

Supplementary Table S1. GPS coordinates and collection sites of the Apulian kale accessions characterized in this study.

Accessions	GPS coordinates	Collection site
AK-1	40°59'20.17"N 16°53'23.17"E	Adelfia
AK-2	40°59'20.32"N 16°53'32.30"E	Adelfia
AK-3	41° 4'20.86"N 16°55'1.34"E	Triggiano
AK-4	40°59'46.89"N 16°53'25.46"E	Adelfia
AK-5	40°59'33.67"N 16°53'24.95"E	Adelfia
AK-6	41° 1'17.19"N 16°51'50.55"E	Valenzano
AK-7	41° 1'35.46"N 16°53'20.25"E	Valenzano
AK-8	40°59'58.89"N 16°54'10.91"E	Adelfia
AK-9	40°59'33.76"N 16°53'26.53"E	Adelfia
AK-10	40°59'49.62"N 16°52'58.67"E	Adelfia
AK-11	41° 1'9.73"N 16°53'5.29"E	Valenzano
AK-12	41° 0'14.01"N 16°53'2.34"E	Adelfia
AK-13	41° 0'2.29"N 16°53'9.93"E	Adelfia
AK-14	41° 1'46.09"N 16°52'23.80"E	Valenzano
AK-15	41° 1'51.02"N 16°52'33.47"E	Valenzano
AK-16	40°47'15.42"N 16°53'31.51"E	Gioia del colle
AK-17	41° 3'41.06"N 16°53'0.02"E	Valenzano
AK-18	40°59'49.63"N 16°52'58.69"E	Adelfia
AK-19	40°46'25.87"N 16°32'33.34"E	Altamura

Supplementary Table S2. Polymorphic primer pairs tested on the whole germplasm collection of Apulian kale. Asterisks indicate polymorphic primer pairs used for germplasm genetic characterization.

Primer_ID	Sequence 5'→ 3' (Forward and reverse)	Repeat	Ta (°C)	References
*BRMS-005	ACCTCCTGCAGATTCGTGTC GCTGACCTTTCTTACCGCTC	(GA) ₁₃	60	[18]
BRMS-006	TGGTGGCTTGAGATTAGTTC ACTCGAAGCCTAATGAAAAG	(GA) ₃₄	58	[18]
BRMS-007	AAATTGTTTCTCTTCCCAT GTGTTAGGGAGCTGGAGAAT	(CT) ₂₄	58	[18]
BRMS-008	GTGTTAGGGAGCTGGAGAAT AGGACACCAGGCACCATATA	(TC) ₃₀	58	[18]
BRMS-014	CCGTAAGGAATATTGAGGCA TTCCCAATTCTCAAACGGTA	(TC) ₁₅	58	[18]
*BRMS-015	TCGCCAATAGAACCCAAAACCTT CATCTCCATTGCTGCATCTGCT	(TG) ₄ .(GA) ₂₀	61	[18]
*BRMS-016	TCCCGTATCAATGGCGTAACAG CGATGGTGACATTATTGTGGCG	(TC) ₂₀	55	[18]
*BRMS-019	CCCAAACGCTTTTGACACAT GGCACAATCCACTCAGCTTT	(GT) ₁₀	56	[18]
*BRMS-033	GCGGAAACGAACACTCCTCCCATGT CCTCCTTGCTGCTTTCCCTGGAGACG	(CA) ₁₁	55	[18]
*BRMS-036	GGTCCATTCTTTTTGCATCTG CATGGCAAGGGGTAACAAACAT	(CA) ₁₀ . (GA) ₄	55	[18]
*BRMS-042-2	AGCTCCCGACAGCAACAAAAGA TTCGCTTCCTTTTCTGGGAATG	(GA) ₄ .(CT) ₂₆	55	[18]
BRMS-024	TGAATTGAAAGGCATAAGCA CAGCCTCCACCACTTATTCT	(GA) ₂₄	56	[18]
BRMS-026	CAAGCAAGCATGACAAGCAACA CCTATCCTCGGACTAATCAGAA	(CT) ₂₆	60	[18]
BRMS-027	GCAGGCGTTGCCTTTATGTA TCGTTGGTCGGTCACTCCTT	(GA) ₁₇	54	[18]

*BRMS-050	AACTTTGCTTCCACTGATTTTT TTGCTTAACGCTAAATCCATAT	(AAT) ₄ .(TC) ₁₉ (TTC) ₃	58	[18]
BRMS-051	GGCCAAGCCACTACTGCTCAGA GCGGAGAGTGAGGGAGTTATGG	(TC) ₁₅	60	[18]
BRMS-056	GATCAAGGCTACGGAGAGAGAG CGTGACGCTAGAGTAATCGAGT	(GA) ₁₃	60	[18]
*OL11-G11	GTTGCGGCGAAACAGAGAAG GAGTAGGCGATCAAACCGAG	(CCG) ₅	57	[20]
*OL12-A04	TGGGTAAGTAACTGTGGTGGC AGAGTTCGCATACTCTGGAGC	(CT) ₁₇	55	[19]
OL13-E08	TTCGCAACTCCTCCTAGAAATC AAGGTCTCACCACCGGAGTC	(GA/CT) ₁₁	55	[19]
*Ra2-A01	TTCAAAGGATAAGGGCATCG TCTTCTTCTTTTGTGTCTTCCG	(GA) ₁₉	52	[19]
Ra2-E04	ACACACAACAAACAGCTCGC AACATCAAACCTCTCGACGG	(GA/CT) ₁₉	52	[19]
Ra2-E07	ATTGCTGAGATTGGCTCAGG CCTACACTTGCGATCTTCACC	(GA/CT) ₁₉	55	[19]
*Ra2-E12	TGTCAGTGTGTCCACTTCGC AAGAGAAACCCAATAAAGTAGAACC	(GA) ₃₂	56	[19]
Ra2-G09	ACAGCAAGGATGTGTTGACG GATGAGCCTCTGGTTCAAGC	(GA/CT) ₁₉	55	[19]
Ra3-H10	TAATCGCGATCTGGATTAC ATAATGGCTGCTGCAGGTTTC	(GA/CT) ₂₃	55	[19]

