at 5%	18.35	4.01	0.75	0.15	3.32
2nd season					
control	53.82 B	50.49 B	11.80 A	0.96 A	51.04 C
J. 0.03 %	71.57 A	69.19 A	11.23 AB	1.00 A	55.50 B
J. 0.06 %	76.61 A	69.89 A	10.77 B	1.03 A	61.01 A
Means	67.33	63.19	11.27	1.00	55.85
LSD at 5%	15.35	16.54	0.99	0.10	4.00

In a column under each data, means followed by a common letter are not significantly difference at the 5 % level by DMRT.
* Jasmine oil

References

A.O.A.C (Associated of Official Agriculture Chemists) (1985). Official methods of analysis, 4 th ed .pp. 495 –510 510...Benjamin Franklin station, Washing, D.C., U.S.A.

Ahmed, S. Samira; S.M.Shahin and H. El-Zayat (2010). Jasmine oil as a natural extract for improving growth and quality of Phoenix and Latania palm transplants rather than chemical fertilization. Egypt. J. of Apple. Sci., 25 (48): 281 – 296.

Beale, M.H and J.L.Ward (1998). Jamonates: Key players in the plant defence Natural products Reports, Bristol Univ., England: 533 – 548.

Desmond, R.Z.Jiang ad J.W.Rushing (2001). Tree reflective film improves red skin coloration and advances maturity in peach Hort. Technology, Vol. 11, No. 2, 234 – 242.

Duncan, D.B. (1955). Multiple ranges and multiple "F" Tests. Biometrics, 11:1- 42.

El-Zayat, H. and H.Allam (2006). Natural methods for peach color enhancement. Egypt. J.Agric. Res., 84 (2) 493 – 504.

Feng, L.JY; H. Zheng and Y.F.Zhang (2003). Jasmonate reduces chilling injury and maintains post- harvest quality in peaches Agri. Sci. China – CN, Vol 2, and N.11: 1246 – 1252.

Garnsey, S. and G.S.Lawes (1999). Improving apple color. Tree fruits, tasmania No. 3, December.

Harold, E.P (1985). Evaluation of quality of fruits and vegetables. AVI publications – West Port. Conn. U.S.A.

Koda, Y., E.A.Omer; T.Yoshihara; H. Shihata; S. Sakamura and Y.Okazawa (1998). Isolation of a specific potato tuber – inducing substance from potato leaves. Plant Cell Physiol., 29: 1047 – 1051.

Kondo, S. and F.Yayama (2004). Changes of abscisic acid and its metabolite during development of apple fruit. J.Amer. Soc .Hort. Sci.; 129 (2): 152 – 157.

Kondo, S. and K.Fucuda (2001). Changes of jasmonates in grape berries and their possible rules in fruit development. Scientia Hort., 91: 275 – 287.

Kondo, S.; A.Tomizama and H.Seto (2000). Changes of endogenous jasmonic acid and methyl jasmonate in apple sweet cherries during fruit development. J.Amer. Soci. Hort. Sci., 125: 282 – 287.

Little, T.M.and F.J.Hills (1978). Agriculture experimentation, design and analysis. Jhon Wiely and Sons, New York.

Mc-Guire, R.G. (1992). Reporting of objective color measurements. Hortscience, Vol .27 (12): 1254 – 1255.

Mira, S.K .and E.A.Baldwin (2001). Mango, in (Post harvest physiology and storage of tropical and subtropical fruits), CAB International, England, pp: 85 – 122.

Nojiri, H.; H. Yamane; H. Seto; I. Yamaguchi; N. Murofushi and H. Shibook (1992). Qualitative and quantitative analysis of endogenous Jasmonic acid in bulding and non – bulding onion plants. Plant cell physiol., 33: 1225 – 1231.

Paulin, A. (1986). Influence of exogenous sugars on the evaluation of senescence parameters of petals. Acta Hort . , 181: 183 – 193.

Scbroder, F.A. (1998). Review of chemical defence in plants. Chemical Int. Ed., 37: 21 – 31. England.

