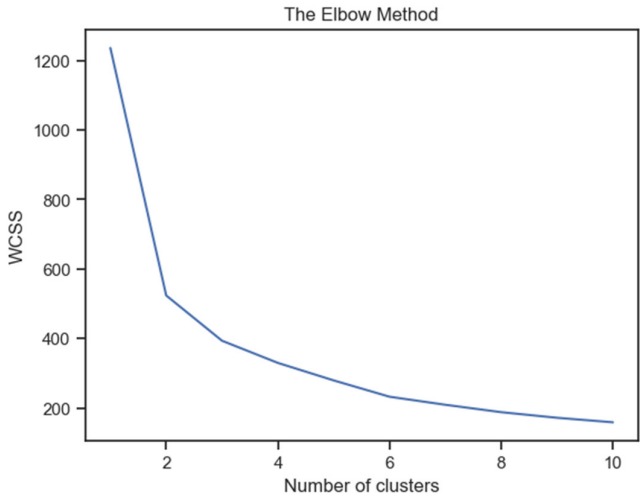

Figure S1: An elbow method graph represents an optimal number of clusters following the Within-Cluster Sum of Square Method (WCSS).

Table S1. Accessions studied in our experiment, along with their origins.

S.N	IT Number	Origin	S.N	IT Number	Origin	S.N	IT Number	Origin
1	IT21631	KOR	**73**	IT101256	KOR	**145**	IT153915	KOR
2	IT21649	HKG	**74**	IT103322	KOR	**146**	IT153920	KOR
3	IT21665	CHN	**75**	IT103548	KOR	**147**	IT154209	KOR
4	IT21686	USA	**76**	IT103631	KOR	**148**	IT154365	KOR
5	IT21697	KOR	**77**	IT103951	KOR	**149**	IT154391	KOR
6	IT21874	KOR	**78**	IT104441	KOR	**150**	IT154397	KOR
7	IT21882	KOR	**79**	IT104789	KOR	**151**	IT154413	KOR
8	IT21941	KOR	**80**	IT104865	KOR	**152**	IT154489	KOR
9	IT22074	UNK	**81**	IT104874	KOR	**153**	IT154613	KOR
10	IT22099	KOR	**82**	IT104935	KOR	**154**	IT154621	KOR
11	IT22156	CHN	**83**	IT104938	KOR	**155**	IT154718	KOR
12	IT22194	USA	**84**	IT104997	KOR	**156**	IT154724	KOR
13	IT22240	JPN	**85**	IT105286	KOR	**157**	IT154725	KOR
14	IT22249	CRI	**86**	IT105400	KOR	**158**	IT154757	KOR
15	IT22268	JPN	**87**	IT105782	KOR	**159**	IT155149	KOR
16	IT22274	KOR	**88**	IT108727	KOR	**160**	IT155159	KOR
17	IT22456	KOR	**89**	IT108806	KOR	**161**	IT155946	KOR
18	IT22582	KOR	**90**	IT108929	KOR	**162**	IT156011	JPN
19	IT22590	KOR	**91**	IT111048	KOR	**163**	IT156012	BRA
20	IT22891	UNK	**92**	IT112739	THA	**164**	IT156023	THA
21	IT22990	UNK	**93**	IT112847	KOR	**165**	IT156106	CHN
22	IT23002	DEU	**94**	IT113059	KOR	**166**	IT156133	KOR

