# Primary selection and secondary diversification: two key processes in the history of olive domestication

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# Supplementary files

**Table S1.** List of the 35 wild olive populations. The sampling locations, the number of populations and individuals per location (size) and the GPS coordinates are given.

**Table S2.** List of the 410 Mediterranean olive cultivars analyzed in the present study, along with their origins and maternal lineages.

**Table S3.** Pairwise genetic differentiation (Fst) among the 11 sub-clusters, as identified by DAPC using the "*find.clusters*" function.

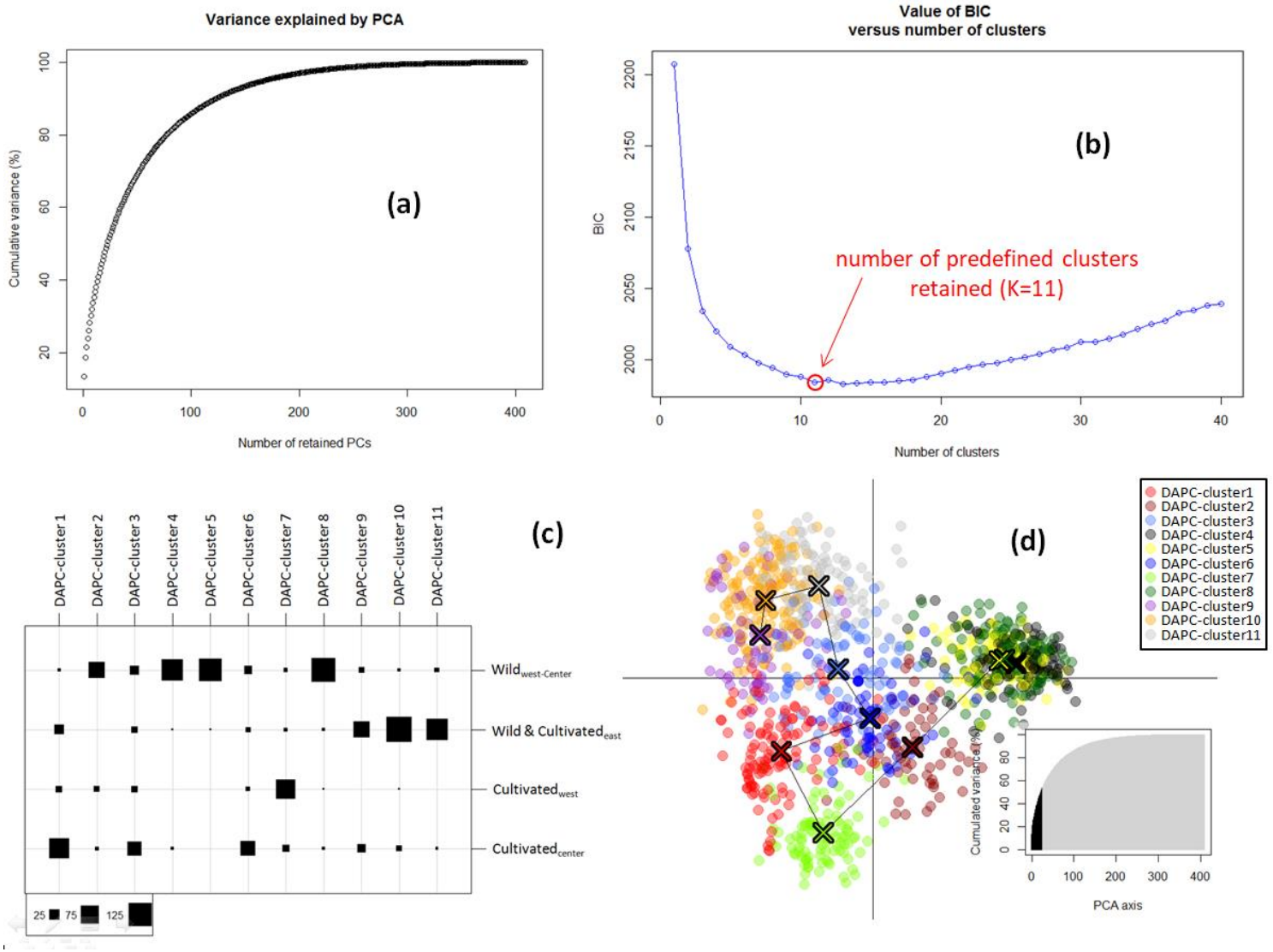
**Table S4.** Number of wild and cultivated olives per region of origin and the number and proportion of individuals assigned to each group based on the DAPC findings with a membership probability of 0.8.

