

EFFECT OF FOLIAR APPLICATION OF SOME CROPS SEEDS SPROUT EXTRACTS ON FRUITING OF VALENCIA ORANGE TREES

Huda M. H. Ismaiel

Citriculture Research Department, Horticulture Research Institute, Agricultural Research Center, Giza, Egypt

Corresponding author email: Hudasps122@hotmail.com

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ABSTRACT

Valencia orange trees has a great potentially for export to foreign markets. Appreciated any efforts directed towards enhancing yield and fruit quality. For avoiding the side effects on environmental pollution and human health by using chemical fertilizers this study was examned the use of crops seeds sprout extracts as an alternative for getting fruit quality and promoting yield on Valencia orange trees.

Crops seeds sprout extracts are of great benefits when used to spray on plants. It contains high levels of major and minor nutrients, amino acids and vitamins, which are beneficial to the crop in quantity and quality. The study relies on the use of seven crop seed sprout extracts: fenugreek (FSSE), celery (CSSE), rocket (RSSE), barley (BSSE), wheat (WSSE), garlic (GSE) and onion (OSSE) at a concentration of 0.1% in each extract.

Through the results obtained, it was found that all the extracts gives a Significant effects compared to the control on the vegetative and fruit characteristics, chemical composition of fruits, photosynthetic pigments and promoted yield and fruit quality of Valencia orange trees and found also that the crop seeds sprout extracts used in descending order were as follows: FSSE followed by CSSE, RSSE, BSSE, WSSE and finally GSE and OSSE.

KEYWORDS: Crop Seed Sprout Extract, FSSE, CSSE, RSSE, WSSE, OSSE, GSE, Valencia Orange, Photosynthetic Pigments, Fruit Setting.

1. INTRODUCTION

Citrus is considered the important cash crop all over the world. In Egypt, citrus ranked the first fruit crop among all cultivated fruit crops. The fruiting area and production reached 418415 fed and 4272886 tons, respectively. The fruiting area and total production of Valencia orange trees reached 102544 and 1165444 tons, respectively. (2016 statistics).

Many attempts were accomplished for improving yield and fruit quality of Valencia orange for facilitating fruit marketing and exportation it to local and to foreign markets by using natural extract. Using crops seeds germination and sprouting of different crop seed such as fenugreek, celery, rocket, barley, wheat, garlic and onion may change the content and composition of Fruits namely proteins, fats and amino acids and enhances the building and biosynthesis of essential amino acids like Glutamic acid, tryptophan, argentine, methionine and lysine, vitamin B&C and some macro and micro nutrients and makes them high available to the tree Table (1) and Table (2) (Cazuola *et al.*, 2004; Cairney, 2005; Biommeron, 2007; Anwar *et al.*, 2013 and Dhekney, 2016).

Recent studies supported the beneficial effects of using crop seed sprouts to promote growth, tree

nutrition status, yield and fruit quality in detent evergreen fruit crops especially citrus, mangoes and date palms and at the same time protecting our environment from pollution (Oraby, 2018 and Ali *et al.*, 2018).

The aim of the work was examining the effect of foliar application of some crop seed sprouts (fenugreek, celery, rocket, barley, wheat, garlic and onion) on fruiting of Valencia orange trees grown under Upper Egypt conditions.

2. MATERIALS AND METHODS

This study was carried out during two consecutive experimental seasons 2016/2017 and 2017/2018 on uniform in vigor 35 years old Valencia orange trees (*Citrus sinensis L.*) onto sour orange rootstock. The selected trees are grown in a private orchard located at Malawi district Minia governorate (about 300 Km south of Cairo). The trees planted at a spacing of 4×6 meters. The soil of the orchard is well drained clay in texture with a water table not less than two meters deep. Surface irrigation system was carried out using the procedures outlined according to (Peach and Tracey 1968) as shown in Table (4).