Tamari, G., A. Borochov; R.Atzorn and D.Weiss (1995). Methyl jasmonate induces pigmentation and flavonoid gene expression in petunia corollas: a possible role in wound response. Plant physiol., 94: 45 – 50.

Ueda, J. (1991). Biosynthesis of Jasmonic acid and its related compound. Chem. Regulate. Pronts Vol. 26: 173 – 189.

Voss, D.H. (1992). Relating colorimeter measurement of plant color to the Royal Horticultural Society color chart. Hort Science, Vol . 27 (12), 1256 – 1260.

Yan, Z. (2002). Induced systemic protection against tomato late blight elicited by plant growth- promoting Rhizo bacteria. American Phytopathological Soc., 101 (2): 80 – 86.

Zaky, Amal A. and H. El-Zayat (2008). Effect of some ethylene inhibitors on the keeping quality and extending the vase life of carnation (Dianthus caryophyllus L) cut flowers. Egypt. J. Agric. Res., 86 (1): 243 – 256.

الملخص العربي

استخدام زيت الياسمين المنشط على أشجار البرتقال أبوسره
١- لزيادة المحصول و جودة الثمار

عبدالنعيم عبدالسلام العبد* على السيد زغلول- حمدى السيد الزيات****

*** قسم بحوث الموالح - معهد بحوث البساتين – مركز البحوث الزراعية – الجيزة – مصر**

**** قسم بحوث تداول الفاكهة - معهد بحوث البساتين – مركز البحوث الزراعية – الجيزة – مصر**

أجريت هذه الدراسة برش زيت الياسمين على أشجار برتقال أبوسره عمر ٢٠ سنة مطعومة على أصل النارنج نامية فى أرض طينية طميية بمحافظة كفر الشيخ بجمهورية مصر العربية خلال موسمى ٢٠٠٨/٢٠٠٩ و ٢٠٠٩/٢٠١٠ و ذلك بمعدلات ٠,٠٣ ٪ ، ٠,٠٦ ٪ فى أربعة مواعيد خلال موسم النمو . و تم اخذ بعض القياسات خلال موسم النمو و هى عبارة عن نسبة

العقد و نسبة تساقط ما قبل الجمع . وعند موعد الحصاد ((منتصف ديسمبر)) تم تقدير متوسط وزن الثمرة بالجرام و عدد الثمار / شجرة وتم تقدير المحصول لكل شجرة بالكيلوجرام ثم نقلت عينات الثمار إلى معمل معهد بحوث البساتين بمركز البحوث الزراعية لإجراء التقديرات المعملية للصفات الطبيعية و الكيماوية للثمار . وقد أظهرت النتائج أن الرش بالتركيز العالي لزيت الياسمين فى هذه الدراسة ادى الى زيادة المحصول سواء فى عدد الثمار أووزن الثمار (كجم / شجرة) بالمقارنة بالمعاملة ذات التركيز المنخفض وكذلك معاملة "المقارنة". كذلك زيادة نسبة العقد فى الثمار و وزن الثمرة بالجرام بينما ادت الى انخفاض نسبة تساقط الثمار قبل الجميع بوضوح خلال موسمى الدراسة .

أشارت النتائج إلى ان الثمار المعاملة بزيت الياسمين أعطت معدلات عالية فى صلابة القشرة ومحتوى الثمار من فيتامين ج و الإحتفاظ بلون الثمار عند الحصاد مقارنة بمعاملة "المقارنة" بينما لم تتأثر نسبة الحموضة بالمعاملات .

سجلت معاملة "المقارنة" القيم الأعلى فى نسبة المواد الصلبة الذائبة بالمقارنة بالثمار المعاملة بزيت الياسمين خلال موسمى الدراسة . لهذا فإنه يمكن التوصية بإستخدام زيت الياسمين المنشط على أشجار البرتقال أبوسره لزيادة المحصول و تحسين جودة الثمار وتأخير نضج الثمار .