Table S1. Mean performance of Bambara genotypes for the 2019/2020 growing season

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genotype | GYLD | PDL | PDW | NPP | NSP |
| BC12 | 943 | 17.6 | 9.9 | 18.0 | 1.00 |
| BC13 | 1124 | 17.8 | 8.9 | 28.2 | 1.00 |
| BC3 | 1017 | 17.5 | 9.5 | 16.1 | 1.00 |
| BC4 | 413 | 18.4 | 9.6 | 17.0 | 1.00 |
| BC5 | 977 | 19.4 | 10.8 | 22.9 | 1.17 |
| BC6 | 894 | 18.7 | 9.6 | 18.3 | 1.00 |
| BC7 | 1217 | 18.1 | 10.3 | 21.9 | 1.00 |
| Chikope-cha-nyani | 490 | 18.4 | 9.8 | 21.3 | 1.00 |
| Kayera | 1021 | 16.9 | 8.6 | 24.9 | 1.00 |
| Khaki-light | 476 | 16.4 | 8.2 | 15.7 | 1.00 |
| Khaki-light-1 | 579 | 16.5 | 8.7 | 20.3 | 1.00 |
| Mazira-a-mpheta | 1290 | 17.3 | 8.6 | 32.8 | 1.00 |
| Mazira-a-mpheta-1 | 437 | 16.3 | 8.3 | 14.8 | 1.00 |
| TVSu-1045 | 1002 | 15.6 | 8.9 | 33.3 | 1.00 |
| TVSu-1108 | 472 | 16.4 | 8.5 | 20.5 | 1.00 |
| TVSu-1169 | 856 | 18.4 | 10.9 | 14.4 | 1.00 |
| TVSu-1175 | 441 | 17.6 | 9.1 | 18.8 | 1.00 |
| TVSu-1244 | 507 | 16.5 | 8.8 | 24.2 | 1.00 |
| TVSu-1256 | 1307 | 17.8 | 9.5 | 26.7 | 1.00 |
| TVSu-1258 | 466 | 15.7 | 7.6 | 17.2 | 1.00 |
| TVSu-1311 | 498 | 17.9 | 10.4 | 16.1 | 1.00 |
| TVSu-1312 | 1043 | 18.3 | 10.5 | 19.9 | 1.00 |
| TVSu-1316 | 776 | 19.3 | 9.9 | 13.5 | 1.00 |
| TVSu-1321 | 1410 | 19.4 | 10.7 | 25.3 | 1.00 |
| TVSu-1380 | 535 | 16.7 | 9.9 | 17.5 | 1.00 |
| TVSu-1436 | 337 | 18.8 | 9.5 | 15.7 | 1.00 |
| TVSu-1438 | 654 | 17.7 | 8.8 | 20.4 | 1.00 |
| TVSu-1448 | 472 | 19.9 | 11.3 | 9.6 | 1.00 |
| TVSu-1557 | 1381 | 19.8 | 10.0 | 23.2 | 1.00 |
| TVSu-1604 | 571 | 20.1 | 10.2 | 9.8 | 1.00 |
| TVSu-1667 | 277 | 18.8 | 9.2 | 8.0 | 1.00 |
| TVSu-1733 | 1302 | 19.2 | 11.0 | 24.4 | 1.00 |
| TVSu-1755 | 887 | 16.7 | 9.1 | 23.8 | 1.00 |
| TVSu-1780 | 814 | 19.4 | 9.2 | 16.4 | 1.17 |
| TVSu-1794 | 784 | 18.9 | 10.8 | 23.8 | 1.00 |
| TVSu-1797 | 366 | 18.1 | 8.4 | 15.3 | 1.00 |
| TVSu-1831 | 252 | 15.4 | 6.7 | 8.9 | 1.00 |
| TVSu-1874 | 620 | 17.4 | 9.9 | 20.8 | 1.00 |
| TVSu-1888 | 425 | 19.5 | 8.5 | 13.2 | 1.13 |
| TVSu-1929 | 452 | 16.9 | 8.8 | 13.5 | 1.00 |
| TVSu-193 | 396 | 19.5 | 9.3 | 9.1 | 1.00 |