The selected trees were subject to the normal horticultural practices that already applied in the orchard except those dealing with using crop seed

Table 1. Chemical analyses for FSSE and RSSE

FSSE(mg/100gFW)		RSSE (mg/100gFW)	
Constituent	Value	Constituent	Value
Asparatic acid	2.2	Cystine	4.1
Arginine	2.1	Cysteine	3.9
Alanine	2.9	Methionene	3.8
Isoleucin	2.1	Glutamic acid	3.5
Cystine	1.9	Thiamine	0.16
Cysteine	1.8	Riboflavin	0.15
Glutamic acid	2.0	Vitamin E	0.94
Methionene	6.0	Vitamin A	4.4
Lysine	5.1	Vitamin C	101
Vitamin A	1.0	K	496
Vitamin B1	0.32	P	1410
Vitamin B2	0.30	Mg	460
Vitamin B6	1.00	Fe	267
Vitamin C	2.00	Mn	16
Ca	220	Zn	255
P	341		
K	469		
Mg	371		
Fe	242		
Phytic acid	0.9		
Niacin	1.4		

Table 2. Chemical analyses for BSSE and WSSE

BSSE(mg/100gFW)		WSSE(mg/100gFW)	
Constituent	Value	Constituent	Value
Asparatic acid	2.1	Arginine	4.0
Arginine	3.5	Alanine	3.1
Alanine	2.9	Isoleucine	4.1
Isoleucin	2.0	Glutamic acid	5.2
Glutamic acid	4.7	Thiamine	3.1
Thiamine	2.5	Riboflavin	3.00
Lysine	1.9	Asparatic acid	3.3
Vitamin E	0.61	Pyridoxine	2.5
Riboflavin	3.00	Vitamin E	0.59
Pyridoxine	1.9	K	644
Ca	280	P	600
P	510	Mg	319
K	600	Fe	511
Mg	281	Ca	292
Fe	181	Zn	218
Zn	150		

sprout extracts. This investigation consisted of eight treatments arranged as follows:

- 1-control
- 2-spraying onion seed sprout at 0.1%
- 3-spraying garlic sprout at 0.1%
- 4-spraying barley seed sprout at 0.1%
- 5-spraying wheat seed sprout at 0.1%
- 6-spraying rocket seed sprout at 0.1%
- 7-spraying celery seed sprout at 0.1%

8- spraying fenugreek seed sprout at 0.1%
 Each treatment was replicated three times, one tree per each. The seven seeds of crops extracts (fenugreek, celery, rocket, barley, wheat, garlic and onion) were sprayed three times at growth start (2nd of Mar) just after fruit setting (Last week of Apr) and one month later (last week of May) triton B as a wetting agent was added to all extract at 0.05 % and spraying was done till run off .

Table 3. Chemical analyses for GSE(oil) and OSSE

OSSE(mg/100gFW)		G Oil	
Constituent	Value	Constituent	Value
Protein %	3.2	Glutamic acid	2.3-2.7
Fat %	0.1	Pantotheonic acid (mg)	0.14
Carbohydrates %	13.8	Cysteine	1.0-1.2
Fibre %	0.4	Cystine	1.4-1.7
ash %	81.5	Methionene	1.9-2.1
Ca (gm)	220	Arginine	2.2-2.5
Fe (gm)	1	Vitamin D (mg)	0.3
Mg (gm)	11	Riboflavin (mg)	0.05
P (gm)	79	Nicotinic acid (mg)	0.2
K (gm)	212	Vitamin C (mg)	10.0
Zn (gm)	1	Folic acid (mg)	16.0
		Biotin (mg)	0.9
		Zn	1.5-2.8
		Mn	0.5-1.0
		S	50-51
		Ca	190-540
		P	200-430
		K	80-110
		Na	31-50
		Mg	81-150
		Al	0.5-1.0
		Ba	0.1-1.0
		Fe	1.8-2.6
		Sr	0.08-7.0
		B	0.6-1.0
		Cu	0.05-0.64