**Table S5.** Proportion of maternal lineages according to the *a priori* grouping clusters for both wild and cultivated olives identified as admixed genotypes by DAPC with a membership assignation of $p < 0.8$.

**Fig. S1.** Discriminate analysis of principal component (DAPC) results. Cumulative variance explained by the principal component analysis (PCA) relative to the number of principal components (PCs) retained in the analysis (a). Selection of the optimal number of clusters in the DAPC using the lowest Bayesian information criterion (BIC; b). Comparison of clustering performed by DAPC (K=11) and the *a priori* wild and cultivated olive groups (c). Squares represent the number of individuals in each pairwise comparison. Scatterplot from a DAPC of olive genotypes showing the relationships between the 11 identified clusters (d).

**Fig. S2.** Principal coordinate analysis (PCoA) based on the simple matching coefficient showing the relationships among cultivated and wild olive genotypes according to groups resulting from DAPC.

# Figure S1


Variance explained by PCA
Cumulative variance (%)
Number of retained PCs
(a)
Value of BIC
versus number of clusters
BIC
Number of clusters
(b)
number of predefined clusters
retained (K=11)
DAPC-cluster1
DAPC-cluster2
DAPC-cluster3
DAPC-cluster4
DAPC-cluster5
DAPC-cluster6
DAPC-cluster7
DAPC-cluster8
DAPC-cluster9
DAPC-cluster10
DAPC-cluster11
(c)
Wild west-Center
Wild & Cultivated east
Cultivated west
Cultivated center
25
75
125
(d)
Cumulated variance (%)
PCA axis

