Supplementary Table 1. *Free fatty acid (FFA) content in palms from various countries of origin*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Label | Country | Accessions | Population | Family | FFA | Palm Number | Fruit Type |
| **ANGOLA** |  |  |  |  |  |  |  |
| Angola1 | Angola | AGO 01.05 |  |  | 1.54 | 0.312/149 | Tenera |
| Angola 2 | Angola | AGO 02.01 | 02 | 02.01 | 17.24 | 0.312/821 | Dura |
| Angola 3 | Angola | AGO 02.01 | 02 | 02.01 | 13.31 | 0.312/1218 | Tenera |
| Angola 4 | Angola | AGO 03.02 | 03 |  | 39.07 | 0.312/995 | Dura |
| Angola 5 | Angola | AGO 03.07 | 03 |  | 37.12 | 0.312/127 | Tenera |
| Angola 6 | Angola | AGO 04.01 | 04 |  | 2.65 | 0.312/18 | Tenera |
| Angola 7 | Angola | AGO 04.02 | 04 |  | 41.24 | 0.312/607 | Tenera |
| Angola 8 | Angola | AGO 04.07 | 04 |  | 30.63 | 0.312/843 | Tenera |
| Angola 9 | Angola | AGO 04.08 | 04 |  | 33.02 | 0.312/1191 | Tenera |
| Angola 10 | Angola | AGO 05.01 | 05 | 05.01 | 2.05 | 0.312/68 | Dura |
| Angola 11 | Angola | AGO 05.01 | 05 | 05.01 | 41.05 | 0.312/945 | Tenera |
| Angola12 | Angola | AGO 05.02 | 05 |  | 9.9 | 0.312/895 | Dura |
| Angola 13 | Angola | AGO 06.01 | 06 | 06.01 | 29.35 | 0.312/110 | Dura |
| Angola 14 | Angola | AGO 06.01 | 06 | 06.01 | 8.7 | 0.312/1021 | Dura |
| Angola 15 | Angola | AGO 06.03 | 06 | 06.03 | 50.35 | 0.312/146 | Dura |
| Angola 16 | Angola | AGO 06.03 | 06 | 06.03 | 11.61 | 0.312/752 | Dura |
| Angola 17 | Angola | AGO 07.02 | 07 |  | 20.71 | 0.312/763 | Dura |
| Angola 18 | Angola | AGO 07.04 | 07 | 07.04 | 35.42 | 0.312/172 | Tenera |
| Angola 19 | Angola | AGO 07.04 | 07 | 07.04 | 33.62 | 0.312/836 | Dura |
| Angola 20 | Angola | AGO 08.10 | 08 |  | 4.27 | 0.312/797 | Tenera |
| Angola 21 | Angola | AGO 08.13 | 08 |  | 4.61 | 0.312/1029 | Tenera |
|  |  |  | N=7 | N=5 |  |  |  |
|  |  |  |  |  |  |  |  |
| **CAMEROON** |  |  |  |  |  |  |  |
| Cameroon 1 | Cameroon | CMR 04.01 |  |  | 54.51 | 0.218/590 | Dura |
| Cameroon 2 | Cameroon | CMR 07.04 |  |  | 38.37 | 0.218/591 | Dura |
| Cameroon 3 | Cameroon | CMR 09.05 | 09 |  | 17.92 | 0.218/178 | Tenera |
| Cameroon 4 | Cameroon | CMR 09.09 | 09 |  | 0.94 | 0.218/421 | Tenera |
| Cameroon 5 | Cameroon | CMR 11.01 | 11 | 11.01 | 8.19 | 0.218/455 | Tenera |
| Cameroon 6 | Cameroon | CMR 11.01 | 11 | 11.01 | 22.33 | 0.218/457 | Tenera |
| Cameroon 7 | Cameroon | CMR 11.01 | 11 | 11.01 | 21.34 | 0.218/556 | Dura |
| Cameroon 8 | Cameroon | CMR 11.01 | 11 | 11.01 | 2.9 | 0.218/558 | Dura |
| Cameroon 9 | Cameroon | CMR 12.03 | 12 | 12.03 | 16.55 | 0.218/327 | Dura |
| Cameroon 10 | Cameroon | CMR 12.03 | 12 | 12.03 | 20.4 | 0.218/328 | Dura |
| Cameroon 11 | Cameroon | CMR 19.04 | 19 | 19.04 | 1.06 | 0.218/546 | Dura |
