

()

(*Pyrus serotina* Rehd.)

*

(/ / : / / :)

(*Pyrus serotina* Rehd.)

'KS8' 'KS7' 'KS6'

'KS14' 'KS13' 'KS12' 'KS11' 'KS10' 'KS9'

() " " (*Pyrus communis* L.)

%

%

'KS11' 'KS7' "

" "

" "

'KS6' 'KS12' 'KS9'

" "

'KS7' "

(Arzani,
2000a, 2000b; 2000c; 2001; 2003; 2004; 2005 &
.2007)

(*Pyrus serotina*

Rehd.)

(Arzani, 2007)
(Koushesh-Saba et
(Kashefi et al., 2008) al., 2007)

(*Pyrus communis* L.)

‘KS₈’
‘KS₁₃’ ‘KS₉’

‘Gold Nijisseiki’
‘Kousui’ ‘Housui’

(Arzani et al., 2008,
.Khoshghalb et al., 2007)

(Arzani, 2002a &
2002b; Bell et al., 1996 ; Veltman et al., 2003)

(Rossi et al., 1992)

"

"

‘KS₁₄’, ‘KS₁₃’,
‘KS₁₂’, ‘KS₁₁’, ‘KS₁₀’, ‘KS₉’, ‘KS₈’, ‘KS₇’, ‘KS₆’

(*Pyrus communis* L.)

(*Cydonia oblonga* L.)

(Arzani, 2007)

‘KS’₈ ‘KS’₇ ‘KS’₆
‘KS’₁₄ ‘KS’₁₃ ‘KS’₁₂ ‘KS’₁₁ ‘KS’₁₀ ‘KS’₉
(Arzani, 2000a, 2000b & 2007)

(Arzani, 2000a,
.2000b; 2002a & 2002b)

...

(

(Emami, 1996)

() " "

(Jenway, U. K)

(Shimadzu, cm cm

Japan)

SAS MINITAB MSTATC

(/ /)

T-

test

:

" "

(Khosshghalb, 2001)

(')

'KS₉' / cm

() / cm

/ cm 'KS'₁₂

/ cm 'KS'₁₄

() / cm

() " "

'Guot' 'Xue- Hau-Li'

(Stanica, 2002)

$$= \frac{W_2 - W_1}{T_2 - T_1}$$

T₂ **T₁** **W₂** **W₁**

(AMS)

DELTA-T Mk₂

)

(Aung & Matta, 1992)

P. calleryana

'Seigyoku'

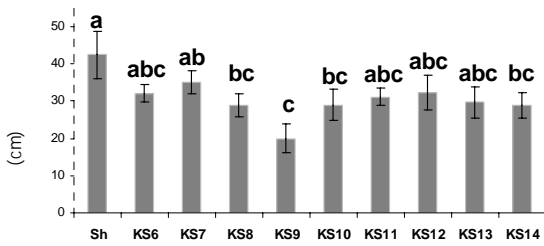
/ cm

'Yakami'

/ cm

.(Wertheim, 2002)

.(Arzani, 1996)



(Arzani, 2002a, 2002b, 2004 & 2005)

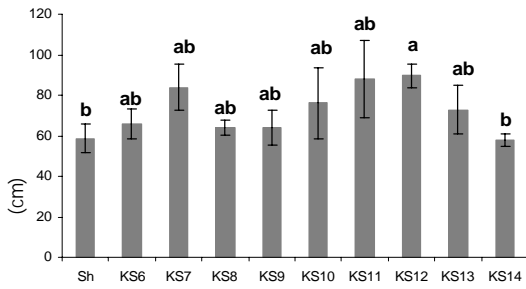
.(Wertheim, 2002)

(" " Sh)

/

/ 'KS₉'

.()



'KS₇'

" "

/ cm

() / cm

'KS₇'

.()

/ cm

/ cm

(" " Sh)

	pH	(EC/meter)	(%)	(%)	(%)	(%)
(cm)	/	/	/	/	/	/
(cm)	/	/	/	/	/	/
	(%)	(%)	(%)	(ppm)	(ppm)	(ppm)
(cm)	/	/	/	/	/	/
(cm)	/	/	/	/	/	/

... :

% / mm 'KS₁₁' :

/ mm 'KS₁₄'

'OHF'

(Larsen & Higgins, 1986)