Source: **Peter (1999).**

Source: **Fenwich and Hanley, 1990.**

Table 4. Analysis of the soil at trial location

Constituents	Values
Sand%	4.0
Silt%	16.0
Clay%	80
Texture	clay
O.M.%	2.25
PH(1:2.5extract)	8.11
E.C (1:2.5extract)(memos/cm/25c)	1.14
CaCo3%	1.22
Available%	0.09
Available P (Olsen method.ppm)	4.50
Available K (ammonium acetate, pap)	45.0

2.1. Preparation of the extracts:

Extracts of the seven crop seed sprout were prepared by germinating of the seeds when the plant height reached Ten cm ,they were harvested and put in the refrigerator at 10°C till use , As the time of application they were blended in electric blender .

Complete randomized block design (CRBD) was adopted which the experiment included eight Treatments and each treatment was replicated three times, one tree per each during both seasons and statistical analysis was done and treatments means were compared using new L.S.D. at 5% (Snedecor and Cochran, 1980).

The following measurements were recorded:

- 1- Vegetative growth Characteristics namely shoot length, number of leaves / shoot, shoot thickness and leaf area (cm²) by (Ahmed and Morsy, 1999)
- 2- Leaf pigments namely chlorophylls a & b ,total chlorophylls and total carotenoids (as mg/1g F.W) (Von-Wettstein,1957)
- 3- Total carbohydrates (A.O.A.C.,2006)
- 4- Leaf chemical components namely N. P .K .S and Ca (as %) and Zn, Fe and Mn(as ppm) (Cottenie et al.,1982 and Summer,1985).
- 5- Percentages of initial fruit setting and fruit retention.
- 6- Number of fruits per tree and yield /tree (Kg) was calculated (1st week of April).
- 7- Physical and chemical characteristics of the fruit namely fruit weight (g) and dimension (height and diameter as cm), percentages of juice and fruit peel weight, fruit peel thickness (as cm), T.S.S% , total acidity% (as g. citric acid/100 ml juice) T.S.S./acid,

total and reducing sugars% (lane and Eynon, 1965) vitamin C content (mg/100 ml juice)(A.O.A.C,2006).

3. RESULTS

3.1. Vegetative criteria:

Data in Table (5) clearly shows that spraying trees three times with any seed sprout namely Onion, garlic, barley, wheat, rocket, celery and fenugreek each at 0.1%. Significantly shows the four growth aspects of Valencia orange trees namely shoot length, number of leaves, shoot thickness and leaf area in the spring growth cycle relative to the control treatments. Significant differences of these growth traits were observed as the results of the seven crop seed sprouts applications. The maximum values were presented in the tree sprayed with Onion, barley, wheat, rocket, garlic, celery and fenugreek seed sprout extracts. Onion occupied the last position in this respect .The maximum values were recorded on the tree treated with fenugreek seed sprout .The untreated tree produced the minimum values. This result were true during both season.

Table 5. Effect of spraying some crops seed sprout on some Vegetative criteria of Valencia orange trees during 2016/2017 and 2017/2018 seasons.

Treatments	Shoot length (cm)		No of leaves/shoot		Shoot thickness (mm)		Leaf area (cm ²)	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	3.9	4.0	3.0	3.0	1.40	1.37	20.1	19.9
OSSE	4.4	4.4	4.0	4.0	1.52	1.53	20.6	20.4
BSSE	4.9	4.7	4.0	4.0	1.66	1.68	21.2	20.8
WSSE	5.4	5.1	5.0	4.0	1.80	1.84	21.9	21.4
RSSE	5.7	5.5	5.0	4.0	1.92	2.00	23.0	21.9
GSE	6.3	5.9	5.0	5.0	2.06	2.15	23.5	23.0
CSSE	6.6	6.3	6.0	5.0	2.20	2.31	24.0	23.5
FSSE	7.0	6.7	6.0	5.0	2.33	2.45	24.6	24.1
New LSD 5 %	0.3	0.3	1.0	1.0	0.11	0.14	0.5	0.4

