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Supplementary

# Morphological and genetic diversity in olive (*Olea europaea* subsp. e*uropaea* L.) clones and varieties

**Supplementary Table S1a: Phenotypic traits of the olive leaf and fruit and their description**

| Traits* | |
|---|---|
| Leaf (1 trait) | |
| Shape (FFE) | 1- Elliptic (L/W < 4)<br>2- Elliptic-lanceolate (L/W 4-6)<br>3- Lanceolate (L/W > 6) |
| Fruit (4 traits) | |
| Shape (position A) (FOF) | 1- Spherical (L/W < 1.25)<br>2- Ovoïd (L/W 1.25-1.45)<br>3- Elongated (L/W > 1.45) |
| Position of maximum transverse diameter (position B) (DIF) | 1- Towards base<br>2- Central<br>3- Towards apex |
| Nipple (MUF) | 1- Absent<br>2- Tenuous<br>3- Obvious |
| Location of start of colour change (VRF) | 1- From the base Uniformly<br>2- Across the whole epidermis<br>3- From the apex |

*****Abbreviations: FFE- Leaf shape; FOF - Fruit shape (position A); DIF - Position of maximum transverse diameter (position B) in fruit; MUF - Nipple of fruit; VRF - Location of start of fruit colour change; L/W- Fruit length/width

**Supplementary Table S1b: Phenotypic traits of endocarop and their description**

| Endocarpe (10 caractères)* | |
|---|---|
| Shape (position A) (FOE) | 1- Spherical (L/W < 1.4)<br>2- Ovoid (L/W 1.4-1.8)<br>3- Elliptic (L/W 1.8-2.2)<br>4- Elongated (L/W > 2.2) |
| Symmetry (position A) (SAE) | 1- Symmetric<br>2- Slightly asymmetric<br>3- Asymétric |
| Symmetry (position B) (SBE) | 1- Symétric<br>2- Slightly asymmetric |
| Position of maximum transverse diameter (position B) (DIE) | 1- Towards base<br>2- Central<br>3- Towards apex |
| Apex (position A) (APE) | 1- Pointed<br>2- Rounded |
| Base (BAE) | 1- Truncate<br>2- Pointed<br>3- Rounded |
| Surface (position B) (SUE) | 1- Smooth<br>2- Rugose<br>3- Scabrous |
| Number of grooves (NSE) | 1- Low (< 7)<br>2- Medium (7-10)<br>3- High (> 7) |
| Distribution of the grooves (DSE) | 1- Regular<br>2- Grouped around the suture |
| Termination of the apex (position A) (TAE) | 1- Without mucron<br>2- With mucron |

*Abbreviations: FOE- Endocarp shape (position A) ; SAE - Endocarp symetry (position A); SBE - Endocarp symetry (position B); DIE - Position of maximum transverse diameter (position B) in endocarp; APE - Endocarp apex (position A); BAE - Endocarp base; SUE - Endocarp surface (position B) ; NSE - Number of endocarp grooves; DES - Distribution of endocarp grooves; TAE - Termination of the endocarp apex (position A); L/W - Endocarp length/width

**Supplementary Table S2:** Morphological characters recorded

| Genotypes | FFE | FOF | DIF | MUF | VRF | FOE | SAE | SBE | DIE | APE | BAE | SUE | NSE | DES | TAE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Picholine de Languedoc | Elliptic (L/W<4) | Elongated | Central | Absent | From the apex | Elongeted | Asymetric | Symetric | Towards apex | Pointed | Truncate | Rugose | Medium (7-10) | Regular | With mucro |
| Leccino | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Elliptic | Asymetric | symetric | Central | Rounded | Rounded | Rugose | Medium (7-10) | regular | With mucro |
| Branquita | Elliptic (L/W<4) | Spherical | Central | Absent | From the apex | Ovoid | Symetric | symetric | Towards apex | Rounded | Truncate | Smooth | Low (< 7) | Grouped around the suture | With mucro |
| Ayvalik | Lanceolate (L/W >6) | Ovoid | Central | Absent | From the apex | Ovoid | Symetric | symetric | Central | Rounded | Rounded | Rugose | Medium (7-10) | regular | With mucro |
| Carolea | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Obvious | across the whole epidermis | Elliptic | Slightly asymetric | symetric | Towards apex | Rounded | Truncate | Rugose | Medium (7-10) | regular | With mucro |
| Sorani | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the baseUniformly, | Elliptic | Slightly asymetric | symetric | Towards apex | Pointed | Truncate | Rugose | Medium (7-10) | regular | With mucro |
| Arbequine | Elliptic (L/W<4) | Spherical | Towards base | Absent | across the whole epidermis | Ovoid | Symetric | symetric | Central | Rounded | Rounded | Rugose | Medium (7-10) | regular | Without mucro |
| Pich Marocaine | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Elliptic | Slightly asymetric | Symetric | Central | Pointed | Rounded | Rugose | High (>10) | Regular | With mucro |
| Menara | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Elliptic | Slightly asymetric | Symetric | Central | Pointed | Rounded | Rugose | High (>10) | Grouped around the suture | With mucro |
| Haouzia | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Elliptic | Slightly asymetric | Symetric | Central | Pointed | Rounded | Rugose | Medium (7-10) | Regular | With mucro |
| S7 | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Tenuous | From the apex | Elliptic | Asymetric | Slightly asymetric | Central | Pointed | Pointed | Rugose | Medium (7-10) | Regular | With mucro |
| S8 | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Tenuous | From the apex | Elliptic | Asymetric | Symetric | Central | Pointed | Rounded | Rugose | Medium (7-10) | Regular | With mucro |
| M14 | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Elliptic | Symetric | Symetric | Central | Pointed | Pointed | Scabrous | Medium (7-10) | Grouped around the suture | Without mucro |
| M16 | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Elliptic | Slightly asymetric | Symetric | Central | Pointed | Pointed | Rugose | Medium (7-10) | Regular | Without mucro |
| M26 | Elliptic lanceolate (L/W 4-6) | Ovoid | Central | Absent | From the apex | Ovoid | Slightly asymetric | Symetric | Central | Pointed | Rounded | Rugose | Medium (7-10) | Grouped around the suture | With mucro |
| Bakhboukh beldi | Lanceolate (L/W >6) | Ovoid | Central | Tenuous | across the whole epidermis | Ovoid | Slightly asymetric | Symetric | Central | Rounded | Rounded | Rugose | Medium (7-10) | Grouped around the suture | With mucro |
| Bouchouk Rkik | Lanceolate (L/W >6) | Ovoid | Central | Tenuous | From the apex | Elliptic | Slightly asymetric | Symetric | Towrds apex | Pointed | Pointed | Smooth | Medium (7-10) | Regular | Without mucro |
| Bouchouk Laghlid | Lanceolate (L/W >6) | Elongated | Towards apex | Tenuous | across the whole epidermis | Ovoid | Slightly asymetric | Symetric | Towrds apex | Pointed | Rounded | Rugose | Medium (7-10) | Regular | Without mucro |
| Bouchouika | Lanceolate (L/W >6) | Elongated | Central | Obvious | across the whole epidermis | Ovoid | Slightly asymetric | Symetric | Towrds apex | Pointed | Pointed | Smooth | Medium (7-10) | Regular | Without mucro |