Supplementary Table S3. Pairwise Population PhiPT Values among Apulian kale accessions. PhiPT Values below diagonal. Probability values based on 999 permutations are shown above diagonal.

	AK-1	AK-2	AK-3	AK-4	AK-5	AK-6	AK-7	AK-8	AK-9	AK-10	AK-11	AK-12	AK-13	AK-14	AK-15	AK-16	AK-17	AK-18	AK-19
AK-1	0.000	0.001	0.001	0.001	0.001	0.003	0.004	0.001	0.001	0.002	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
AK-2	0.366	0.000	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
AK-3	0.297	0.485	0.000	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001	0.002
AK-4	0.228	0.215	0.206	0.000	0.001	0.001	0.001	0.005	0.001	0.001	0.001	0.042	0.002	0.001	0.002	0.001	0.001	0.018	0.017
AK-5	0.338	0.572	0.474	0.329	0.000	0.001	0.001	0.001	0.001	0.023	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002
AK-6	0.219	0.358	0.319	0.144	0.254	0.000	0.064	0.001	0.001	0.002	0.044	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001
AK-7	0.187	0.428	0.270	0.142	0.344	0.075	0.000	0.001	0.002	0.001	0.010	0.001	0.001	0.001	0.001	0.001	0.004	0.001	0.001
AK-8	0.285	0.326	0.365	0.196	0.459	0.271	0.336	0.000	0.001	0.001	0.002	0.004	0.001	0.001	0.010	0.001	0.001	0.014	0.007
AK-9	0.502	0.497	0.451	0.297	0.538	0.285	0.433	0.446	0.000	0.001	0.001	0.002	0.001	0.004	0.001	0.001	0.001	0.002	0.001
AK-10	0.302	0.485	0.359	0.265	0.106	0.190	0.258	0.340	0.467	0.000	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001
AK-11	0.175	0.367	0.184	0.129	0.277	0.075	0.125	0.189	0.368	0.141	0.000	0.004	0.001	0.001	0.001	0.001	0.001	0.006	0.001
AK-12	0.273	0.267	0.320	0.075	0.274	0.169	0.298	0.178	0.305	0.231	0.148	0.000	0.118	0.001	0.002	0.001	0.001	0.014	0.002
AK-13	0.440	0.444	0.500	0.252	0.414	0.279	0.440	0.406	0.399	0.329	0.354	0.060	0.000	0.001	0.001	0.002	0.001	0.001	0.002
AK-14	0.447	0.435	0.456	0.225	0.478	0.197	0.373	0.341	0.224	0.404	0.278	0.174	0.238	0.000	0.001	0.001	0.001	0.001	0.001
AK-15	0.335	0.436	0.192	0.201	0.430	0.279	0.279	0.172	0.407	0.308	0.207	0.258	0.431	0.366	0.000	0.001	0.001	0.005	0.002
AK-16	0.516	0.603	0.487	0.421	0.566	0.460	0.498	0.381	0.599	0.357	0.415	0.369	0.466	0.544	0.423	0.000	0.001	0.002	0.002
AK-17	0.234	0.379	0.378	0.247	0.432	0.242	0.183	0.371	0.520	0.313	0.308	0.338	0.407	0.427	0.368	0.439	0.000	0.001	0.001
AK-18	0.301	0.302	0.297	0.113	0.427	0.230	0.322	0.155	0.364	0.342	0.145	0.158	0.404	0.283	0.203	0.524	0.359	0.000	0.001
AK-19	0.278	0.278	0.375	0.146	0.515	0.253	0.300	0.175	0.481	0.464	0.261	0.260	0.471	0.320	0.290	0.579	0.370	0.217	0.000

Supplementary Table S4. Fixation Index (F) among the 19 Apulian kale (AK) accessions collected in this study.

Accessions	F
AK-1	-0.045
AK-2	-0.335
AK-3	-0.277
AK-4	0.187
AK-5	-0.055
AK-6	0.022
AK-7	0.030
AK-8	0.062
AK-9	0.031
AK-10	-0.096
AK-11	-0.028
AK-12	0.039
AK-13	-0.163
AK-14	0.006
AK-15	-0.073
AK-16	-0.289
AK-17	0.051
AK-18	0.035
AK-19	0.004
Mean	-0.004