3.2. Leaf chemical components:

It is evident from the data in Tables (6,7&8) that subjecting the tress to the seven crop seed sprouted extracts namely Onion, garlic ,barley ,wheat rocket ,celery and fenugreek each at 0.1% were significantly

enhanced chlorophylls A&B, total chlorophylls ,total carotenoid, N, P, k, Ca, S, Zn, Fe and Mn while the lowest values were recorded in control trees crop seed sprouts could be arranged in ascending order as

Table 6. Effect of spraying some crops seed sprout on some photosynthetic pigments in the leaves of Valencia orange trees during 2016/2017 and 2017/2018 seasons

Treatments	Chlorophyll a (mg/g F.W.)		Chlorophyll b (mg/g F.W.)		Total Chlorophyll (mg/g F.W.)		Total carotenoids (mg/g F.W.)		Total carbohydrates %	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	3.1	2.9	1.0	0.9	4.1	3.8	1.0	0.9	14.0	13.9
OSSE	3.6	3.5	1.3	1.2	4.9	4.7	1.3	1.2	14.5	14.6
BSSE	4.1	4.0	1.5	1.5	4.6	5.5	1.6	1.5	15.0	15.1
WSSE	4.7	4.6	1.7	1.8	6.4	6.4	1.9	1.7	15.6	15.7
RSSE	5.3	5.2	2.0	2.1	7.3	7.3	2.1	2.0	16.2	16.3
GSE	6.0	5.6	2.2	2.4	8.2	8.0	2.3	2.2	16.8	17.0
CSSE	6.5	6.0	2.4	2.7	8.9	8.7	2.6	2.2	17.3	17.6
FSSE	7.0	6.5	2.7	3.0	9.7	9.5	2.8	2.5	17.8	18.3
New LSD 5 %	0.4	0.5	0.2	0.3	0.4	0.5	0.2	0.2	0.5	0.6

Table 7. Effect of spraying some crops seed sprout on percentage of N,P,K and Ca on the leaves of Valencia orange trees during 2016/2017 and 2017/2018 seasons.

Treatments	Leaf N%		Leaf P %		Leaf K%		Leaf Ca%	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	1.56	1.59	0.211	0.201	1.11	1.04	2.41	2.39
OSSE	1.61	1.64	0.222	0.212	1.16	1.14	2.51	2.50
BSSE	1.66	1.68	0.233	0.224	1.21	1.19	2.60	2.60
WSSE	1.71	1.73	0.250	0.236	1.26	1.23	2.70	2.69
RSSE	1.77	1.77	0.263	0.250	1.31	1.27	2.80	2.79
GSE	1.83	1.82	0.275	0.269	1.36	1.33	2.90	2.90
CSSE	1.88	1.86	0.287	0.281	1.41	1.38	3.01	3.01
FSSE	1.94	1.90	0.305	0.294	1.46	1.43	3.11	3.12
New LSD 5 %	0.05	0.04	0.010	0.009	0.04	0.04	0.07	0.08

Table 8. Effect of spraying some crops seed sprout on percentage of Zn,Fe,Mn and S on the leaves of Valencia orange trees during 2016/2017 and 2017/2018 seasons.

