

(2011 / 12/ 12 2011/ 10 /30)

60 30)

(³ 6 4 2)

(¹⁻ .

15

(5/25 5/10 4/25)

(R.C.B.D)

72

4

2011

¹⁻ . 60

¹⁻ . 30

.³ 6

:

Effect of Foliar Spray of Iron Cheleate and Acta Acro Fertilizers on Growth of *Pistacia vera* L. Seedling

Zuhair A. Dawood

Ayad H. Alalaf

Ayad T . Shayal Alalam

Department of Horticulture and Landscape Design

College of Agric. and Forestry

University of Mosul

ABSTRACT

The research included study the effect of foliar spray of three concentrations (0, 30 and 60 mg.l⁻¹) of Iron element as Iron cheleat (Fe – EDDHA) and three concentrations (0, 2, 4 and 6 cm³) of Acta Agro fertilizer on growth and some vegetative characteristics of *pistacia vera* L. seedlings which grown in black poly ethylene bags filled with lomy soil, each treatment was applied three times at 25/4, 10/5, 25/5 /2011. A complete randomized block design (R.C.B.D) with three replicates each consisted of 4 seedlings was used to carry out this research. Data collected at the end of September 2011 indicated that, foliar spray of Iron element at 60 mg.l⁻¹ resulted in a significant increase in both parameters, seedlings high and percentage chlorophyll pigment as compared with control treatment. Mean while spray of Iron element at 30 mg.l⁻¹. led to the most significant increase in seedlings high. At the same time, application of Acta Agro fertilizer at 6 cm³.l⁻¹ gave the highest increase in total number of leaves per plant, single leaf area and leaf area per seedling. None of treatments had a significant effect on the fresh and dry weight and percentage of dry matter of leaves as compared with control.

Keywords: Seedling , *Pistacia vrea*, Iron cheleat, foliar spray, Acta Agro.

Pistacia vera L.

(7-6)

3-2

.(2000)

)

Porphyrin

(2003

.....

(2011)

”

Fe-EDTA Fe-EDDHA
(2006)

(2010) (2000) El-Shazly (1995) Atawia Awad
(2011) (2010) Al-Bamarny

RNA)

(Tize and Zeiger, 2003;

(DNA

%2

(2011)

Whdan

(Havlin *et al.*, 2005

”

(Havlin *et al.*, 2005)

(2002) Hegazi (2003)

¹⁻.P 37,71

(Carl, 2005)

(2003)

(2004) Ben Mimoun (Garcia, 2004)

”

” ”

Mahnaz (Kessel , 2006)

200

(2010)

1-

/

/

2011

(³ 6 4 2)

(¹⁻ . 60 30)

)

(4-3

15

30-25

35

15

10

.(1)

:1

53,7	pH	55,462	(¹⁻ .)
30,97	(¹⁻ .)	55,306	(¹⁻ .)
00,49	(¹⁻ .)	90,230	(¹⁻ .)
00,22	(¹⁻ .)		
00,130	(¹⁻ .)	10,17	(¹⁻ .)
29,31	(¹⁻ .)	456,1	(¹⁻ .)EC

/

/

*

(Fe- Fe-EDDHA

%6

Ethylene diamine di (o-hydroxy phenyl acetic acid))

.(2)

%7,0	
%6,0	
%0,3	
%0,7	
%21,0	
%1,0	K₂O
%0,2	
%7	

: 2

5/3 1

(R.C.B.D)

4

2011

72

(Vernier) ()

()

(2001)

(1984) Patton (²) /

× = : (/²)

SPAD) (Saieed, 1990)

() (Felixloh and Bassuk, 2000) (Chlorophyll meter – 520

10 () (Agha *et al.*, 1994)

° 70 (Oven)

() 72

(2008) %100

(SAS, 1996) SAS

.0,05

1- . 60 (3)
 26,73 " " " "
 1- . 30
 3 6 1,72
 " "

(² 1653,70 ² 38,41 43,00)
 (2010) Al-Bamarny (2004)
 (2011)
 (2010) Hassan (2000) Saeed
 (2011) Abd El-Razek (2011) Mohamed
 ()

:3

(²)	(²)	(/)	()	()	
772,10 b	30,58 b	25,81 c	1,03 b	15,38 b	
1405,30 a	35,13 ab	39,68 ab	1,72 a	22,71 ab	1- . 30
1165,70 ab	36,14 ab	31,66 bc	1,25 b	26,73 a	1- . 60
748,80 b	31,61 b	23,60 c	1,41 ab	18,30 ab	³ 2
1142,70 ab	38,22 a	29,96 bc	1,30 ab	16,23 b	³ 4
1653,70 a	38,41 a	43,00 a	1,25 b	20,34 ab	³ 6

%5

*

.....