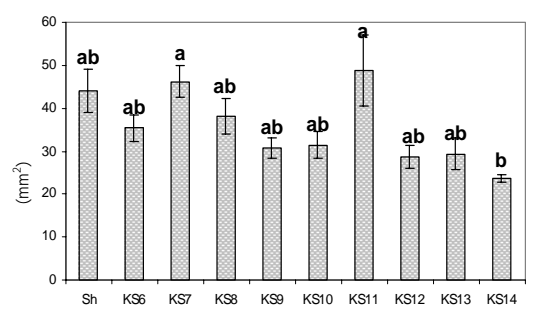
% 'Tsu-Li' % ()

'20th Century'

(Larsen & Higgins, .1997)

(Aung & Matta, 1992) " "

(Westwood et 'OHF' (Loreti, 2000) al., 1976)



(" " Sh)

%

×

% /

(Hartmann et al., 1990)

'KS'₆

AB

B

()	'KS' ₆	'KS' ₇	'KS' ₈	'KS' ₉	'KS' ₁₀	'KS' ₁₁	'KS' ₁₂	'KS' ₁₃	'KS' ₁₄
	/ a	/ ab	/ abc	abc	/ c	/ abc	/ abc	/ bc	/ abc
(cm ²)	/ c	abc	a	ab	bc	abc	bc	abc	bc
	/ a	/ a	a	/ a	/ a	/ a	/ a	/ a	/ a
	a	a	a	a	a	a	a	a	a

%

(Malakouti & % /
 .Tehrani, 2000)

'KS₁₄' 'KS₁₂' 'KS₁₁' 'KS₉'
 " "

(Shahabi & Malakouti, " "
 2000)

/ /

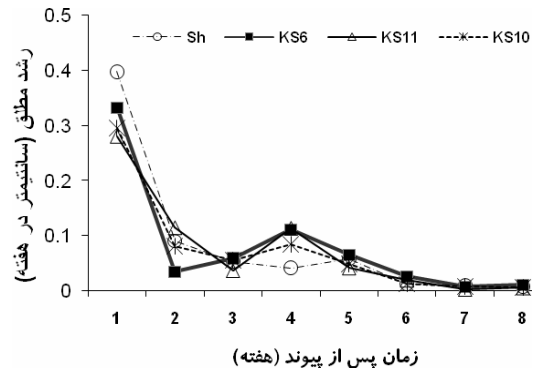
(Hunt, 1978)

" "
 'KS₉' / cm

% / 'KS₁₂' :
 % / 'KS₆' 'KS₁₀'
 % /
 ()

() mg kg⁻¹
 / / %
 " "

/
 .(Shahabi & Malakouti, 2000) /



(" " Sh)

% / 'KS₆' :
 % / " "
 ()

%
 () mg kg⁻¹

.(Malakouti & Tehrani, 2000)

'KS₉' :
 " " % /
 % / 'KS₁₁' 'KS₁₂'
 % /
 ()
 % / /

...

(Shahabi & Malakouti, / / .2000)

“ ”

“ ”

‘KS₁₀’ :
% /
()

() mg kg⁻¹
% / /

“ ”

‘KS₁₁’ :
% /

‘KS₉’ :
% /

‘KS₇’ :
% /

(Malakouti & Tehrani, % / “ ” .2000)

(Shahabi & Malakouti, 2000)

() mg kg⁻¹
(Malakouti & Tehrani, 2000)

/ /

()	“ ”	“ ”	‘KS’ ₆	‘KS’ ₇	‘KS’ ₈	‘KS’ ₉	‘KS’ ₁₀	‘KS’ ₁₁	‘KS’ ₁₂	‘KS’ ₁₃	‘KS’ ₁₄
(%)	/ d	/ b	bcd	/ cd	/ a	/ b	/ b	/ b	/ b	bcd	/ b
(%)	/ e	/ b	b	/ cd	/ b	/ d	/ a	/ a	/ a	/ cd	b
(%)	/ ab	/ bc	/ bc	/ bc	/ bc	/ c	/ ab	/ a	/ a	/ bc	/ bc
(%)	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a
(%)	/ h	a	/ e	/ c	/ d	/ e	/ f	/ b	/ b	/ g	/ d
(%)	/ a	a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a
(%)	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a
(%)	/ g	/ de	/ f	/ e	/ c	/ b	/ a	/ a	/ de	/ f	/ d
(%)	/ f	/ cd	/ de	/ ab	/ ab	/ a	/ a	/ a	/ ab	/ ef	/ a
(%)	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a
(ppm)	/ a	a	/ b	b	b	b	b	b	/ b	/ b	ab
(ppm)	a	a	a	a	a	a	a	a	a	a	a
(ppm)	a	bc	c	a	a	bc	bc	ab	ab	ab	ab
(ppm)	a	b	c	a	a	bc	b	b	b	ab	b

*

%

'KS₁₄'

'KS₁₁'

.(Childers et al., 1995)

ppm

'KS₁₂'

/ ppm

/ ppm

'KS₁₂'

.()

'KS₉'

'KS₆'

'KS₁₂'

" "

'KS₇' " "

" "

.(Shahabi & Malakouti, 2000)

() mg kg⁻¹

ppm

.(Malakouti & Tehrani, 2000)

(*Pyrus serotina* Rehd.)