23	IT23005	DNK	**95**	IT113581	KOR	**167**	IT156143	KOR
24	IT23015	JPN	**96**	IT115409	KOR	**168**	IT156159	KOR
25	IT23016	AFG	**97**	IT115476	KOR	**169**	IT156165	KOR
26	IT23027	SVN	**98**	IT115491	KOR	**170**	IT156180	KOR
27	IT23028	SVN	**99**	IT115500	KOR	**171**	IT156181	KOR
28	IT23071	SRB	**100**	IT115505	KOR	**172**	IT156189	KOR
29	IT23220	UNK	**101**	IT115605	KOR	**173**	IT156190	KOR
30	IT23223	UNK	**102**	IT115679	KOR	**174**	IT156195	KOR
31	IT23236	CHN	**103**	IT115713	KOR	**175**	IT156242	JPN
32	IT23240	ITA	**104**	IT115849	KOR	**176**	IT156253	KOR
33	IT23289	JPN	**105**	IT115861	KOR	**177**	IT156262	KOR
34	IT23389	KOR	**106**	IT115907	KOR	**178**	IT156263	USA
35	IT23453	KOR	**107**	IT115920	KOR	**179**	IT156278	BTN
36	IT23479	VEN	**108**	IT134349	KOR	**180**	IT156280	USA
37	IT23482	KOR	**109**	IT134351	KOR	**181**	IT157861	KOR
38	IT23489	ARG	**110**	IT134415	KOR	**182**	IT157951	KOR
39	IT23504	COL	**111**	IT136303	NPL	**183**	IT157957	MYS
40	IT23530	USA	**112**	IT138089	KOR	**184**	IT157958	LKA
41	IT23541	USA	**113**	IT141627	KOR	**185**	IT157970	UNK
42	IT23589	UNK	**114**	IT141697	KOR	**186**	IT158004	BEL
43	IT23602	ZAF	**115**	IT141790	KOR	**187**	IT158006	BEL
44	IT23648	USA	**116**	IT141801	KOR	**188**	IT158040	DEU
45	IT23739	USA	**117**	IT141865	KOR	**189**	IT158049	SWE
46	IT23768	USA	**118**	IT141890	KOR	**190**	IT158063	ZAF
47	IT23803	KOR	**119**	IT141970	KOR	**191**	IT158073	SRB
48	IT23848	KOR	**120**	IT141972	KOR	**192**	IT158076	YUG
49	IT23891	KOR	**121**	IT142063	KOR	**193**	IT158095	MEX
50	IT23924	KOR	**122**	IT142807	KOR	**194**	IT158099	ZWE
51	IT23948	KOR	**123**	IT142810	KOR	**195**	IT160024	USA
52	IT23955	KOR	**124**	IT143006	KOR	**196**	IT160105	KOR
53	IT23974	KOR	**125**	IT143039	KOR	**197**	IT160143	KOR
54	IT24147	KOR	**126**	IT143161	KOR	**198**	IT160160	USA
55	IT24151	KOR	**127**	IT143169	KOR	**199**	IT160295	USA
56	IT24186	USA	**128**	IT143192	JPN	**200**	IT160936	ZAF
57	IT24212	KOR	**129**	IT143277	PHL	**201**	IT161015	USA
58	IT24250	TWN	**130**	IT143347	KOR	**202**	IT161371	CAN
59	IT24271	UNK	**131**	IT144019	KOR	**203**	IT161377	CHN
60	IT24280	GEO	**132**	IT146110	TWN	**204**	IT161384	CHN
61	IT24285	UKR	**133**	IT151154	JPN	**205**	IT161435	CHN
62	IT24300	CHN	**134**	IT151161	CHN	**206**	IT161443	AUS

63	IT24453	KOR	**135**	IT151169	PER	**207**	IT161461	CHN
64	IT24570	KOR	**136**	IT153356	KOR	**208**	IT161474	UNK
65	IT24634	KOR	**137**	IT153358	KOR	**209**	IT161990	KOR
66	IT24681	USA	**138**	IT153640	KOR	**210**	IT24099	KOR
67	IT24789	KOR	**139**	IT153649	KOR	**211**	IT23319	CHN
68	IT25044	UNK	**140**	IT153722	KOR	**212**	IT142811	KOR
69	IT25152	KOR	**141**	IT153820	KOR	**213**	IT142818	KOR
70	IT25384	KOR	**142**	IT153834	KOR	**214**	IT142834	KOR
71	IT25668	KOR	**143**	IT153844	KOR	**215**	IT142837	CAN
72	IT101015	KOR	**144**	IT153901	KOR	**216**	PUNGSAN	KOR

Table S2. A detail result of the clustering analysis

I. Evolution of the inertia:

Inertia\Cluster	3	4	5
Within-cluster	32107466.499	29364858.788	18634909.203
Between-clusters	123672794.144	126415401.856	137145351.441
Total inertia	155780260.644	155780260.644	155780260.644

II. Statistics for each iteration:

Iteration	Within-cluster variance	Trace(W)	ln(Determinant(W))	Wilks' Lambda
0	7.151E+05	1.523E+08	7.604E+01	9.190E-01
1	2.192E+05	4.668E+07	7.459E+01	2.154E-01
2	1.605E+05	3.420E+07	7.427E+01	1.561E-01
3	1.528E+05	3.254E+07	7.422E+01	1.482E-01
4	1.514E+05	3.225E+07	7.421E+01	1.474E-01
5	1.508E+05	3.213E+07	7.420E+01	1.465E-01
6	1.507E+05	3.211E+07	7.420E+01	1.466E-01

III. Initial cluster centroids:

Cluster	TRL	AD	RV	NT	NF	TTL
1	930.213	0.457	1.470	1174.910	2598.777	681.923
2	842.613	0.462	1.343	1074.167	2364.398	633.765
3	915.894	11.006	1.433	1169.550	2594.070	699.122

