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Supplementary Materials

Evaluation of the Genetic Diversity of Greek Garlic (*Allium sativum* L.) Accessions Using DNA Markers and Association with Phenotypic and Chemical Variation

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Table S1. Pairwise genetic distance values among the garlic accessions, including *A. schoenoprasum* (AS29) accession.

Accession	AS01	AS02	AS04	AS05	AS06	AS07	AS08	AS09	AS10	AS12	AS11	AS13	AS14	AS15	AS17	AS19	AS21	AS23	AS24	AS25	AS28	AS29	AS30	AS32	AS33	AS34	AS35	AS36
AS01	****																											
AS02	0.337	****																										
AS04	0.067	0.403	****																									
AS05	0.000	0.337	0.067	****																								
AS06	2.013	0.000	**2.079**	2.013	****																							
AS07	0.259	0.077	0.326	0.259	0.000	****																						
AS08	0.141	0.403	0.208	0.141	**2.079**	0.326	****																					
AS09	0.337	0.337	0.403	0.337	0.000	0.259	0.221	****																				
AS10	0.259	0.164	0.326	0.259	0.000	0.087	0.326	0.365	****																			
AS12	0.626	0.626	0.693	0.626	0.000	0.549	0.288	0.221	0.549	****																		
AS11	0.000	0.337	0.067	0.000	2.013	0.259	0.141	0.337	0.259	0.626	****																	
AS13	0.403	0.509	0.470	0.403	0.000	0.432	0.134	0.141	0.432	0.065	0.403	****																
AS14	0.337	0.000	0.403	0.337	0.000	0.077	0.403	0.337	0.164	0.626	0.337	0.509	****															
AS15	0.626	0.626	0.693	0.626	0.000	0.549	0.288	0.221	0.549	0.000	0.626	0.065	0.626	****														
AS17	0.403	0.509	0.470	0.403	0.000	0.432	0.134	0.141	0.432	0.065	0.403	0.000	0.509	0.065	****													
AS19	0.259	0.077	0.326	0.259	0.000	0.000	0.326	0.259	0.087	0.549	0.259	0.432	0.077	0.549	0.432	****												
AS21	0.337	0.000	0.403	0.337	0.000	0.077	0.403	0.337	0.164	0.626	0.337	0.509	0.000	0.626	0.509	0.077	****											
AS23	0.626	0.626	0.693	0.626	0.000	0.549	0.288	0.221	0.549	0.000	0.626	0.065	0.626	0.000	0.065	0.549	0.626	****										
AS24	0.685	0.685	1.040	0.685	0.000	0.608	0.347	0.280	0.608	0.059	0.685	0.123	0.685	0.059	0.123	0.608	0.685	0.059	****									
AS25	0.337	0.154	0.403	0.337	0.000	0.077	0.221	0.337	0.164	0.403	0.337	0.308	0.154	0.403	0.308	0.077	0.154	0.403	0.462	****								
AS28	0.403	0.509	0.470	0.403	0.000	0.432	0.134	0.141	0.432	0.065	0.403	0.000	0.509	0.065	0.000	0.432	0.509	0.065	0.123	0.308	****							
AS29	2.471	2.471	**2.538**	2.471	1.844	2.394	0.000	2.471	2.394	0.000	2.471	0.000	2.471	0.000	0.000	2.394	2.471	0.000	0.000	0.000	0.000	****						
AS30	0.067	0.403	0.134	0.067	0.000	0.326	0.288	0.403	0.326	0.693	0.067	0.470	0.403	0.693	0.470	0.326	0.403	0.693	0.752	0.403	0.470	**2.538**	****					
AS32	0.403	0.509	0.470	0.403	0.000	0.432	0.134	0.141	0.432	0.065	0.403	0.000	0.509	0.065	0.000	0.432	0.509	0.065	0.123	0.308	0.000	0.000	0.470	****				
AS33	0.626	0.509	0.693	0.626	0.000	0.432	0.288	0.141	0.549	0.065	0.626	0.065	0.509	0.065	0.065	0.432	0.509	0.065	0.123	0.308	0.065	0.000	0.693	0.065	****			
AS34	0.403	0.509	0.470	0.403	0.000	0.432	0.134	0.141	0.432	0.065	0.403	0.000	0.509	0.065	0.000	0.432	0.509	0.065	0.123	0.308	0.000	0.000	0.470	0.000	0.065	****		
AS35	0.259	0.077	0.326	0.259	0.000	0.000	0.326	0.259	0.087	0.549	0.259	0.432	0.077	0.549	0.432	0.000	0.077	0.549	0.608	0.077	0.432	2.394	0.326	0.432	0.432	0.432	****	
AS36	0.337	0.074	0.403	0.337	0.000	0.164	0.403	0.442	0.077	0.626	0.337	0.509	0.074	0.626	0.509	0.164	0.074	0.626	0.685	0.241	0.509	2.471	0.403	0.509	0.626	0.509	0.164	****

Table S2. Fisher's exact test contingency table showing statistically significant correlations ($p < 0.05$) between the SSR loci, and the morphological and chemical traits examined. SSR loci in bold are these for which significant correlation values have been observed in the logistic regression analysis too.

