

( )

\*

( // : // : )

**M26**

**MS**

**M26**

**M26**

**M26**

:

(Storiopoulos,

.2007; Jalili Marandi M., 1998)

.(Flowers, 2004)

/

(Jalili Marandi,

.1998)

.(Jalili Marandi, 1998)

- 
1. Osmotic effect
  2. Specific ion effect

E-mail: rasuljalili@yahoo.com

: \*

:

.2006)

.(Jalili Marandi, 1998)

.(Erturk et al., 2007)

(Jalili Marandi, 1998; Sotiropoulos, 2007; Erturk et al., 2007)

.(Molassiotis et al., 2004; Rejskova et al., 2007)

(Sivritepe & Eris, 1999; Roussos et al., 2005; Kashyap & Sharma, 2006; Sotiropoulos et al., 2006a; Amany & Enas, 2007)

(Sivritepe & Eris, 1999; Storiopoulos, 2007)

.(Flowers, 2004)

(Safwan et al., 2003; Amany & Enas, 2007; Storiopoulos, 2007)

(Jalili Marandi, 1998; Donfrio & Morini, 2002)

(Ochatt & Power, 1989; Shibli & Al-Juboory, 2002)

(Safwan et al., 2003)

.(Jalili Marandi, 1998)

.(Flowers, 2004)

.(Hagnia, 1989)

.(Flowers, 2004)

$M_{26}$

(Donfrio & Morini, 2002)

$M_{26}$

$M_9$   $M_{16}$

(Djibril, 2005; Molassiotis et al.,

.(Naseri et al., 2006)

- 
1. Avoidance
  2. Tolerance
  3. Resistance

...

:

( )

(Jalili Marandi, 2009)

.(Ghasemi, 2001)

.(Erturk et al., 2007)

M<sub>26</sub>

(1992) Irigoyen et al.

MS

(1979) Paquin & Lechasseur ( × )

(1992) Irigoyen et al.

/ pH

(Jalili Marandi, 1998; Storiopoulos et al., 2006)

MSTATC

/

( )

.(Storiopoulos, 2007)

)

(

±

( )

( )

( )

.(Jalili Marandi, 1998)

( )

M<sub>26</sub>

M<sub>26</sub>

.( )

M<sub>26</sub>

.( )

M<sub>26</sub>

.( )

( )

.( )

( )

M<sub>26</sub>

---

---

/ **	/ **	/ **	/ **	/ **	/ **
/ **	/ **	/ **	/ **	/ **	/ **
/ ns	/ *	/ **	/ **	/ **	/ **
/	/	/	/	/	/
/	/	/	/	/	/
(%)					
ns ** *					

M<sub>26</sub>

( ) ( )

---

---

/ **	/ **	/ **	/ **	/ **	/ **
/ **	/ **	/ **	/ **	/ **	/ **
/ **	/ **	/ **	/ **	/ **	/ **
/	/	/	/	/	/
/	/	/	/	/	/
(%)					
ns ** *					

...

:

\*

( )	( )	( )	( )	( )	( )
/ a	/ a	/ a	/ a	/ a	/ a
/ b	/ b	/ b	/ b	/ b	/ b

M26

.\*

\* M<sub>26</sub>

( )	( )	( )	( )	( )	( )
/ a	/ a	/ b	/ b	/ a	/ a
/ b	/ b	/ a	/ a	/ b	/ b

M26

.\*

\*

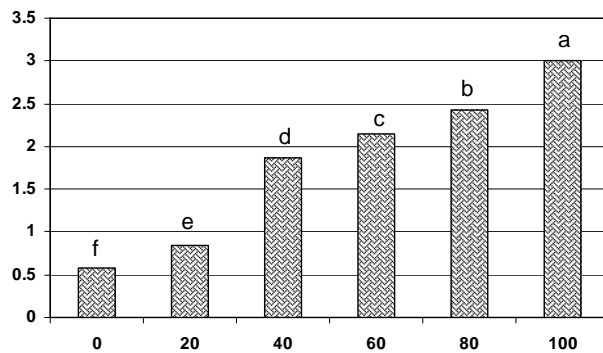
( )	( )	( )	( )	( )	( )	( )
/ a	/ a	/ a	/ a	/ a	/ a	/ a
/ a	/ b	/ b	/ b	/ a	/ b	/ b
/ b	/ b	/ c	/ c	/ b	/ c	/ c
/ b	/ c	/ c	/ d	/ c	/ d	/ d
/ b	/ c	/ d	/ e	/ c	/ e	/ e
/ c	/ d	/ e	/ f	/ d	/ f	/ f