IV. Cluster centroids:

Cluster	TRL	AD	RV	NT	NF	TTL	Sum of weights	Within-cluster variance
1	650.786	12.249	1.139	824.249	1676.298	485.032	69.000	156784.183
2	920.735	0.460	1.478	1149.229	2557.514	691.361	83.000	116829.903
3	1132.091	0.437	1.636	1471.208	3388.484	850.729	64.000	188350.635

V. Distances between the cluster centroids:

Cluster	TRL	AD	RV	NT	NF	TTL	Sum of weights	Within-cluster variance
1	650.786	12.249	1.139	824.249	1676.298	485.032	69.000	156784.183
2	920.735	0.460	1.478	1149.229	2557.514	691.361	83.000	116829.903
3	1132.091	0.437	1.636	1471.208	3388.484	850.729	64.000	188350.635

VI. Central objects:

Cluster	TRL	AD	RV	NT	NF	TTL
1 (Obs164)	644.749	0.467	1.048	827.833	1693.167	496.683
2 (Obs146)	946.664	0.482	1.522	1235.750	2584.167	715.491
3 (Obs114)	1092.797	0.434	1.502	1469.500	3449.667	897.859

VII. Distances between the central objects:

	1 (Obs164)	2 (Obs146)	3 (Obs114)
1 (Obs164)	**0**	1048.478	1964.362
2 (Obs146)	1048.478	**0**	926.468
3 (Obs114)	1964.362	926.468	**0**

Table S3. K-means clustering result

Cluster	1	2	3
Number of objects by cluster	77	69	70
Sum of weights	77	69	70
Within-cluster variance	156784.183	116829.903	188350.635
Minimum distance to centroid	24.666	97.215	86.669
Average distance to centroid	317.801	321.816	366.784
Maximum distance to centroid	1644.081	560.525	1381.812
	Obs1	Obs5	Obs7
	Obs2	Obs8	Obs11
	Obs3	Obs10	Obs13
	Obs4	Obs12	Obs14
	Obs6	Obs15	Obs26

Obs9	Obs23	Obs27
Obs16	Obs24	Obs34
Obs17	Obs25	Obs35
Obs18	Obs28	Obs36
Obs19	Obs29	Obs42
Obs20	Obs30	Obs47
Obs21	Obs31	Obs48
Obs22	Obs33	Obs51
Obs32	Obs37	Obs52
Obs38	Obs39	Obs54
Obs41	Obs40	Obs62
Obs43	Obs44	Obs63
Obs46	Obs45	Obs65
Obs49	Obs50	Obs66
Obs71	Obs53	Obs68
Obs77	Obs55	Obs69
Obs86	Obs56	Obs70
Obs89	Obs57	Obs72
Obs94	Obs58	Obs73
Obs96	Obs59	Obs75
Obs97	Obs60	Obs76
Obs106	Obs61	Obs79
Obs115	Obs64	Obs80
Obs119	Obs67	Obs82
Obs123	Obs74	Obs90
Obs126	Obs78	Obs98
Obs132	Obs81	Obs102
Obs139	Obs83	Obs109
Obs141	Obs84	Obs110
Obs143	Obs85	Obs111
Obs159	Obs87	Obs112
Obs160	Obs88	Obs113
Obs161	Obs91	Obs114
Obs164	Obs92	Obs117
Obs166	Obs93	Obs122
Obs168	Obs95	Obs127
Obs170	Obs99	Obs128
Obs172	Obs100	Obs130
Obs173	Obs101	Obs131
Obs174	Obs103	Obs133
Obs175	Obs104	Obs136

Obs176	Obs105	Obs140
Obs177	Obs107	Obs142
Obs178	Obs108	Obs144
Obs179	Obs116	Obs149
Obs180	Obs118	Obs150
Obs181	Obs120	Obs153
Obs182	Obs121	Obs154
Obs184	Obs124	Obs155
Obs186	Obs125	Obs156
Obs187	Obs129	Obs157
Obs188	Obs134	Obs163
Obs189	Obs135	Obs165
Obs190	Obs137	Obs196
Obs191	Obs138	Obs200
Obs192	Obs145	Obs205
Obs193	Obs146	Obs206
Obs194	Obs147	Obs212
Obs198	Obs148	Obs214
Obs208	Obs151	Obs169
Obs209	Obs152	Obs171
Obs210	Obs158	Obs183
Obs215	Obs162	Obs185
Obs216	Obs167	Obs195
Obs199		Obs197
Obs201		
Obs202		
Obs203		
Obs204		
Obs207		
Obs211		
Obs213		