| TVSu-1939 | 661 | 18.0 | 9.9 | 15.3 | 1.00 |
| TVSu-200 | 756 | 18.1 | 9.6 | 18.8 | 1.00 |
| TVSu-250 | 420 | 19.5 | 8.5 | 9.0 | 1.00 |
| TVSu-288 | 485 | 16.9 | 8.9 | 12.0 | 1.00 |
| TVSu-368 | 282 | 21.3 | 9.6 | 11.9 | 1.00 |
| TVSu-388 | 654 | 16.6 | 9.2 | 14.8 | 1.00 |
| TVSu-416 | 996 | 19.9 | 10.4 | 21.3 | 1.00 |
| TVSu-466 | 920 | 17.9 | 9.1 | 22.9 | 1.00 |
| TVSu-49 | 758 | 20.1 | 10.4 | 10.8 | 1.00 |
| TVSu-534 | 284 | 17.6 | 9.6 | 15.2 | 1.00 |
| TVSu-542 | 1046 | 19.1 | 10.3 | 18.1 | 1.00 |
| TVSu-637 | 461 | 18.3 | 8.7 | 8.9 | 1.03 |
| TVSu-758 | 451 | 16.7 | 9.4 | 29.3 | 1.00 |
| TVSu-793 | 799 | 18.5 | 10.8 | 17.1 | 1.00 |
| TVSu-868 | 804 | 15.9 | 8.3 | 31.3 | 1.00 |
| Mean | 714 | 18.0 | 9.4 | 18.4 | 1.01 |
| P-VALUE | <0.01 | <0.001 | <0.001 | <0.001 | <0.001 |
| SE± | 236 | 0.64 | 0.62 | 4 | 0.02 |

GYLD=Grain yield (kg/ha), NSP=Number of seeds per pod, NPP=Number of pods per plant, PDW=Pod width, PDL=Pod length

Table S2. Mean performance of Bambara genotypes for the 2021/2022 growing season

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Genotype | GYLD | S100W | SDL | NSP | NPP | PDW | PDL | PHT | CNS | DFF |
| BC12 | 555 | 77.3 | 1.0 | 1.4 | 21.8 | 1.2 | 1.9 | 18.8 | 30.8 | 57.3 |
| BC13 | 1083 | 85.1 | 1.1 | 1.3 | 31.6 | 1.4 | 2.3 | 23.0 | 34.2 | 58.3 |
| BC14 | 444 | 56.7 | 1.2 | 1.4 | 22.7 | 1.4 | 2.3 | 20.0 | 34.3 | 55.1 |
| BC15 | 1044 | 68.1 | 1.0 | 1.2 | 26.9 | 1.5 | 2.4 | 19.6 | 31.0 | 58.1 |
| BC16 | 484 | 49.0 | 1.0 | 1.4 | 30.6 | 1.3 | 2.3 | 21.2 | 35.3 | 54.6 |
| BC17 | 935 | 61.8 | 1.0 | 1.5 | 23.6 | 1.4 | 2.1 | 20.2 | 33.8 | 55.8 |
| BC3 | 687 | 77.7 | 1.1 | 1.4 | 16.2 | 1.5 | 2.4 | 21.9 | 36.9 | 56.7 |
| BC4 | 909 | 74.9 | 1.0 | 1.3 | 24.3 | 1.4 | 2.3 | 21.0 | 36.0 | 55.6 |
| BC5 | 754 | 68.4 | 1.1 | 1.6 | 22.2 | 1.5 | 2.8 | 22.5 | 36.8 | 55.5 |
| BC6 | 755 | 64.7 | 1.0 | 1.7 | 36.4 | 1.4 | 2.8 | 22.0 | 32.3 | 56.9 |
| BC7 | 1031 | 78.8 | 1.1 | 1.3 | 26.9 | 1.5 | 2.5 | 22.4 | 34.3 | 56.2 |
| CCN | 461 | 72.0 | 1.1 | 1.4 | 26.2 | 1.3 | 2.2 | 21.0 | 32.3 | 55.6 |