() " "

(%)

%

()

)

'KS₉'

'KS₁₂'

(

'KS₉'

'KS₁₃'

'KS₇'

REFERENCES

1. Arzani K. (1996). The role of root, ABA and CK interactions on growth control of fruit trees grown under dry conditions. In: *Proceedings of the first Iranian Horticultural Science Congress*. 14-17 September, 1996, Karaj, Iran (P. 22).
2. Arzani, K. (2000a). *Fruitfull fields*. (translated book). Published by Agricultural Publisher. Karaj. Iran. 145p (In Farsi).
3. Arzani, K. (2000b). Introduction and study on the propagation and quarantine aspects of some Asian pear (*Pyrus serotina*) cultivars in Iran. In: *Proceedings of the Second Iranian Horticultural Sciences Congress*, 19 - 21 September. Karaj, Iran (Page 43 - 44).
4. Arzani, K. (2000c). Study on the adaptation of some Asian Pear cultivars (*Pyrus serotina*) in Iran. In: *Proceedings of the 8th international Symposium on Pear*. 4-9 September, Bologna, Italy (Abstract, p.79).
5. Arzani, K. (2001). The position of pear breeding and culture in Iran: Introduction of some Asian Pear (*Pyrus serotina* Rehd.) cultivars. In: *Proceedings of the International Symposium on Asian Pear*. 25-29 August, Kuaryoshi, Tottori, Japan (Abstract, p. 31).
6. Arzani, K. (2002a). Introduction of some Asian pear cultivars (*Pyrus pyrifolia*) to Iran. *Acta Horticulturae*, 596, 278-290.
7. Arzani, K. (2002b). The position of pear breeding and culture in Iran: Introduction of some Asian Pear (*Pyrus serotina* Rehd.) cultivars. *Acta Horticulturae*, 578, 167-173.
8. Arzani, K. (2003). Progress in National Asian pear project (*Pyrus serotina* Rhed) in Iran. In: *Proceedings of the Third Iranian Horticultural Sciences Congress*. 1 - 2 September. Karaj, Iran.
9. Arzani, K. (2004). The effect of European pear (*Pyrus communis* L.) and quince (*Cydonia oblonga* L.) seedling rootstocks on growth and performance of some Asian pear (*Pyrus serotina* Rhed) cultivars. *Acta Horticulturae*, 658, 93-97.
10. Arzani, K. (2005). Progress in National Asian pear project: Study on the adaptation of some Asian pear (*Pyrus serotina* Rhed) cultivars under Iran environmental conditions. *Acta Horticulturae*, 671, 209-212.
11. Arzani, K. (2007). *Introduction and study on the propagation and quarantine aspects of some Asian pear (Pyrus serotina) cultivars in Iran, Phase 1: Germplasm introduction and propagation*. Final National Project Report of Grant No. NRCI 4225, supported by National Research Council of Islamic Republic of Iran and Tarbiat Modares University (TMU). 141p (In Farsi).
12. Arzani, K., Khoshghalb, H., Malakouti, M. J. & Barzegar, M. (2008). Postharvest physicochemical changes and properties of Asian (*Pyrus serotina* Rehd.) and European (*Pyrus communis* L.) pear cultivars. *Hort Environ Biotechnol*, 49 (4), 1-9.
13. Aung, H. & Matta, F. B. (1992). Grafting success and early performance of Asian pear on *Pyrus calleryana* rootstock. *Fruit Varieties Journal*, 17, 11-18.
14. Bell, R. L., Quamme, H. A., Layne, R. E. C. & Skirvin, R. M. (1996). *In vitro* micropropagation of pear (*Pyrus communis* L.). *Fiziologia i Biokhimiya Kulturnykh Restenii*, 26, 84-90.
15. Childers, N. F., Morris, J. R. & Sibbett, G. S. (1995). *Modern Fruit Science*. University of Florida, USA. 632p.
16. Emami, A. (1996). *Plant analysis manual*. 1st ed. Published by Agricultural Research, Education and Extension Organization (AREEO), Ministry of Agriculture, Islamic Republic of Iran, Tehran, Iran. 128p (In Farsi).
17. Hartman, H. T., Kester, D. E. & Davies, F. T. (1990). *Plant Propagation: Principles and Practices*. (5th ed). Perntice – Hall International, Inc., Newjersey, USA.
18. Hunt, R. (1978). *Plant growth analysis*. The Camelot Press Ltd, Southampton, UK. pp. 67.
19. Inoue, K. (2001). Pear industry in Japan. In: *Proceedings of the International Symposium on Asian pear*. 25-29 August, Kuaryoshi, Tottori, Japan (Abstract, p.12).
20. Kashefi, B., Arzani, K. & Nejatian, M. A. (2008). Seasonal changes in fruit growth and development of four Asian pear (*Pyrus serotina* Rehd.) genotypes under Tehran environmental conditions. *Journal of Agricultural Science*, 38(4),623-630 (In Farsi).
21. Khoshghalb, H. (2001). *Study on early growth, performance and survival of some Asian pear (Pyrus serotina Rhed) cultivars on European pear (Pyrus communis L.) seedling rootstocks under Tehran environmental conditions*. M. Sc. Thesis, Department of Horticultural Science, Faculty of Agriculture, Tarbiat Modares University (TMU), Tehran, Iran. 156p (In Farsi).
22. Khoshghalb, H., Arzani, K., Malakouti, M. J. & Barzegar, M. (2007). Quality of Asian (Japanese) pear cultivars (*Pyrus serotina* Rehd.) fruit in relation to ripening time, CaCl₂, Zn and B pre-harvest sprays and time of harvest and storage conditions. *10th International Symposium on Pear, Portugal*. (Abstract, p.54).
23. Koushesh-Saba, M., Arzani, K. & Jalali-Javaran, M. (2007). Study on flowering, pollination, self and cross incompatibility of some Asian pear (*Pyrus serotina* Rehd.) cultivars. *Journal of Agricultural Science*, 37(5), 755-763. (In Farsi).

