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Waters

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Table 1. Climatic characteristics (1997-2007) of studied regions.

Climatic factors	Regions				
	Kiar	Gerd Bishe	Meymand	Yasuj	Semirom
Elevation (m)	2280	1731	1410	1831	2150
Longitude	51-03	50-49	51-21	51-41	51-27
Latitude	32-46	31-31	31-17	30-50	31-55
Average of annual temperature (°C)	11.51	15	16.61	14.3	13.2
Average of annual relative humidity (%)	46.13	44.16	44.1	40.1	40.5
Average of annual precipitation (mm)	488.97	624	697.5	782	305.88

Table 2. Soil characteristics of studied regions.

	Kiar	Gerd Bishe	Meymand	Yasuj	Semirom
Soil texture	Loam clay	Clay-loam clay	Loam clay	Clay-loam clay	Loam clay
pH	7.85	7.74	7.75	7.71	7.72
OM (%)	0.61	0.43	1.02	1.93	2.8
P (mg kg ⁻¹)	13.1	4.4	7.9	15.2	19.9
K (mg kg ⁻¹)	245	116	166	285	495
Ca (mg kg ⁻¹)	5.5	4.1	4.5	5.3	4.3
Mg (mg kg ⁻¹)	2.5	3.7	3.5	4.3	3.2
Fe (mg kg ⁻¹)	3.81	3.12	5.91	6.2	7.91
Cu (mg kg ⁻¹)	0.63	0.61	0.86	0.98	1.12
Zn (mg kg ⁻¹)	0.82	0.86	0.98	1.2	1.8
Mn (mg kg ⁻¹)	4.28	5.4	5.1	6.25	7.91
B (mg kg ⁻¹)	1.63	1.54	1.68	1.98	2.7

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Table 3. Comparison between the means (± Se) of morphological characteristics of dog rose (*Rosa canina* L.) fruits.

Regions	Morphological characteristics				
	Fruit length (mm)	Fruit weight (g)	Fruit flesh (%)	Fruit flesh thickness (mm)	/ Flesh/seed (%)
Kiar	21.70a ± 0.29 [†]	2.41a ± 0.08	65.2b ± 0.65	1.77ab ± 0.1	1.87c ± 0.05
Meymand	20.38ab ± 0.24	2.05ab ± 0.04	68.1ab ± 1.26	1.88ab ± 0.06	2.14bc ± 0.12
Semirom	18.17b ± 0.60	2.31a ± 0.11	70.2a ± 0.41	2.01a ± 0.05	2.36ab ± 0.05
Gerd Bishe	21.86a ± 0.27	2.51ab ± 0.07	72.33a ± 0.38	2.05a ± 0.04	2.62a ± 0.05
Yasuj	19.72ab ± 0.30	1.92b ± 0.06	65.3b ± 0.47	1.54b ± 0.08	1.88c ± 0.04

[†] In each column, means followed with the same letters are not significantly different at 5% level of probability.

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Table 4. Comparison between the means (\pm Se) of vitamin C of dog rose (*Rosa canina* L.) fruits

Kiar	Meymand	Semirom	Gerd Bishe	Yasuj
721.64c \pm 0.49 [†]	818.48bc \pm 1.8	854.5b \pm 37.7	1384.4a \pm 32.4	747.48c \pm 5.28

[†] In each row means followed with the same letters are not significantly different at 5% level of probability.

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(± Se)

Table 5. Comparison between the means (± Se) of fatty acids of dog rose (*Rosa canina* L.) fruits.

Regions	Fatty acid				
	Palmitic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid
Kiar	6.68b ± 0.15 [†]	6.51b ± 0.25	26.35a ± 0.48	48.73a ± 0.15	11.70a ± 0.32
Meymand	8.82a ± 0.16	8.48a ± 0.22	21b ± 0.86	49.49a ± 0.34	11.88a ± 0.22
Semirom	5.25c ± 0.26	3.89c ± 0.03	28.38a ± 0.36	49.51a ± 0.26	12.57a ± 0.73
Gerd Bishe	6.94b ± 0.08	6.21b ± 0.38	24.69ab ± 1.02	48.73a ± 0.95	12.01a ± 0.72
Yasuj	6.39b ± 0.10	4.56c ± 0.20	27.21a ± 0.54	48.75a ± 0.20	13.13a ± 0.60

[†] In each column, means followed with the same letters are not significantly different at 5% level of probability.

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REFERENCES

3. Assuncao, R.B. and A.Z. Merchadante, 2003. Carotenoids and ascorbic acid from cashew apple (*Anacardium occidentale* L.): variety and geographic effects. Food Chem. 81:495–502.