Treatments	Leaf Zn (ppm)		Leaf Fe (ppm)		Leaf Mn (ppm)		Leaf S%	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	49.9	50.0	54.0	55.0	60.4	59.1	0.69	0.70
OSSE	54.0	54.0	57.5	59.0	64.4	63.0	0.73	0.74
BSSE	56.9	57.0	60.9	62.5	68.5	66.0	0.79	0.79
WSSE	59.9	60.0	63.9	66.0	71.9	70.0	0.84	0.86
RSSE	63.0	62.9	64.9	69.0	76.0	73.0	0.88	0.90
GSE	67.0	66.9	70.9	72.0	79.0	77.0	0.92	0.93
CSSE	69.9	70.0	73.5	75.0	82.9	80.0	0.96	0.98
FSSE	74.0	74.0	78.9	78.0	85.0	82.9	1.01	1.01
New LSD 5 %	2.7	2.9	2.4	2.5	2.7	2.6	0.03	0.03

follows : Onion, barley ,wheat, rocket, garlic, celery and fenugreek, Onion significant occupied the last position in this respect significant on the other hand the highest values were observed on trees that sprayed with fenugreek seed sprout that was responsible for maximizing these leaf chemical component .these results were true during 2016/2017 and 2017/2018 seasons.

3.3. Percent of initial fruit setting and yield per tree

Table (9) shows that the parentages of initial fruit setting and fruit retention as well as yield expressed in weight and number of fruits /tree were significantly improved relating to the use of the seven crop seed sprouts at 0.1% relative to the control. The promotion on these parameters was significantly associated with spraying crop seed sprouts Onion, barley, wheat, rocket, garlic, celery and fenugreek in ascending order significant differences of fruit setting and yield were observed among the seven crop seed sprouts. The best crop seed sprouts was fenugreek followed by celery and Onion, ranked the last position in this respect. The lowest values of yield expressed in weight (56 &58 Kg) during both seasons were recorded on untreated tree while the highest values (80.1 & 81.0 Kg) were

recorded on the tree treated with crop seed sprouts namely fenugreek during both season respectively. The parentage it accrument does to application of fenugreek over the control reached and respectively. These results were true during both seasons.

3.4. Fruit Physical and chemical characterizations

Over mentioned data in tables (10,11&12) showed that supplying Valencia orange trees three times with the seven crop seed sprouts each at 0.1% significantly enhanced fruit quality in term of fruit height, diameter, juice, T.S.S., T.S.S./acidity, was very effective in enhancing fruit quality These treatments were increased fruit height and diameter ,juice %, T.S. S.%, total and reducing sugars %,T. S. S /acid and vitamin C in addition to decrease fruit peel weight and thickness and total acidity % relative to the control. The promotion on both physical and chemical characterizing of the fruit was related in ascending order to the application with Onion , barley , wheat, rocket, garlic, celery and fenugreek. Significant differences in this respect was observed among the seven seed sprouts the best result recorded on fenugreek seed sprout , the last was onion seed sprout and unfavorable effect in fruit quality was attributed

Table 9. Effect of spraying some crops seed sprout on Initial fruit setting % , fruit retention % , Number of fruit / tree and yield of Valencia orange trees during 2016/2017 and 2017/2018 seasons

Treatments	Initial fruit setting %		Fruit retention %		Number of fruit / tree		Yield / tree (Kg.)	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	10.0	9.6	0.74	0.71	350	360	56.0	58.0
OSSE	10.5	10.6	0.80	0.80	370	369	59.9	60.5
BSSE	11.0	11.1	0.85	0.86	380	381	62.7	63.6
WSSE	11.6	11.8	0.91	0.92	390	392	65.5	66.6
RSSE	12.3	12.5	0.96	1.01	405	405	68.9	69.7
GSE	13.0	13.3	1.03	1.10	420	421	72.7	73.9
CSSE	13.5	14.0	1.10	1.16	431	435	76.1	77.2
FSSE	14.3	14.7	1.16	1.22	445	450	80.1	81.0
New LSD 5 %	0.5	0.6	0.05	0.06	10.0	9.0	0.7	0.8

Table 10. Effect of spraying some crops seed sprout on some physical characteristics of Valencia orange Fruits during 2016/2017 and 2017/2018 seasons.