24. Larsen, F. E. & Higgins, S. S. (1986). Scion/Rootstock influence on tree survival of Asian pear in the first growing season. *Fruit Varieties Journal*, 40, 89-90.
25. Larsen, F. E. & Higgins, S. S. (1997). Scion/rootstock interaction determines tree size of ten OldHome × Farmingdale rootstocks. *Fruit Varieties Journal*, 51, 48-52.
26. Loreti, F., Massai, R., Fei, C. & Cinelli, F. (2000). Performance of conference cultivar several quince and pear rootstocks. In: Proceedings of the 8th Symposium on Pear. 4-9 September, Bologna, Italy (Abstract, p.89).
27. Malakouti, M. J. & Tehrani, M. (2000). *The role of micronutrients application on the productivity and yield quality of agricultural crops in the minor crops with the higher effects*. Published by Tarbiat Modares University Press. Tehran Iran. 292p (In Farsi).
28. Rossi, V., De Paoli, G. & Dal Pozzo, P. (1992). Propagation of *Pyrus calleryana* sel. D6 by *in vitro* culture. *Acta Horticulturae*, 300, 145-148.
29. Shahabi, A. & Malakouti, M. J. (2000). The effectiveness of deep fertilizer placement and use of different nutrient combinations in relieving nutritional problems in Semirrom apple orchards. *Journal of Soil and Plant*, 12 (8), 30-38 (In Farsi).
30. Stanica, F. (2002). Behaviour of four over grafted Chinese pear varieties (*Pyrus serotina*) in Bucurest area. *Acta Horticulturae*, 596, 405-409.
31. Veltman, R., Lenthéric, L., Van der Plas, H. & Peppelenbos, W. (2003). Internal browning in pear fruit (*Pyrus communis* L. cv Conference) may be a result of a limited availability of energy and antioxidants. *Postharvest Biology and Technology*, 28, 295-302.
32. Wertheim, S. J. (2002). Rootstocks for European pear: a Review. *Acta Horticulturae*, 596, 299-309.
33. Westwood, M. N., Lombard, P. B. & Bjorstand, H. O. (1976). Performance of Bartlet pear on standard and OldHome × Farmingdale clonal rootstocks. *Journal of the American Society for Horticultural Science*, 101, 161-164.