4. AOAC. 1989. Official methods and recommended practices of the American Oil Chemist Society. Champaign: American Oil Chemist Society, Method Ce-66.
5. Belgin, C., G. Bilal, and K. Mostafa, 2007. Oil content and fatty acid composition on some safflower (*Carthamus tinctorius* L.) varieties sown in spring and winter. Int. J. Natu. Engin. Sci. 1:11-15.
6. Cinar, I. and S. Colakoglu, 2005. Potential health benefits of rose hip products. Acta Hort. 690:253-257.
7. Dany, X. and R. Scarth. 1998. Temperature effects on fatty acid composition development of low-linolenic oil seed rape (*Brassica napus* L.). J. Agr. Food Chem. 57:759-766
8. Daood, H.G., P.A. Biacs, M.A. Dakar, and F. Hajdu. 1994. Ion-pair chromatography and photodiode-array detection of vitamin C and organic acids. J. Chromatogr. Sci. 32:481-487.
9. Delvin, S. 2003. Vitamins, Minerals and Hormones. IVY PUBLISHING HOUSE. New Delhi, India.
10. Demir, F. and M. Ozcan. 2001. Chemical and technological properties of rose (*Rosa canina* L.) fruits grown wild in Turkey. J. Food. Engin. 47:333-336.
11. Ercisli, S. 2007. Chemical composition of fruits in some rose (*Rosa* spp.) species. Food Chem. 104:1379-1384.
12. Ercisli, S. and A. Esitken. 2004. Fruit characteristics of native rose hip (*Rosa* spp.) selection from the Erzurum provinces of Turkey. New Zealand J. Crop Hort. Sci. 32:51-53.
13. Ercisli, S. and M. Guleryuz. 2005. Rose hip utilization in Turkey. Acta Hort. 690:77-81.
14. Hornik, L. 1986. Effect of environmental factors on grow yield and on active principles of some spice plants. Acta Hort. 168:169-176.
15. Jacoba, R.A. 1999. Vitamin C. In: Modern Nutrition in Health and Disease, 9th. Williams & Wilkins, Baltimore, U.S.A. 467-473.
16. Jose, R.L., D. Ursicino, and D.Q. Rafael. 1990. Definite influence of location and climatic conditions on the fatty acid composition of sunflower seed oil. J. Agr. Food Chem. 67:618-623.

17. Joublan, J.P. and D. Rios. 2005. Rose culture and industry in Chile. *Acta Hort.* 690:65-71.
18. Mahdavi, D.L., S.S. Deshpandes and D.K. Salunkhe. 1995. *Food Antioxidants*. 1st ed. Marcel Dekker, Inc. New York, U.S.A.
19. Metcalf, L.C. Shmitz, A.A. and J.R. Pelka. 1966. Rapid preparation of methyl esters from lipid for gas chromatography analysis. *Anal. Chem.* 38:514-515.
20. Ogiri, Y., F. Sun, S. Hayami, A. Fujimura, K. Yamamoto, M. Yaita and S. Kojo. 2002. Very low vitamin C activity of orally administered 1-dehydroascorbic acid. *J. Agr. Food Chem.* 50:227–229.
21. Pankov, Y.A. and V.P. Gladchenko. 1976. Content and accumulation of ascorbic acid in *Rosa* species growing in Soviet Far East. *Hort. Abst.* 44:3170.
22. Pokorny, J., N. Yanishlieva and M. Gordon. 2001. *Antioxidant in Food*. 1st ed. CRC Press, New York, U.S.A. 278 p.
23. Rathor, D.S. 1984. A note on ascorbic acid content of rose hips. *Prog. Hort.* 16:159-160.
24. Rebetzk, G.J. Plantalone, W.R., Burton, J.W., Carter, Jr. and R.F. Wilson. 2001. Genetic background and environment influence palmitate content of soybean seed oil. *Crop Sci.* 14:1731-1736.
25. Shamsizade, L. and E. Novruzov. 2005. Distribution, fruit properties and productivity of *Rosa* species in Great Caucasus, Azerbaijan. *Acta Hort.* 690:101-105.
26. Tang, X. and P.M.A. Tigerstedt. 2001. Variation of physical and chemical characters within an elite sea buckthorn (*Hippophae rhamnoides* L.) breeding population. *HortScience* 88:203-214.
27. Uggla, M., K.E. Gustavsson, M.E. Olsson and H. Nybom. 2005. Changes in colour and sugar content in rose hips (*Rosa dumalis* L. and *Rosa rubiginosa* L.) during ripening. *J. Hort. Sci. Biotech.* 80:204-208.
28. Uggla, M., X. Goa and G. Werlemark. 2003. Variation among and within dog rose taxa (*Rosa canina*) in fruit weight, percentage of fruit flesh and dry matter, and vitamin C content. *Acta Agr. Scand, B–S P.* 53:147-155.

29. Voahanyinirina, R. and R. Elie, 2007. Effects of planting location and storage time on lipids and fatty acids contents of some Madagascarian rice varieties. *African J. Agr. Res.* 2:349-355.

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