Treatments	Fruit weight (g.)		Fruit height (cm)		Fruit diameters (cm)		Juice %	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	160.0	161.0	6.8	7.0	6.3	6.2	40.0	40.5
OSSE	162.0	164.0	7.1	7.2	6.6	6.4	41.0	41.5
BSSE	165.0	167.0	7.3	7.5	7.0	6.6	42.0	43.0
WSSE	168.0	170.0	7.6	7.7	7.3	7.0	43.0	44.0
RSSE	170.0	172.0	7.8	8.0	7.6	7.3	43.9	45.0
GSE	173.0	176.0	8.0	8.2	7.8	7.6	45.0	46.0
CSSE	175.0	179.0	8.2	8.4	8.0	7.9	46.0	47.0
FSSE	178.0	182.0	8.5	8.6	8.2	8.3	46.9	48.1
New LSD 5 %	2.0	2.2	0.2	0.2	0.2	0.2	0.8	1.0

Table 11. Effect of spraying some crops seed sprout on some physical characteristics of Valencia orange Fruits during 2016/2017 and 2017/2018 seasons.

Treatments	Fruit peel weight %		Fruit peel thickness		T.S.S%		Total acidity%	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	24.0	25.0	0.42	0.41	11.0	10.9	1.340	1.344
OSSE	23.0	24.1	0.39	0.39	11.3	11.5	1.314	1.327
BSSE	22.1	23.6	0.36	0.37	11.7	11.9	1.291	1.300
WSSE	21.4	23.0	0.33	0.34	12.1	12.3	1.269	1.271
RSSE	20.6	22.0	0.30	0.32	12.4	12.6	1.240	1.246
GSE	20.0	20.4	0.28	0.29	12.8	13.0	1.1220	1.226
CSSE	19.2	19.8	0.26	0.27	13.1	13.3	1.201	1.200
FSSE	18.5	19.0	0.24	0.24	13.5	13.6	1.180	1.171
New LSD 5 %	0.6	0.5	0.2	0.2	0.3	0.3	0.014	0.012

Table 12. Effect of spraying some crops seed sprout on some physical characteristics of Valencia orange Fruits during 2016/2017 and 2017/2018 seasons.

Treatments	T.S.S/ acid		Total sugars %		Reducing sugars %		Vitamin C(mg/100 ml) juice	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
CT	8.2	8.1	7.4	7.6	2.9	3.0	44.1	45.3
OSSE	8.6	8.7	7.7	7.9	3.3	3.3	46.0	46.3
BSSE	9.1	9.2	8.0	8.2	3.6	3.6	47.9	48.2
WSSE	9.5	9.7	8.3	8.5	3.9	4.0	49.9	50.3
RSSE	10.0	10.1	8.6	8.8	4.2	4.3	52.0	52.5
GSE	10.5	10.6	9.0	9.1	4.4	4.6	54.0	55.0
CSSE	11.0	11.1	9.4	9.4	4.7	5.0	55.7	57.8
FSSE	11.4	11.6	9.8	9.9	5.0	5.3	58.0	59.9
New LSD 5 %	0.3	0.3	0.2	0.2	0.2	0.2	1.0	0.9

Table 13. Expected net profit for the suggested treatments when applied in one fed. Contains 122 Valencia orange trees during 2016/2017 and 2017/2018 seasons.

	The recommended treatment(R.T.)		The control treatment	
	1 st season	2 nd season	1 st season	2 nd season
Costs of all Hort. Practices	6000	6310	6000	6310
Costs of inorganic N / organic fertilizer (LE)	600	710	1850	1900
Costs of SSE	500+ 1200	630+1270	-	-
Total costs/ fed. (LE)	8300	8920	6850	8210
Yield /fed. (ton)	9.4	9.8	4.9	5.6
Price of selling yield / fed. (LE)	18800	24500	9800	14000
Net profit / fed.(LE)	10500	15580	2950	5790
The increase of R.T over the Control	1 st season	was 10500	2 nd season	was 15580

Price of selling one ton of Valencia orange fruits reached 2000, 2500 LE during both seasons.

to the untreated trees .Similar trend was observed during both seasons. Over mentioned data in Table (13) showed that by applying the recommended treatment net profit will get in the first and second seasons respectively 10500, 15580 LE Compared to the control treatment will gets 2950, 5790 LE. During both seasons.