## Figure S2

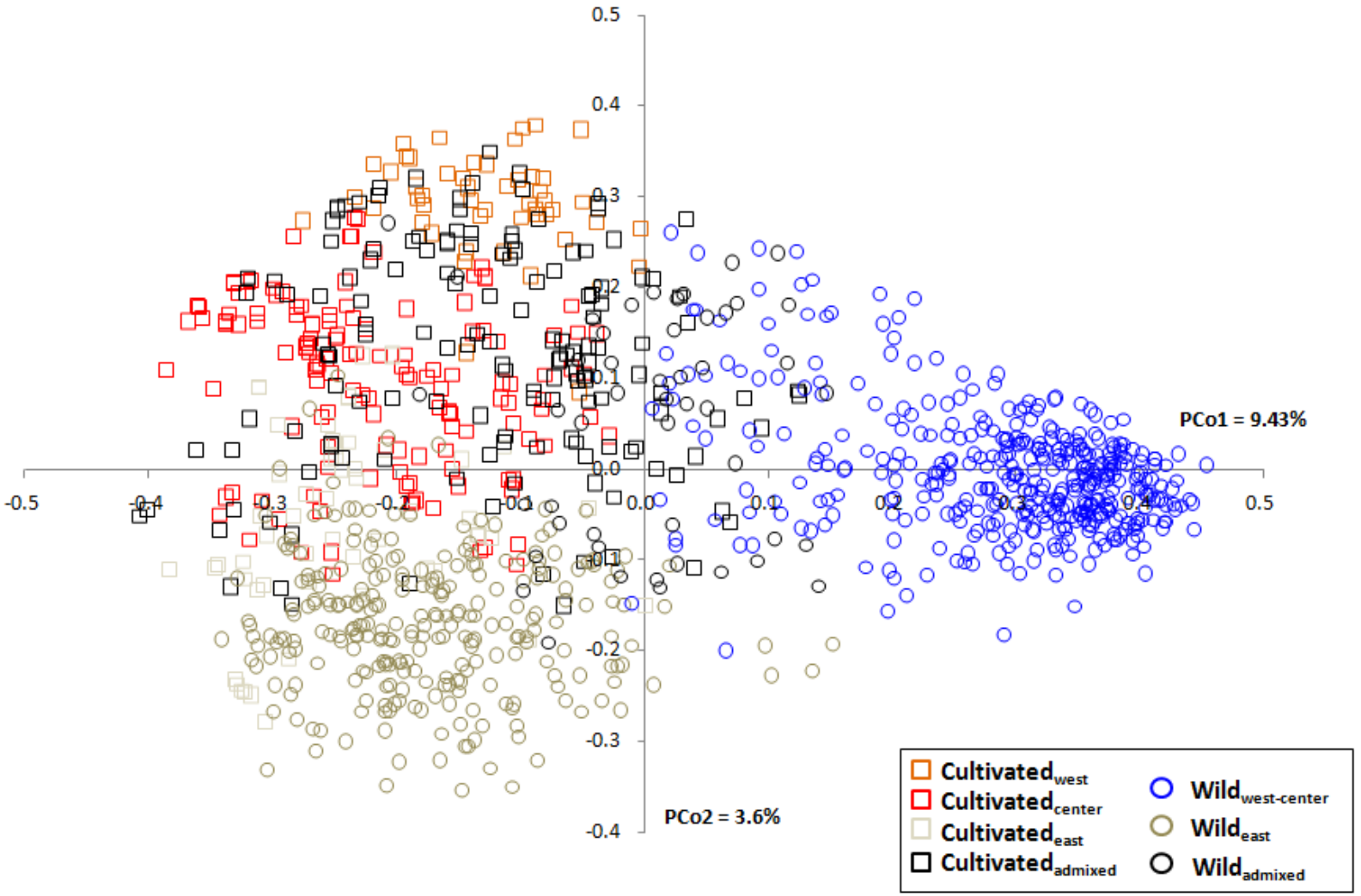

0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.4
-0.3
0.1
0.2
0.3
0.4
0.5
PCo1 = 9.43%
PCo2 = 3.6%
Cultivated west
Cultivated center
Cultivated east
Cultivated admixed
Wild west-center
Wild east
Wild admixed

**Table S1.** List of the 35 wild olive populations. The locality of sampling, the number of populations and individuals per location (size) and the GPS coordinates are given.

| Region of origin | No. of population | Locality | Country | Size | Lat. | Long. |
|---|---|---|---|---|---|---|
| Iberian Peninsula | 4 | Aznalcazar, Sevilla | Spain | 40 | 37.253 | -6.210 |
| | | San jodé Del Pedroso, Cadiz | Spain | 25 | 36.525 | -5.995 |
| | | Alcala de Los Gazules, Cadiz | Spain | 24 | 36.531 | -5.602 |
| | | Tarifa, Cadiz | Spain | 23 | 36.062 | -5.670 |
| Balearic Islands | 1 | S'Albufera des Grau, Minorca | Spain | 17 | 39.945 | 4.247 |
| Western Maghreb | 6 | Mokrisset/Capo Negro | Morocco | 18 | 35.666 | -5.311 |
| | | Jbel Ghorghize/Oued low | Morocco | 22 | 35.554 | -5.374 |
| | | Taouante/Sefrou/Zarhoun | Morocco | 18 | 34.361 | -4.699 |
| | | Bin El Ouidane/Ouzoud | Morocco | 22 | 32.110 | -6.469 |
| | | Taroudant/Ameskroud | Morocco | 14 | 30.543 | -9.288 |
| | | Taghazout/Smimou | Morocco | 21 | 30.550 | -9.728 |
| Eastern Maghreb | 2 | Birkhadem/Gue de Constantine | Algeria | 37 | 36.715 | 3.076 |
| | | Ain Barbar/Seraidi | Algeria | 18 | 36.962 | 7.578 |
| Corsica & Sicily | 2 | Ostriconi, Avapessa, Corsica | France | 27 | 42.648 | 9.065 |
| | | Alí, Messina, Sicily | Italy | 28 | 38.015 | 15.415 |
| Continental France | 1 | Mont Boron | France | 20 | 43.700 | 7.297 |
| Continental Italy | 2 | Cittadella del Capo | Italy | 14 | 39.540 | 15.895 |
| | | Santa Tegla | Italy | 22 | 41.777 | 16.152 |
| Cyrenaica | 1 | Wadi el Kuf | Libya | 14 | 32.698 | 21.565 |
| Greece/Crete | 4 | Gialova-Manaki/Pylos | Greece | 29 | 36.964 | 21.711 |
| | | Galini-Komos | Crete | 15 | 35.108 | 24.688 |
| | | Sises-Iraklio | Crete | 19 | 35.388 | 24.893 |
| | | Cape Lithinon-Vathi-Tripiti Gorge | Crete | 19 | 34.931 | 24.756 |
| Cyprus | 4 | Lageia-Ora | Cyprus | 22 | 34.850 | 33.236 |
| | | Pegeia | Cyprus | 24 | 34.891 | 32.364 |
| | | North Kampos | Cyprus | 18 | 35.081 | 32.776 |
| | | Stavrovouni | Cyprus | 20 | 34.886 | 33.438 |
| Near East and Turkey | 8 | Hocali-Mut | Turkey | 15 | 36.479 | 33.615 |
| | | Bogazkirim-Kilis | Turkey | 12 | 36.828 | 36.890 |
| | | Ucari | Turkey | 13 | 36.871 | 32.343 |
| | | Grand CanounKemes | Turkey | 11 | 36.404 | 30.333 |
| | | Rajou | Syria | 26 | 36.693 | 36.641 |
| | | Fakrou | Syria | 29 | 35.307 | 36.302 |
| | | Haram | Syria | 14 | 36.217 | 36.562 |
| | | Al Asharinah | Syria | 12 | 35.268 | 36.319 |
| **Total** | **35** | | | **722** | | |