(4)

1- . 60

0,87 60,78

³ 6

1- . 30

(4,81 10,99)

Bohorquez .%43,96

(2010)

Al-Bamarny

(2010)

(2001)

(2002)

Hegazi

(2011) Aly Shereen

(2009)

(2011)

:4

(%)	()	()	()		
43,91 a	4,22 a	9,62 a	0,60 ab	51,31 c	
43,96 a	4,21 a	9,57 a	0,58 ab	55,06 bc	1- . 30
39,68 a	4,00 a	10,06 a	0,87 a	60,78 a	1- . 60
40,92 a	3,70 a	8,95 a	0,78 ab	56,56 a - c	³ 2
43,82 a	4,75 a	10,75 a	0,54 ab	59,68 ab	³ 4
43,10 a	4,81 a	10,99 a	0,47 b	59,42 ab	³ 6

%5

*

(2003)
 γ-aminolivulinic acid Glutamate
 Protochlorophyllid Mg- Protoporphyrin 1x methyl ester
 (2011)
 Cytochrome oxidase Peroxidase Catalase
 .(Havlin *et al.*, 2005)

()

(Dong *et al.* , 2002)

Porphyrins

(Havlin *et al.*, 2005)

(IAA)

(Singh ,2003)

.(2003)

(Carl , 2005)

(IAA)

.(2003)

(1989)

.(Mengel and Kirkby, 2001)

.....

3 6 1- . 60

.(2011)

.(2011)

.(2004)

NPK

.(2009)

. *Prunus armeniaca* L.

.(2006)

".(1989)

Prunus armeniaca L .

.(2008)

".(2011)

".(2003)

Pistacia .(2000)
 .9-5 (1)**32** . .*vera* L.
 .(2001)
 . 162 – 155 : 28 – 24 . .
 .(2003)
 KT-30 .(2010)
 (2) **2** . *Vitis vinifera* L.
 .137- 123

- Al-Bamarny, S . F . A . ; Salman, M . A . ; Ibrahim, Z . R . (2010). Effect of some chemical compounds on some characteristics of shoot and fruit of peach (*Prunus persica* L .) cv . Early Coronet . *Meso . J . Agric .* **38** (Supplement 1) , 35 – 44
- Abd El-Razek, E.; Treutter, D.; Saleh , M.M.S.; El-Shammaa, M.; Fouad, A. A. ; Abdel-Hamid, N. (2011). Effect of nitrogen and potassium fertilization on productivity and fruit quality of ‘crimson seedless’ grape. *Agric. Biol. J. N. Am.*, **2**(2), 330-340
- Agha, J. Th ; Daoud, D.A. ; Fadil, N.N. (1994). Effect of N and P application on the growth and leaf P content of sour orange seedlings . *Mesopotamia J. Agric.***26**(1), 19-24.
- Awad, M. M. ; Atawia, R. A. (1995). Effect of foliar sprays with some micronutrients on "Le-Conte" pear trees. 1: Tree growth and leaf mineral concentration. *Annals. Agric. Sci.* **40** (1), 359-367.
- Ben mimoun, M.O. ; Loumi, M. ; Ghrab, K.; latiri, K. ; hellali, R. (2004). "Foliar Potassium Application on Pistachio Tree". IPI regional workshop on Potassium and Fertigation development in West Asia and North Africa; Rabat, Morocco, pp. 24-28 .
- Bohorquez, J.M.; Romera, F.J. ; Alcantara, E. (2001). Effect of Fe³⁺, Zn²⁺ and Mn²⁺ on ferric reducing capacity and regreening process of the peach rootstock nemaguard *prunus persica* (L.). *Batsch. Plant and Soil*, **237**, 157-163.
- Carl, S. (2005). Mid-Continent Agronomist, USGA Green Section. Potassium, Calcium, Magnesium- How they relate to plant growth . Potassium Fact sheet. pp.1-3.
- Dong, S.; Cheng, L. ; Scagel, C.F. ; Fuchigami, L. H. (2002). Nitrogen absorption, translocation and distibution from urea applied in autumn to leaves of young potted apple (*Malus domestica*) trees. *Tree Physiol.* **22**, 1305-1310.
- El-Shazly, S.M.; Abdel Naseer, G. ; Harhash, M. M. (2000). Physiological and biochemical indices in Washington novel orange trees as influenced by iron foliar application. *Alexandria J. Agric. Res.*, **45** (1), 287-306.