.\*

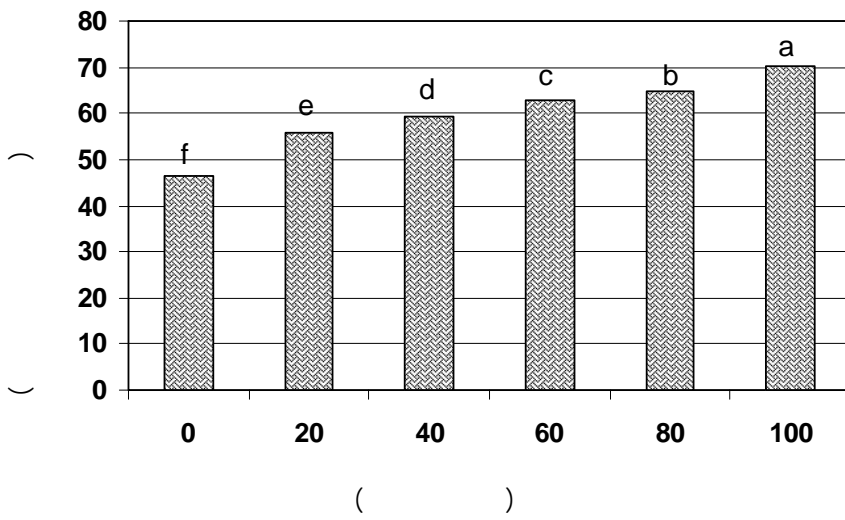
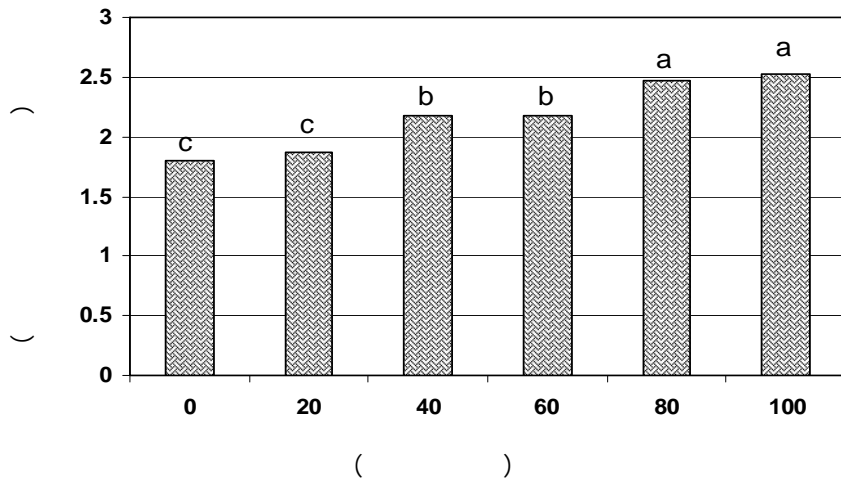
\*

( )
/ f
/ e
/ d
/ c
/ b
/ a

.\*



( )



(Jalili Marandi, 1998; Erturk et al., 2007)

(Jalili Marandi,

.1998)

(Roussos et al., 2005;

.Storiopoulos, 2007)

...

:

(Hagnia, 1989)  
(1996) Olmos & Hellin

(Olmos & Hellin, 1996; Zhu,  
2001; Apse & Blumwald, 2002; Storiopoulos et  
al., 2006)

M<sub>26</sub>

(Djibril, 2005; Erturk et al., 2007)

(Storiopoulos, 2007)

(Ghasemi, 2001; Heidari  
Sharif Abad, 2001; Kashyap & Sharma, 2006)

(Storiopoulos, 2007)

(Storiopoulos, 2007)