Genotype	Trait	Fisher's exact test (p)
Asa08-Locus 7	Allylprop1enyldisulfide	0.037
Asa10-Locus 4	Pyruvate	0.036
Asa08-Locus 9	Bulb distribution of cloves (BDC)	<0.001
Asa10-Locus 1		<0.001
Asa10-Locus 3	Bulb position of cloves at tip of the bulb (BPCTB)	0.027
GB-AS-076 Locus 3		0.043
Asa08-Locus 3	Bulb position of root disc (BPRD)	0.011
Asa10-Locus 2		<0.001
Asa10-Locus 4		0.016
Asa10-Locus 5		0.005
Asa10-Locus 2	Bulb structure type (BST)	0.003
Asa10-Locus 4		0.009
Asa10-Locus 2	Shape of bulb base (SBB)	0.002
Asa10-Locus 4		0.002
Asa10-Locus 5		0.006
Asa08-Locus 3		0.010
Asa10-Locus 2		0.002
Asa10-Locus 2	Bulb external cloves (BEC)	0.050
Asa08-Locus 6	Weight of cloves (WC)	0.015
Asa08-Locus 8		0.015
Asa24-Locus 2		0.015
Asa24-Locus 4		0.015
GB-AS-076 Locus 1		0.015
GB-AS-076 Locus 4		0.015
GB-AS-102 Locus 2		0.015
GB-AS-102 Locus 4		0.015
Asa10-Locus 2	Number of cloves per compound bulb (NC/B)	0.013

Table S3. Fisher's exact test contingency table showing statistically significant correlations ($p < 0.05$) between the ISSR loci, and the morphological and chemical traits examined. ISSR loci in bold are these for which significant correlation values have been observed in the logistic regression analysis too.

Genotype	Trait	Fisher's exact test (p)
811-Locus 6	2-vinyl-4H-1,3-dithiin (2-VDT)	0.031
811-Locus 8		0.023
812-Locus 6		0.006
818-Locus 11		0.035
826-Locus 6		0.004
826-Locus 1	3H-1,2-dithiole	0.017
826-Locus 6	3-vinyl-4H-1,2-dithiin (3-VDT)	0.010
811-Locus 13		0.050
811-Locus 6		0.021
811-Locus 8	4H-1,2,3- trithiine	0.041
811-Locus 1		0.015
811-Locus 13		0.050
826-Locus 11	Anthocyanin stripes on clove scales (ASCS)	0.003
826-Locus 14		0.020
812-Locus 14	Bulb compactness of cloves (BCC)	0.004
812-Locus 12		0.013
811-Locus 10	Bulb external cloves (BEC)	0.015
812-Locus 5		0.030
818-Locus 11		0.001
818-Locus 13		<0.001
818-Locus 14		0.007
818-Locus 15		0.003
818-Locus 7		<0.001
826-Locus 12		0.032
826-Locus 14		0.007
811-Locus 1	Bulb position of cloves at tip of the bulb (BPCTB)	0.043
812-Locus 14		0.025
812-Locus 7		0.043
818-Locus 2		0.043
846-Locus 3	Bulb position of root disc (BPRD)	0.005
846-Locus 5		0.005
818-Locus 9		0.050
812-Locus 5	Bulb Skin Color (BSC)	0.035
818-Locus 14		0.021
812-Locus 5	Bulb structure type (BST)	0.016
818-Locus 13		0.004
818-Locus 7		0.004
846-Locus 6		0.010
818-Locus 14	Carbohydrates	0.036
880-Locus 2		0.008
811-Locus 3	Diallyl trisulfide (DATS)	0.025
812-Locus 8		0.025
826-Locus 13		0.031
826-Locus 14		0.025
826-Locus 2		0.025
846-Locus 1		0.025

811-Locus 6	Diallyl disulfide (DDS)	0.007
811-Locus 13	Methyl allyl disulfide (MADS)	0.015
811-Locus 2	Number of cloves per compound bulb (NC/B)	0.010
818-Locus 18		0.034
811-Locus 6	Total Identified Organosulfur Compounds (OS)	0.015
826-Locus 6		0.009
812-Locus 10	Phenolics	0.013
846-Locus 6	Pyruvate	0.034
826-Locus 9	Shape of bulb base (SBB)	0.037
846-Locus 3		0.006
846-Locus 5		0.006
846-Locus 6		0.007
846-Locus 8	Skin color of the clove (SCC)	0.022
826-Locus 9	Shape of Mature Bulb (SMB)	0.018
846-Locus 5		0.006
846-Locus 6		0.018
811-Locus 1	Weight of cloves (WC)	0.024
812-Locus 14		0.009
812-Locus 2		0.042
818-Locus 8		0.035
846-Locus 10		0.015
846-Locus 7		0.015
811-Locus 2	Total soluble solids (TSS) content (^{o}Brix)	0.004
811-Locus 4		0.003
811-Locus 7		0.034
812-Locus 5		0.008
818-Locus 1		0.026
826-Locus 11		0.032
846-Locus 1		0.021
818-Locus 11	Anthocyanin stripes on dry external scales of bulb (ASBDES)	0.042
846-Locus 6		0.050