**Table S2.** List of the 410 Mediterranean olive cultivars analyzed in the present study, along with their origins and maternal lineages (see excel file).

**Table S3**. Pairwise genetic differentiation ($F_{ST}$) among the eleven sub-clusters as identified by DAPC method using "find.clusters" function.

| Sub-clusters | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **2** | 0.058 | | | | | | | | | |
| **3** | 0.053 | 0.045 | | | | | | | | |
| **4** | 0.127 | 0.051 | 0.087 | | | | | | | |
| **5** | 0.120 | 0.038 | 0.077 | 0.023 | | | | | | |
| **6** | 0.037 | 0.045 | 0.033 | 0.081 | 0.070 | | | | | |
| **7** | 0.037 | 0.042 | 0.070 | 0.129 | 0.110 | 0.052 | | | | |
| **8** | 0.123 | 0.045 | 0.076 | 0.024 | 0.017 | 0.069 | 0.117 | | | |
| **9** | 0.045 | 0.085 | 0.039 | 0.127 | 0.120 | 0.059 | 0.085 | 0.122 | | |
| **10** | 0.042 | 0.057 | 0.034 | 0.107 | 0.102 | 0.046 | 0.074 | 0.108 | 0.024 | |
| **11** | 0.054 | 0.051 | 0.034 | 0.083 | 0.068 | 0.046 | 0.082 | 0.073 | 0.037 | 0.017 |

**Table S4.** Number of wild and cultivated olive per region of origin and the number and proportion of individuals assigned to each cluster resulting from DAPC approach with a membership probability of 0.8.