| Cameroon 12 | Cameroon | CMR 19.04 | 19 | 19.04 | 41.04 | 0.218/547 | Tenera |
| Cameroon 13 | Cameroon | CMR 20.03 |  |  | 11.86 | 0.218/458 | Dura |
| Cameroon 14 | Cameroon | CMR 29.03 | 29 |  | 1.02 | 0.218/221 | Tenera |
| Cameroon 15 | Cameroon | CMR 29.04 | 29 | 29.04 | 18.63 | 0.218/332 | Dura |
| Cameroon 16 | Cameroon | CMR 29.04 | 29 | 29.04 | 11.01 | 0.218/333 | Tenera |
| Cameroon 17 | Cameroon | CMR 29.05 | 29 | 29.05 | 2.86 | 0.218/309 | Tenera |
| Cameroon 18 | Cameroon | CMR 29.05 | 29 | 29.05 | 11 | 0.218/310 | Tenera |
| Cameroon 19 | Cameroon | CMR 32.01 | 32 | 32.01 | 0.77 | 0.218/200 | Dura |
| Cameroon 20 | Cameroon | CMR 32.01 | 32 | 32.01 | 34.82 | 0.218/201 | Tenera |
|  |  |  | N=6 | N=6 |  |  |  |
|  |  |  |  |  |  |  |  |
| **GUINEA** |  |  |  |  |  |  |  |
| Guinea 1 | Guinea | GUI 02.01 | 02 |  | 1.28 | 0.353/131 | Tenera |
| Guinea 2 | Guinea | GUI 02.02 | 02 | 02.02 | 31.73 | 0.353/190 | Dura |
| Guinea 3 | Guinea | GUI 02.02 | 02 | 02.02 | 8.28 | 0.353/377 | Dura |
| Guinea 4 | Guinea | GUI 02.02 | 02 | 02.02 | 1.28 | 0.353/381 | Tenera |
| Guinea 5 | Guinea | GUI 02.02 | 02 | 02.02 | 3.28 | 0.353/382 | Dura |
| Guinea 6 | Guinea | GUI 02.02 | 02 | 02.02 | 0.77 | 0.353/383 | Dura |
| Guinea 7 | Guinea | GUI 03.01 | 03 |  | 11.77 | 0.353/360 | Dura |
| Guinea 8 | Guinea | GUI 03.04 | 03 | 03.04 | 5.12 | 0.353/421 | Dura |
| Guinea 9 | Guinea | GUI 03.04 | 03 | 03.04 | 1.02 | 0.353/434 | Dura |
| Guinea 10 | Guinea | GUI 03.04 | 03 | 03.04 | 0.28 | 0.353/435 | Dura |
| Guinea 11 | Guinea | GUI 03.04 | 03 | 03.04 | 0.51 | 0.353/439 | Dura |
| Guinea 12 | Guinea | GUI 03.04 | 03 | 03.04 | 0.26 | 0.353/440 | Dura |
| Guinea 13 | Guinea | GUI 04.01 | 04 |  | 5.95 | 0.353/389 | Dura |
| Guinea 14 | Guinea | GUI 04.03 | 04 | 04.03 | 0.44 | 0.353/88 | Tenera |
| Guinea 15 | Guinea | GUI 04.03 | 04 | 04.03 | 0.45 | 0.353/248 | Tenera |
| Guinea 16 | Guinea | GUI 04.04 | 04 |  | 12.8 | 0.353/216 | Tenera |
| Guinea 17 | Guinea | GUI 07.02 |  |  | 1.01 | 0.353/96 | Tenera |
| Guinea 18 | Guinea | GUI 09.05 | 09 | 09.05 | 36.35 | 0.353/182 | Tenera |
| Guinea 19 | Guinea | GUI 09.05 | 09 | 09.05 | 20.35 | 0.353/183 | Tenera |
| Guinea 20 | Guinea | GUI 09.05 | 09 | 09.05 | 15.19 | 0.353/200 | Tenera |
|  |  |  | N=4 | N=4 |  |  |  |
| **NIGERIA** |  |  |  |  |  |  |  |
| Nigeria 1 | Nigeria | PK 2645 (36.07x32.16) |  |  | 0.62 | **0.151/1662** x **0.151/146** | Tenera |
| Nigeria 2 | Nigeria | PK 2648 (12.05 x 19.17) | 12 | 12.03 x 12.05 | 0.77 | **0.150/5375** x **0.150/1780** | Dura |
| Nigeria 3 | Nigeria | PK 2665 (12.07 x 12.01) |  | 34.07 x 12.05 | 0.81 | **0.150/2356** x **0.149/14483** | Tenera |
| Nigeria 4 | Nigeria | PK 2665 (12.07 x 12.01) | 12 | 12.05 x 12.05 | 0.84 | **0.150/2356** x **0.149/14483** | Tenera |
