

Table 1. Analysis of variance for fatty acid or oil content in the fennel landraces

(%) Oil content	DF	SOV
**27.54	49	Genotype
**8.34	2	Block
1.581	98	Error 1
14.66	-	Mean
8.7	-	(%) CV

Table 2. The results of GCMS for fatty acid (% of total fatty acids) in the 12 selected fennel landrace

Composition		Retention time (min)	Late maturity			Medium maturity				Early maturity				
			Sari	Qazvin	Chahestan	Meshkin shahr	Khash	Alamot	Fozveh	Sanandaj	Fasa	Rafsanjan	Sabzevar	Arak
Caprylic acid	C8:0	3.95	0.204	0.321	0.515	0.247	0.134	0.231	0.171	0.122	0.176	0.502	0.172	0.296
Capric acid	C10:0	4.63	0.133	0.066	0.254	0.278	0.083	0.049	0.077	0.162	0.104	0.166	0.116	0.105
Lauric acid	C12:0	5.46	0.246	0.263	0.579	0.294	0.277	0.308	0.281	0.151	0.337	0.554	0.416	0.348
Myristic acid	C14:0	6.7	0.568	0.729	1.069	0.471	0.359	0.624	0.609	0.577	0.613	1.069	1.019	0.636
Palmitic acid	C16:0	8.6	0.303	2.806	3.914	2.58	3.203	2.774	2.856	2.681	3.112	3.778	2.913	2.913
Margaric acid	C17:0	9.82	0.183	0.36	0.531	0.113	0.221	0.139	0.256	0.096	0.266	0.524	0.311	0.251
Stearic acid	C18:0	11.26	1.386	1.368	2.374	1.104	1.878	1.247	1.679	1.201	2.103	2.097	1.527	1.739
Oleic acid	C18:1 CIS	11.75	52.264	54.335	58.709	52.098	64.523	57.415	64.641	58.061	60.127	60.562	62.566	64.984
Linoleic acid	C18:2	12.36	35.268	32.135	27.352	39.447	27.02	33.651	27.123	34.257	29.249	26.091	28.505	26.467
Linolenic acid	C18:3(N3)	12.82	2.321	3.624	1.601	2.184	0.675	1.352	1.025	1.174	1.427	1.658	1.01	0.881
Arachidic acid	C20:0	14.5	0.19	0.351	0.557	0.131	0.382	0.163	0.321	0.125	0.833	0.559	0.318	0.308
Paullinic acid	C20:1(N9)	14.9	0.164	0.219	0.452	0.149	0.287	0.236	0.203	0.097	0.392	0.16	0.282	0.253
Heneicosylic acid	C21:0	16.24	0.095	0.15	0.221	0.069	0.067	0.095	0.041	0.082	0.1	0.082	0.084	0.044
Behenic acid	C22:0	18.54	0.322	0.815	0.766	0.117	0.307	0.179	0.248	0.12	0.337	0.954	0.317	0.363
Tricosylic acid	C23:0	19.82	0.284	0.453	0.392	0.226	0.297	0.273	0.165	0.211	0.108	0.562	0.095	0.062
Lignoceric acid	C24:0	21.04	0.377	0.514	0.63	0.291	0.28	0.463	0.302	0.305	0.377	0.679	0.339	0.346
Sum			94.308	98.509	99.916	99.799	99.993	99.199	99.998	99.422	99.661	99.997	99.99	99.996
SFA ²	-	-	4.291	8.196	11.802	5.921	7.488	6.545	7.006	5.833	8.466	11.526	7.627	7.411
UFA	-	-	90.017	90.313	88.114	93.878	92.505	92.654	92.992	93.589	91.195	88.471	92.363	92.585
MUSA	-	-	52.428	54.554	59.161	52.247	64.81	57.651	64.844	58.158	60.519	60.722	62.848	65.237
PUFA	-	-	37.589	35.759	28.953	41.631	27.695	35.003	28.148	35.431	30.676	27.749	29.515	27.348
UFA/SFA	-	-	20.978	11.019	7.466	15.855	12.353	14.156	13.273	16.044	10.771	7.675	12.110	12.492
Omega3/omega6			0.065	0.112	0.058	0.055	0.024	0.040	0.037	0.034	0.048	0.063	0.035	0.033

²SFA: saturated fatty acid, UFA: unsaturated fatty acid, MUSA: monounsaturated fatty acid, PUFA: polyunsaturated fatty acid

Table 3. Fatty acid compositions in group 1 (oleic acid chemotype) and group 2 (linoleic acid chemotype), and climate in their origins.

Palmetic acid	Arachidic acid	Stearic acid	Linolenic acid	Linoleic acid	Oleic acid	Climate (annual temperature and precipitation)	Group
± 0.16 3.24%	$0.47\% \pm 0.07$	$1.91\% \pm 0.11$	$1.18\% \pm 0.14$	$27.04\% \pm 0.42$	$62.3\% \pm 0.95$	Dry/warm 154mm ± 24 and) (16.7°C ± 0.6	1
$2.22\% \pm 0.48$	$0.19\% \pm 0.04$	$1.26\% \pm 0.05$	$2.13\% \pm 0.38$	$34.95\% \pm 1.23$	$54.8\% \pm 1.25$	Humid/cool 465mm ± 60 and) (10.5°C ± 0.7	2