| A priori groups | Region of origin | Size | N. of individuals assigned (%) | A posteriori groups (%) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | $Wild_{west\text{-}center}$ [1] | Wild & $cultivated_{east}$ [1] | $Cultivated_{west}$ [1] | $Cultivated_{center}$ [1] | Wild & $Cultivated_{admixed}$ [2] |
| Wild West-Center | Iberian Peninsula | 112 | 109 (97.3 | 109 (97.3) | | | | 3 (2.7) |
| | Balearic Islands | 17 | 17 (100.0) | 17 (100.0) | | | | |
| | Western Maghreb | 115 | 100 (87.0) | 98 (85.2) | | 1 (0.9) | 1 (0.9) | 15 (13.0) |
| | Eastern Maghreb | 55 | 53 (96.4 | 50 (90.9) | 3 (5.5) | | | 2 (3.6) |
| | Corsica and Sicily | 55 | 50 (90.9) | 50 (90.9) | | | | 5 (9.1) |
| | Continental France | 20 | 17 (85.0) | 13 (65.0) | 3 (15.0) | | 1 (5.0) | 3 (15.0) |
| | Continental Italy | 36 | 34 (94.4) | 30 (83.3) | 4 (11.1) | | | 2 (5.6) |
| | Cyrenaica | 14 | 8 (57.1) | 7 (50.0) | | | 1 (7.1) | 6 (42.9) |
| | Greece | 29 | 23 (79.3) | 21 (72.4) | | | 2 (6.9) | 6 (20.7) |
| Total | | 453 | 411 (90.7) | 395 (87.2) | 10 (2.2) | 1 (0.2) | 5 (1.1) | 42 (9.3) |
| Wild East | Crete | 53 | 46 (86.8) | 3 (5.7) | 40 (75.5) | | 3 (5.7) | 7 (13.2) |
| | Cyprus | 84 | 84 (100.0) | | 84 (100.0) | | | |
| | Near East and Turkey | 132 | 132 (100.0) | | 131 (99.2) | | 1 (0.8) | |
| Total | | 269 | 262 (97.4) | 3 (1.1) | 255 (94.8) | | 4 (1.5) | 7 (2.6) |
| **Total wild** | | **722** | **673 (93.2)** | **398 (55.1)** | **265 (36.7)** | **1 (0.1)** | **9 (1.2)** | **49 (6.8)** |
| Cultivated West | Morocco | 19 | 12 (63.2) | 6 (31.6) | | 5 (26.3) | 1 (5.3) | 7 (36.8) |
| | Portugal | 13 | 8 (61.5) | | | 7 (53.8) | 1 (7.7 | 5 (38.5) |
| | Spain | 82 | 41 (50.0) | | | 32 (39.0) | 9 (11.0) | 41 (50.0) |
| Total | | 114 | 61 (53.5) | 6 (5.3) | | 44 (38.6) | 10 (8.8) | 53 (46.5) |
| Cultivated Center | Algeria | 31 | 20 (64.5) | 1 (3.2) | 5 (16.1) | | 14 (45.2) | 11 (35.5) |
| | France | 10 | 6 (60.0) | | | | 6 (60.0) | 4 (40.0) |
| | Tunisia | 15 | 8 (53.3) | | 1 (6.7) | 1 (6.7) | 6 (40.0) | 7 (46.7) |
| | Italy | 117 | 77 (65.8) | 5 (4.3) | 6 (5.1) | 3 (2.6) | 63 (53.8) | 40 (34.2) |
| | Slovenia and Croatia | 20 | 13 (65.0) | | | | 13 (65.0) | 7 (35.0) |
| | Greece | 16 | 12 (75.0) | | 1 (6.3) | | 11 (68.8) | 4 (25.0) |
| | Egypte | 18 | 10 (55.6) | | | 1 (5.6) | 9 (50.0) | 8 (44.4) |
| Total | | 227 | 146 (64.3) | 6 (2.6) | 13 (5.7) | 5 (2.2) | 122 (53.7) | 81 (35.7) |
| Cultivated East | Cyprus and Lebanon | 19 | 16 (84.2) | | 14 (73.7) | | 2 (10.5) | 3 (15.8) |
| | Syria | 45 | 34 (75.6) | 1 (2.2) | 31 (68.9) | 1 (2.2) | 1 (2.2) | 11 (24.4) |
| | Turkey | 5 | 3 (60.0) | | 1 (20.0) | | 2 (40.0) | 2 (40.0) |
| Total | | 69 | 53 (76.8) | 1 (1.4) | 46 (66.7) | | 5 (7.2) | 16 (23.2) |
| **Total cultivated** | | **410** | **260 (63.4)** | **13 (3.2)** | **59 (14.4)** | **50 (12.2)** | **138 (33.7)** | **150 (36.6)** |
| **Total** | | **1132** | **933 (82.4)** | **411 (36.3)** | **324 (28.6)** | **51 (4.5)** | **147 (13.0)** | **199 (17.6)** |

[1]at membership probability of $p \geq 0.8$; [2]at membership probability of $p < 0.8$

**Table S5.** Proportion of maternal lineage according to the a priori grouping clusters for both wild and cultivated olive identified as admixed genotypes with DAPC method at membership assignation of p < 0.8.

| Olive type | A priori groups | No. of individuals | Maternal lineage (%) | | | |
|---|---|---|---|---|---|---|
| | | | E1 | E2 | E3 | L1.1 |
| Wild olive | Western-Central Mediterranean | 42 | 20 (47.6) | 21 (50.0) | 1 (2.4) | |
| | Eastern Mediterranean | 7 | 6 (85.7) | 1 (14.3) | | |
| Total | | 49 | 26 (53.1) | 22 (44.9) | 1 (2.0) | |
| Cultivated olive | Western Mediterranean | 53 | 48 (90.6) | 1 (1.9) | 4 (7.5) | |
| | Central Mediterranean | 81 | 65 (80.2) | 13 (16.0) | 2 (2.5) | 1 (1.2) |
| | Eastern Mediterranean | 16 | 16 (100.0) | | | |
| Total | | 150 | 129 (86.0) | 14 (9.3) | 6 (4.0) | 1 (0.7) |
| **Total** | | **199** | **155 (77.9)** | **36 (18.1)** | **7 (3.5)** | **1 (0.5)** |