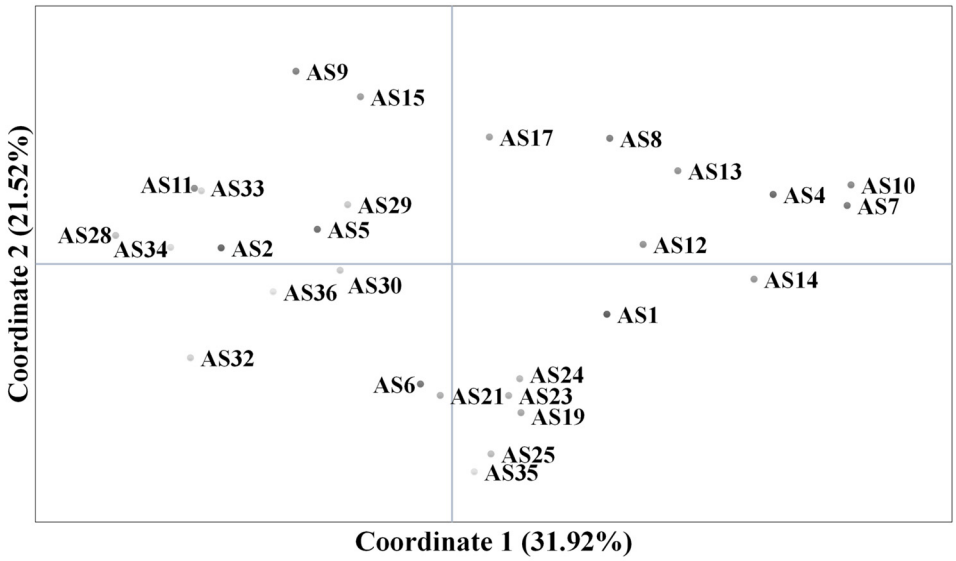

Figure S1. Principal coordinate analysis (PCoA) of the 27 garlic accessions, plus the *A. schoenoprasum* accession (AS29) based on the ISSR data.

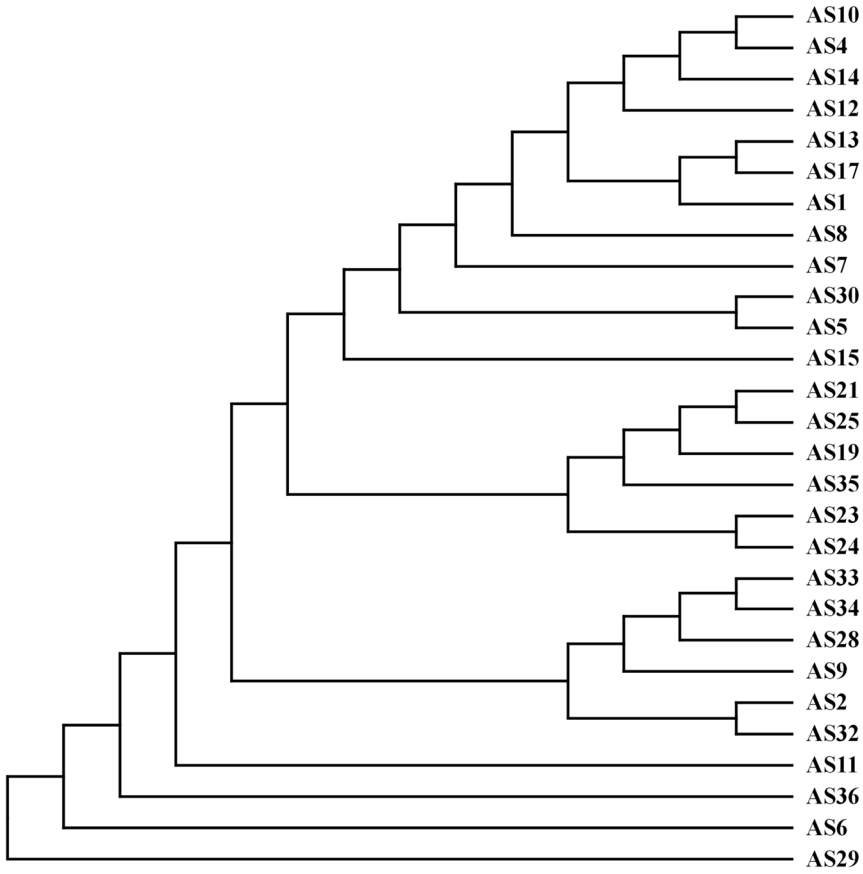

Figure S2. UPGMA dendrogram of the accessions studied, based on the ISSR data, revealed the formation of six clusters, with the *A. schoenoprasum* (AS29) accession being the most distant.