| Nigeria 5 | Nigeria | PK 2672 (34.07 x 12.05) | 12 | 12.03 x 12.05 | 1 | **0.149/6086** X **0.150/484** | Dura |
| Nigeria 6 | Nigeria | PK 2672 (34.07 x 12.05) | 12 | 12.05 x 12.05 | 1.02 | **0.149/6086** X **0.150/484** | Dura |
| Nigeria 7 | Nigeria | PK 2672 (34.07 x 12.05) | 12 | 12.05 x 12.05 | 1.14 | **0.149/6086** x **0.150/484** | Dura |
| Nigeria 8 | Nigeria | PK 2736 (12.07 x 12.07) |  | 34.07 x 12.05 | 1.15 | **0.150/2356** x **0.150/2356** | Dura |
| Nigeria 9 | Nigeria | PK 2742 (12.05 x 12.05) | 12 | 12.05 x 12.05 | 1.28 | **0.150/484** x **0.150/484** | Tenera |
| Nigeria 10 | Nigeria | PK 2742 (12.05 x 12.05) | 12 |  | 2.22 | **0.150/484** x **0.150/484** | Tenera |
| Nigeria 11 | Nigeria | PK 2742 (12.05 x 12.05) | 12 | 12.03 x 12.05 | 2.39 | **0.150/484** x **0.150/484** | Tenera |
| Nigeria 12 | Nigeria | PK 2742 (12.05 x 12.05) |  | 34.07 x 12.05 | 2.45 | **0.150/484** x **0.150/484** | Tenera |
| Nigeria 13 | Nigeria | PK 2742 (12.05 x 12.05) | 12 | 12.07 x 12.01 | 3.23 | **0.150/484** x **0.150/484** | Tenera |
| Nigeria 14 | Nigeria | PK 2909 (12.03 x 12.05) | 12 | 12.05 x 12.05 | 3.5 | **0.149/13130** X **0.150/5375** | Dura |
| Nigeria 15 | Nigeria | PK2909 (12.03 x 12.05) | 12 | 12.07 x 12.01 | 3.76 | **0.149/13130** X **0.150/5375** | Dura |
| Nigeria 16 | Nigeria | PK2909 (12.03 x 12.05) | 12 | 12.03 x 12.05 | 5.12 | **0.149/13130** X **0.150/5375** | Dura |
| Nigeria 17 | Nigeria | PK2909 (12.03 x 12.05) | 12 |  | 12.03 | **0.149/13130** X **0.150/5375** | Dura |
|  |  |  | N=1 | N=4 |  |  |  |
|  |  |  |  |  |  |  |  |
| **SENEGAL** |  |  |  |  |  |  |  |
| Senegal 1 | Senegal | SEN 02.06 | 02 | 02.06 | 2.77 | 0.352/364 | Dura |
| Senegal 2 | Senegal | SEN 02.06 | 02 | 02.06 | 1.07 | 0.352/386 | Dura |
| Senegal 3 | Senegal | SEN 02.09 | 02 |  | 0.66 | 0.352/365 | Dura |
| Senegal 4 | Senegal | SEN 05.01 | 05 |  | 3.39 | 0.352/393 | Dura |
| Senegal 5 | Senegal | SEN 05.02 | 05 |  | 6.12 | 0.352/46 | Tenera |
| Senegal 6 | Senegal | SEN 05.03 | 05 | 05.03 | 2.56 | 0.352/367 | Dura |
| Senegal 7 | Senegal | SEN 05.03 | 05 | 05.03 | 21.59 | 0.352/384 | Dura |
| Senegal 8 | Senegal | SEN 05.08 | 05 | 05.08 | 0.97 | 0.352/319 | Dura |
| Senegal 9 | Senegal | SEN 05.08 | 05 | 05.08 | 0.87 | 0.352/396 | Dura |
| Senegal 10 | Senegal | SEN 07.03 |  |  | 3.36 | 0.352/371 | Dura |
| Senegal 11 | Senegal | SEN 10.03 |  |  | 5.56 | 0.352/407 | Dura |
| Senegal 12 | Senegal | **SC 3 (0.352)** |  |  | 13.71 | 0.352/108 | Tenera |
| Senegal 13 | Senegal | **SC 3 (0.352)** |  |  | 6.06 | 0.352/148 | Tenera |
| Senegal 14 | Senegal | **SC 3 (0.352)** |  |  | 10.29 | 0.352/205 | Tenera |