- Felixloh , J . G . ; Bassuk, N. (2000). Use of the Minolta SPAD-502 to determine chlorophyll concentration in *Ficus benjamina* L . and *Populus deltoids* Marsh leaf tissue . *Hort. Sci.* **35** (3) , 423 .
- Garcia, E.; Birkett, L. ; Bradshaw, T. ; Benedict, C. ; Eddy, M. (2004). Cold climate, grape production . Grape Newsletter. Univ. Vermont Ext. pp. 1-16.
- Hassan, H.S. ; Saleh, M. ; Abd El-Kader, A. (2010). Growth and leaf mineral content of some fruit species seedlings as affected by a slow release nitrogen fertilizer. *Research J. Agric. and Biol. Sci.* , **6**(4), 417-423
- Havlin, J. L. ; Beaton, J. D. ; Tisdale, S. L. ; Nelson, W. L. (2005) . "Soil Fertility and Fertilizers" .7th edn. Upper Saddle River , New Jersey.
- Hegazi, E.S.; Yehia, T.A.; Abou Taleb, S.A. ; Abou Elwafa, M. (2002). "Effect of Phosphorus on Pomegranate Transplant Under Water Strees". Recent Technol. Agric. Proc . 2nd Congress. Facus. Agric.
- Kessel, C. (2006). Strawberry Diagnostic workshops: Nutrition . Ministry of Agriculture, Food and Rural Affairs.
- Mahnaz, A.; Saeid, E. ; Enayat, T. (2010). Interaction of Paclobutrazol, Boron and Zinc on Vegetative Growth, Yield and Fruit Quality of Strawberry (*Fragaria* × *Ananassa* Duch. Cv. Selva). *J. Biol. Environ. Sci.*, **4**(11), 67-75.
- Mengel, K. ; Kirkby, E. A. (2001). "Principles of plant Nutrition". 5th edn. 15BN 0-7973-7150-x.
- Mohamed, R. A.; Hala, A. ; Abd El – Aziz, M. G. (2011). Effect of phosphorous, zinc and their interaction on vegetative growth characters , yield and fruit quality of Strawberry. *J. of Horti. Sci. and Ornamental plants* , **3**(2), 106-114.
- Patton, L. (1984). Photosynthesis and growth of willow used for short rotation. Ph.D. Thesis submitted to the Univ. of Dublin (Trinity College). (C.F.)
- Saieed, N.T. (1990). Studies of variation in primary productivity growth and morphology in relation to the selective improvement of broad-leaved trees species. Ph.D. Thesis submitted to the National Univ. Irland.
- Saeed, W.T.; V.F. Nouman; E.H. El-Sayed and S.A. El-Deen(2000). Effect of mycorrhizae inoculation and phosphorine fertilization on growth patterns and leaf mineral content in transplant of two almond cultivars. *Zagazig J. Agric. Res.* **27**(2): 397-410.
- Saieed, N. T. (1990). Studies of variation in primary production growth and morphology in relation to the selective improvement of broad leaved tree species. Ph. D. Thesis. National University. Ireland.
- SAS (1996). Statistical Analysis System. SAS Institute Inc. Cary Nc. 27511, USA.
- Shereen, A. ; Aly, A. (2011). Response of Rooted Olive Cuttings to Mineral Fertilization and Foliar sprays with Urea and Gibberline. *Nature and Science*; **9**(9), 76-86.
- Singh, A. (2003). "Fruit Physiology and Production" . 5th edn. Kalyani Publishers. New Delhi – 110002 .
- Taiz, L. ; Zeiger, E. (2003). "Plant Physiology". 3rd edn. Annals of Botany Company. pp.8-70.
- Wahdan, M. T.; Habib, S. E.; Bassal, M. A. ; Qaoud, E. M. (2011). Effect of some chemicals on growth, fruiting, yield and fruit quality of "Succary Abiad" mango cv. *J. American Sci.* ,**7**(2), 651-658.