4. Discussion

Crop the higher content of all seed sprouts from nutrients amino acids ,vitamins, antioxidant and plant pigments surely reflected an enhancing growth tree, nutritional status, yield and fruit quality (Camacho *et al.* 1992, cazuola, 2004 and Cairney , 2005).

In addition, germination of seeds lead to enhance the availability of most organic and mineral nutrients (Biommeron,2007, Anwar *et al.*,2013 and Dhekney,2016) the promotion on growth and tree nutrition of status surely reflected on enhancing yield

and fruit quality. These results are in harmony with those obtained by (Al-wasfy *et al.* (2013), Mohamed (2014), El-khawaga and Mansour(2014), Refaai (2014a) and (2014b); Ahmed (2015); shoug (2015),Abdel –Rahman(2015) Abdelaziz *et al.* (2017), Oraby (2018) and Ali *et al.*(2018).

5. Conclusion

Through the results obtained, it was found that all the extracts gives a significant effect compared to the control and spraying trees sprout three times at growth started , just after fruit setting and one month later of fenugreek or celery each at 0.1% was responsible for improving or promoting yield and fruit quality of Valencia orange trees under Mallawy district,Minia Governorate and it's similar conditions.

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الملخص العربي

"تأثير الرش الورقي لنبت بذور بعض المحاصيل على الإثمار في أشجار البرتقال الفالانشيا"

هدى محمد حسن اسماعيل

* قسم بحوث الموالح – معهد بحوث البساتين - مركز البحوث الزراعية بالجيزة

أجريت هذه الدراسة خلال موسمين تجريبيين متتاليين ٢٠١٦/٢٠١٧ وموسم ٢٠١٧/٢٠١٨ على أشجار ممتاثلة من البرتقال الفالانشيا والبالغة ٣٥ عامًا والمطعمومة على أصل النارنج. وتقع هذه الأشجار في مزرعة خاصة بمركز ملوي محافظة المنيا (حوالي ٣٠٠ كم جنوب القاهرة). الأشجار المزروعة على مسافة ٤ × ٦ أمتار. التربة طينية القوام لا يقل ارتفاع مستوى الماء الأرضي عن مترين. وكان نظام الري المتبع هو الري السطحي.

وكان الهدف من هذه الدراسة اختبار تأثير الرش الورقي الفردي لبذور بعض المحاصيل على الإثمار في أشجار البرتقال الفالانشيا. وقد تم استخدام نبت بذور سبعة محاصيل وهي البصل والثوم والشعير والقمح والجرجير والكرفس والحلبة بتركيز 0.1% ثلاث مرات. وتم تكرار كل معاملة ثلاثة مرات بمعدل شجرة لكل مكررة. ومن خلال النتائج التي تم الحصول عليها، تبين أن جميع المستخلصات تعطي تأثيراً معنوياً مقارنة بمعاملة المقارنة. تحت ظروف هذه التجربة والظروف المماثلة فإنه يوصى بالرش الورقي لأشجار البرتقال الفالانشيا والمطعمومة على أصل النارنج بنبث بذور الحلبة او الكرفس بتركيز 0.1% ثلاث مرات (في بداية مرحلة النمو، بعد مرحلة عقد الثمار مباشرة وبعدها بشهر) يكون فعالاً في تحسين صفات النمو الخضري وصبغات التمثيل الضوئي والعناصر الغذائية وخصائص الجودة للثمار وكمية المحصول.

الكلمات الداله: البصل – الثوم – الشعير – القمح – الجرجير – الكرفس – الحلبة- اشجار البرتقال الفالانشيا – كمية المحصول – خصائص الجودة للثمار.