| Senegal 15 | Senegal | **SC 3 (0.352)** |  |  | 20.35 | 0.352/308 | Tenera |
| Senegal 16 | Senegal | **SC 3 (0.352)** |  |  | 4.1 | 0.352/346 | Tenera |
| Senegal 17 | Senegal | **SC 3 (0.352)** |  |  | 4.52 | 0.352/372 | Tenera |
| Senegal 18 | Senegal | **SC 3 (0.352)** |  |  | 12.03 | 0.352/387 | Tenera |
| Senegal 19 | Senegal | **SC 3 (0.352)** |  |  | 34.22 | 0.352/388 | Tenera |
| Senegal 20 | Senegal | **SC 3 (0.352)** |  |  | 13.31 | 0.352/391 | Tenera |
|  |  |  | N=2 | N=3 |  |  |  |
|  |  |  |  |  |  |  |  |
| **S.LEONE** |  |  |  |  |  |  |  |
| S.Leone 1 | Siera Leone | SLE 01.04 | 01 | 01.04 | 18.43 | 0.355/142 | Dura |
| S.Leone 2 | Siera Leone | SLE 01.04 | 01 | 01.04 | 41.6 | 0.355/208 | Tenera |
| S.Leone 3 | Siera Leone | SLE 01.07 | 01 | 01.07 | 13.53 | 0.355/471 | Tenera |
| S.Leone 4 | Siera Leone | SLE 01.07 | 01 | 01.07 | 15.33 | 0.355/472 | Dura |
| S.Leone 5 | Siera Leone | SLE 05.01 | 05 | 05.01 | 0.51 | 0.355/124 | Dura |
| S.Leone 6 | Siera Leone | SLE 05.01 | 05 | 05.01 | 3.34 | 0.355/125 | Dura |
| S.Leone 7 | Siera Leone | SLE 05.01 | 05 | 05.01 | 0.55 | 0.355/137 | Dura |
| S.Leone 8 | Siera Leone | SLE 05.01 | 05 | 05.01 | 4.62 | 0.355/493 | Dura |
| S.Leone 9 | Siera Leone | SLE 05.01 | 05 | 05.01 | 4.69 | 0.355/494 | Tenera |
| S.Leone 10 | Siera Leone | SLE 05.03 | 05 | 05.03 | 1.45 | 0.355/507 | Dura |
| S.Leone 11 | Siera Leone | SLE 05.03 | 05 | 05.03 | 16.11 | 0.355/515 | Tenera |
| S.Leone 12 | Siera Leone | SLE 09.01 |  |  | 11.52 | 0.355/127 | Tenera |
| S.Leone 13 | Siera Leone | SLE 11.01 |  |  | 1.21 | 0.355/516 | Dura |
| S.Leone 14 | Siera Leone | SLE 13.03 | 13 | 13.03 | 26.24 | 0.355/526 | Tenera |
| S.Leone 15 | Siera Leone | SLE 13.03 | 13 | 13.03 | 55.73 | 0.355/527 | Tenera |
| S.Leone 16 | Siera Leone | SLE 14.02 | 14 | 14.02 | 36.48 | 0.355/187 | Tenera |
| S.Leone 17 | Siera Leone | SLE 14.02 | 14 | 14.02 | 23.04 | 0.355/524 | Dura |
| S.Leone 18 | Siera Leone | SLE 14.02 | 14 | 14.02 | 55.26 | 0.355/525 | Dura |
| S.Leone 19 | Siera Leone | SLE 14.05 | 14 |  | 43.85 | 0.355/340 | Tenera |
|  |  |  | N=4 | N=6 |  |  |  |
|  |  |  |  |  |  |  |  |
| **TANZANIA** |  |  |  |  |  |  |  |
| Tanzania 1 | Tanzania | TZA 01.03 | 01 |  | 2.56 | 0.256/650 | Tenera |
| Tanzania 2 | Tanzania | TZA 01.05 | 01 |  | 27.22 | 0.256/239 | Tenera |
| Tanzania 3 | Tanzania | TZA 04.04 | 04 | 04.04 | 30.21 | 0.256/77 | Dura |
| Tanzania 4 | Tanzania | TZA 04.04 | 04 | 04.04 | 43.78 | 0.256/100 | Dura |
| Tanzania 5 | Tanzania | TZA 05.01 | 05 | 05.01 | 1.36 | 0.256/1401 | Tenera |
| Tanzania 6 | Tanzania | TZA 05.01 | 05 | 05.01 | 14.79 | 0.256/1402 | Tenera |
| Tanzania 7 | Tanzania | TZA 05.01 | 05 | 05.01 | 39.86 | 0.256/2243 | Dura |