*Abbreviations: See the footnotes of supplementary Tables S1a and S1b

**Supplementary Table S3:** Size of the amplified fragment, number alleles and observed heterozygosity at 20 microsatellite loci in the 19 olive genotypes

| Locus | Primer sequences (5'→3') | Annealing temperature (°C ) | Size range (bp) | Number of alleles | Observed heterozygosity (*Ho*) |
|---|---|---|---|---|---|
| DCA3 [a] | F: CCCAAGCGGAGGTGTATATTGTTAC<br>R: TGCTTTTGTCGTGTTTGAGATGTTG | 55 | 230-251 | 6 | 0.79 |
| DCA5 [a] | F: AACAAATCCCATACGAACTGCC<br>R: CGTGTTGCTGTGAAGAAAATCG | 55 | - | 1 | - |
| UDO36 [c] | F: AACACTGTGCCACCTCAACA<br>R: GAACCCAACCCCCATCTTAC | 55 | 141-162 | 7 | 1 |
| DCA15 [a] | F: GATCTTGTCTGTATATCCACAC<br>R: TATACCTTTTCCATCTTGACGC | 55 | - | 1 | - |
| GAPU71B [b] | F: GATCAAAGGAAGAAGGGGATAAA<br>R: ACAACAAATCCGTACGCTTG | 55 | 120-153 | 5 | 1 |
| UDO12 [c] | F: TCACCATTCTTAACTTCACACCA<br>R: TCAAGCAATTCCACGCTATG | 55 | - | 1 | - |
| GAPU71A [b] | F: GATCATTTAAAATATTAGAGAGAGAGA<br>R: TCCATCCATGCTGAACTT | 55 | 192-209 | 3 | 0.42 |
| UDO14 [c] | F: TTCCCCTTATTCAATGTGAACC<br>R: ACTGCAGTTTGGGAATCAAA | 55 | 90-120 | 5 | 1 |
| UDO17 [c] | F: GCCCACAAACTCTTTGAACC<br>R: GCGATTTTTCCCTGTATTTAGGT | 55 | 152-168 | 5 | 0.47 |
| DCA17[a] | F: GATCAAATTCTACCAAAAATATA<br>R: TAATTTTTGGCACGTAGTATTGG | 55 | 103-210 | 9 | 0.84 |
| UDO27 [c] | F: TCCGTGCAAACCATGAAATA<br>R: TTGATGACTAGCACACATGTAGGA | 55 | - | 1 | - |
| UDO34 [c] | F: CTCTCGGGCATGTATCATTT<br>R: TTGCATATTTGTATGATTCATTT | 50 | - | 1 | - |
| GAPU59 [b] | F: CCCTGCTTTGGTCTTGCTAA<br>R: CAAAGGTGCACTTTCTCTCG | 55 | 205-237 | 3 | 0.89 |
| UDO44 [c] | F: AATTCCGACAAGTTGTGTGTG<br>R: CACAGCACCCAACCAGATTT | 55 | - | 1 | - |
| UDO6 [c] | F: TCAGTTTGTTGCCTTTAGTGGA<br>R: TTGTAATATGCCATGTAACTCGAT | 55 | 146-189 | 5 | 0.74 |
| DCA 1[a] | F: CCTCTGAAAATCTACACTCACATCC<br>R: TGAACAGAAAGAAGTGAACAATGC | 55 | - | 1 | - |
| DCA 7[a] | F: GGACATAAAACATAGAGTGCTGGGG<br>R: AGGGTAGTCCAACTGCTAATAGACG | 55 | - | 1 | - |
| DCA 4 [a] | F: CTTAACTTTGTGCTTCTCCATATCC<br>R: AGTGACAAAAGCAAAAGACTAAAGC | 55 | - | 1 | - |
| DCA 11[a] | F: GATCAAACTACTGCACGAGAGAG<br>R: TTGTCTCAGTGAACCCTTAAACC | 55 | - | 1 | - |
| DCA 13 [a] | F: GATCAGATTAATGAAGATTTGGG<br>R: AACTGAACCTGTGTATCTTGCATCC | 55 | - | 1 | - |

[a] Sefc et al. (2000); [b] Carriero et al. (2002) and [c] Cipriani et al. (2002)