## REFERENCES

1. Amany, M. H. & Enas, A. M. A. (2007). Effect of different sea water concentration on growth parameters of pineapple in vitro and in vivo. *Journal of Applied Sciences Research*, 3(8), 713-722.
2. Apse, M. P. & Blumwald, E. (2002). Engineering salt tolerance in plants. *Current Opinion. Biotechnology*, 13, 146-150.
3. Djibril, S. (2005). Growth and development of date palm seedlings under drought and salinity stresses. *African Journal of Biotechnology*, 4(9), 968-972.
4. Donfrio, C. & Morini, S. (2002). Increasing NaCl and CaCl<sub>2</sub> concentration in the growth medium of Quince leaves. *In Vitro Cell Development. Biology of plant*, 38, 360-372.
5. Erturk, U., Sivritepe, N., Yerlikaya, C., Bor, M., Ozdemir, F. & Turkan, I. (2007). Response of the cherry rootstock to salinity in vitro. *Biologia Plantarum*, 51(3), 597-600.
6. Flowers, T. J. (2004). Improving crop salt tolerance. *Journal of Experimental Botany*, 55(396), 307-319.
7. Ghasemi, A. (2001). *Study on the physiological characteristics and dwarfing role of two genotype local apple named Azayesh and Gamialmasi on commercial cultivars of apples*. (Final report). Seed breeding and plant research institute of Isfahan. P.34. (In Farsi).
8. Hagnia, M. (1989). *A guide of the tolerance plant tolerance to salinity*. Jihad-e-Daneshgahi. Mashhad. p.31. (In Farsi).
9. Heidari sharif Abad, H. (2001). *Plant and salinity Research Institute of Forests and Rangelands*. Tahran. (In Farsi).
10. Irigoyen, J. J., Emerich, D. W. & Sacher-Diaz, M. (1992). Water stress induced changes in concentration of proline and total soluble sugar in nodulated alfalfa (*Medicago sativa*) plants. *Physiologia Plantarum*, 84, 55-60.
11. Jalili Marandi, R. (1998). Study on the tolerance of 10 grape cultivars at different concentration. *Iranian Journal of Agricultural Sciences*, 29(3), 525-533. (In Farsi).
12. Jalili Marandi, R. (2009). *Growing of Temperate Zone fruits*. Jihad-e-Daneshgahi Urmia. (In Farsi).
13. Kashyap, S. & S. Sharma. (2006). In vitro selection of salt tolerant *Morus alba* and its field performance with bioinoculants. *HortScience*, 33(2), 77-86.
14. Molassiotis, A., Sotriopoulos, T., Tanou, G., Diamantidis, G. & Therios, I. (2006). Boron-induced oxidative damage and antioxidant and nucleolytic responses in shoot tips culture of the apple rootstock EM<sub>9</sub>. *Environmental and Experimental Botany*, 56(1), 54-62.
15. Molassiotis, A. N., Sotriopoulos, T., Tanou, G., Kofidis, G. & Diamantidis, G. (2006). Antioxidant and anatomical responses in shoot culture of the apple rootstock MM106 with NaCl, mannitol or sorbitol. *Biologia Plantarum*, 50(1), 61-68.
16. Naseri, L., Jalili Marandi Marandi, R. & Ghadimzadeh, M. (2006). *Study of botanical, physiological and phonological characteristics of Gami apple rootstock*. (Final report of research project. 10-1533). Urmia University. P.48. (In Farsi).
17. Ochatt, S. J. & Power, J. B. (1989). Cell wall synthesis and salt (saline) sensitivity in cultures colt cherry (*prunus avium X pseudo cerasus*) protoplasm. *Plant Cell Report*, 8, 365-367.
18. Olmos, E. & Hellin, E. (1996). Mechanisms of salt tolerance in cell line of *pisium sativum*. Biochemical and physiological aspects. *Plant Science*, 190, 37-45.
19. Paquin, R. & Lechasseur, P. (1979). Observation sur une methode de dosage de la praline libre dans les extraits de plantes. *Canadian Journal of Botany*, 75, 1851-1854.
20. Rejskova, A., Patkova, L., Stodulkova, E. & Lipavska, H. (2007). The effect of abiotic stresses on carbohydrate status of olive shoots (*Olea Europaea* L.) under in vitro Condition. *Journal of Plant physiology*, 165(2), 174-184.
21. Roussos, P. A., Tsanitili, E. & Pontikis, C. A. (2005). Responses of Jojoba explants to different salinity levels during the proliferation stage in vitro. *Industrial Crops and Products*, 23, 65-72.
22. Safwan, M. S., Rida, A., Shibli, A. & Mohammed, M. M. (2003). Influence of sodium chloride, salt stress on growth and nutrient acquisition of sour orange In Vitro. *Journal of Plant Nutrition*, 26(5), 985-996.
23. Shibli, R. A. & Al-Juboory, K. (2002). Comparative responses of Nabali olive Microshoot, Callus, and suspension cell cultures to salinity and water deficit. *Journal of Plant Nutrition*, 25(1), 61-74.
24. Sivritepe, N. & Eris, A. (1999). Determination of salt tolerance in Some grovine cultivars under in vitro condition. *Turkish. Journal of Biology*, 23, 473-485.
25. Sotriopoulos, T. E., Dimassi, K. N., Tsirkoglou, V. & Therios, I. N. (2006a). Responses of two prunus rootstocks to KCl induced salinity in vitro. *Biologia Plantarum*, 50 (3), 477-480.
26. Sotriopoulos, T. E. (2007). Effect of NaCl and CaCl<sub>2</sub> on growth and contents of minerals, chlorophyll, proline and sugar in the apple rootstock M4 cultured in vitro. *Biologia Plantarum*, 51(1), 177-180.
27. Zhu, J. K. (2001). Plant salt tolerance. *TRENDS. In Plant Science*, 6(2), 66-71.