| Tanzania 8 | Tanzania | TZA 05.01 | 05 | 05.01 | 4.05 | 0.256/2251 | Dura |
| Tanzania 9 | Tanzania | TZA 05.01 | 05 | 05.01 | 32.42 | 0.256/2253 | Dura |
| Tanzania 10 | Tanzania | TZA 05.01 | 05 | 05.01 | 9.98 | 0.256/2259 | Dura |
| Tanzania 11 | Tanzania | TZA 05.02 | 05 |  | 43.52 | 0.256/94 | Tenera |
| Tanzania 12 | Tanzania | TZA 06.01 | 06 |  | 20.29 | 0.256/2425 | Dura |
| Tanzania 13 | Tanzania | TZA 06.02 | 06 | 06.02 | 23.21 | 0.256/2233 | Dura |
| Tanzania 14 | Tanzania | TZA 06.02 | 06 | 06.02 | 30.63 | 0.256/2234 | Tenera |
| Tanzania 15 | Tanzania | TZA 06.02 | 06 | 06.02 | 21.65 | 0.256/2235 | Dura |
| Tanzania 16 | Tanzania | TZA 07.03 |  |  | 3.55 | 0.256/2420 | Dura |
| Tanzania 17 | Tanzania | TZA 11.01 | 11 | 11.01 | 59.91 | 0.256/334 | Tenera |
| Tanzania 18 | Tanzania | TZA 11.01 | 11 | 11.01 | 52.56 | 0.256/360 | Tenera |
| Tanzania 19 | Tanzania | TZA 11.05 | 11 |  | 2.82 | 0.256/54 | Tenera |
| Tanzania 20 | Tanzania | TZA 13.02 |  |  | 58.88 | 0.256/534 | Tenera |
|  |  |  | N=5 | N=4 |  |  |  |
|  |  |  |  |  |  |  |  |
| **ZAIRE** |  |  |  |  |  |  |  |
| Zaire 1 | Zaire | MS 3554 |  |  | 19.25 | 0.222/1630 | Dura |
| Zaire 2 | Zaire | ZRE 33.04 | 33 |  | 23.2 | 0.222/1688 | Dura |
| Zaire 3 | Zaire | ZRE 33.09 | 33 |  | 19.97 | 0.222/1473 | Tenera |
| Zaire 4 | Zaire | ZRE 33.15 | 33 |  | 26.45 | 0.222/1860 | Tenera |
| Zaire 5 | Zaire | ZRE 33.17 | 33 |  | 65.15 | 0.222/1636 | Tenera |
| Zaire 6 | Zaire | ZRE 33.18 | 33 |  | 34.05 | 0.222/1979 | Tenera |
| Zaire 7 | Zaire | ZRE 34.01 |  |  | 14.34 | 0.222/1776 | Dura |
| Zaire 8 | Zaire | ZRE 35.01 |  |  | 19.91 | 0.222/1778 | Dura |
| Zaire 9 | Zaire | ZRE 36.02 | 36 | 36.02 | 15.7 | 0.222/579 | Dura |
| Zaire 10 | Zaire | ZRE 36.02 | 36 | 36.02 | 27.48 | 0.222/1815 | Dura |
| Zaire 11 | Zaire | ZRE 37.03 | 37 |  | 38.66 | 0.222/1941 | Tenera |
| Zaire 12 | Zaire | ZRE 37.04 | 37 |  | 37.63 | 0.222/1629 | Dura |
| Zaire 13 | Zaire | ZRE 37.08 | 37 |  | 36.67 | 0.222/1580 | Dura |
| Zaire 14 | Zaire | ZRE 38.08 |  |  | 36.1 | 0.222/1947 | Tenera |
| Zaire 15 | Zaire | ZRE 39.03 |  |  | 35.41 | 0.222/1933 | Tenera |
| Zaire 16 | Zaire | ZRE 41.03 | 41 |  | 35.72 | 0.222/1634 | Dura |
| Zaire 17 | Zaire | ZRE 41.10 | 41 |  | 6.72 | 0.222/1877 | Tenera |
| Zaire 18 | Zaire | ZRE 41.11 | 41 |  | 6.4 | 0.222/1477 | Tenera |
| Zaire 19 | Zaire | ZRE 42.05 | 42 |  | 36.52 | 0.222/1965 | Tenera |
| Zaire 20 | Zaire | ZRE 42.07 | 42 |  | 1.5 | 0.222/1472 | Dura |
|  |  |  | N=5 | N=1 |  |  |  |
|  |  | Total N | 34 | 33 |  |  |  |
|  |  |  |  |  |  |  |  |

Supplementary Figure 1 Calibration curves for three reference genes, PD00569, pOP-EA01332 and PD00380 (a, b, c) and two genes of interest, GDSL and GXSXG lipase genes (d and e)