| Kayera | 848 | 72.7 | 1.1 | 1.3 | 20.1 | 1.5 | 2.4 | 22.1 | 37.6 | 56.3 |
| Khaki-light | 1174 | 70.9 | 1.1 | 1.2 | 34.0 | 1.3 | 2.3 | 23.6 | 34.4 | 55.9 |
| KL-1 | 713 | 65.0 | 1.1 | 1.5 | 34.0 | 1.4 | 2.2 | 25.4 | 33.5 | 55.6 |
| MAM | 1828 | 61.3 | 1.0 | 1.0 | 38.3 | 1.5 | 2.3 | 21.2 | 41.3 | 56.5 |
| MAM-1 | 1272 | 64.2 | 1.0 | 1.6 | 46.6 | 1.4 | 2.2 | 20.9 | 35.6 | 56.6 |
| TVSu-1045 | 682 | 62.5 | 1.0 | 1.2 | 17.6 | 1.2 | 1.9 | 17.5 | 31.8 | 55.7 |
| TVSu-1108 | 461 | 59.8 | 1.1 | 1.2 | 39.7 | 1.4 | 2.1 | 21.5 | 33.3 | 55.2 |
| TVSu-1169 | 479 | 65.1 | 1.1 | 1.3 | 5.5 | 1.4 | 2.1 | 18.1 | 28.5 | 55.6 |
| TVSu-1175 | 479 | 66.0 | 1.1 | 1.3 | 8.1 | 1.4 | 2.2 | 16.6 | 31.4 | 56.0 |
| TVSu-1244 | 526 | 69.8 | 1.0 | 1.3 | 21.0 | 1.4 | 2.2 | 17.4 | 32.9 | 56.7 |
| TVSu-1256 | 1004 | 60.2 | 1.1 | 1.0 | 29.0 | 1.4 | 2.2 | 18.5 | 32.4 | 56.6 |
| TVSu-1258 | 806 | 51.3 | 1.0 | 1.4 | 22.5 | 1.2 | 2.2 | 18.0 | 33.7 | 55.2 |
| TVSu-1311 | 405 | 56.9 | 1.1 | 1.2 | 15.9 | 1.4 | 2.0 | 19.5 | 30.0 | 55.9 |
| TVSu-1312 | 833 | 55.1 | 1.0 | 1.3 | 24.6 | 1.7 | 2.4 | 20.3 | 32.7 | 56.2 |
| TVSu-1316 | 383 | 54.2 | 1.1 | 1.1 | 26.7 | 1.5 | 2.3 | 21.4 | 34.0 | 56.3 |
| TVSu-1321 | 932 | 68.6 | 1.1 | 1.1 | 22.5 | 1.3 | 2.4 | 22.1 | 33.3 | 55.6 |
| TVSu-1380 | 287 | 56.6 | 1.1 | 1.3 | 8.4 | 1.4 | 2.1 | 15.7 | 29.0 | 56.6 |
| TVSu-1426 | 184 | 51.0 | 1.1 | 1.5 | 14.5 | 1.3 | 2.0 | 16.1 | 28.7 | 56.8 |
| TVSu-1438 | 656 | 52.5 | 1.1 | 1.5 | 21.0 | 1.4 | 2.1 | 21.1 | 36.1 | 55.3 |
| TVSu-1448 | 1224 | 62.0 | 1.1 | 1.6 | 16.9 | 1.5 | 2.3 | 17.8 | 34.3 | 56.6 |
| TVSu-1557 | 1244 | 90.1 | 1.1 | 1.3 | 30.8 | 1.5 | 2.3 | 21.4 | 32.5 | 55.3 |
| TVSu-1604 | 249 | 49.4 | 1.0 | 1.4 | 19.2 | 1.4 | 2.2 | 17.2 | 28.7 | 57.5 |
| TVSu-1667 | 518 | 57.8 | 0.9 | 1.2 | 24.4 | 1.3 | 2.1 | 18.0 | 31.6 | 55.5 |
| TVSu-1733 | 648 | 76.1 | 1.1 | 1.3 | 27.4 | 1.5 | 2.3 | 20.2 | 31.0 | 56.7 |
| TVSu-1755 | 576 | 51.4 | 1.1 | 1.2 | 20.9 | 1.5 | 2.3 | 21.5 | 34.4 | 56.4 |
| TVSu-1780 | 552 | 74.8 | 1.2 | 1.4 | 13.6 | 1.4 | 2.4 | 23.0 | 32.5 | 57.1 |
| TVSu-1794 | 1269 | 57.9 | 1.1 | 1.5 | 60.1 | 1.4 | 2.3 | 24.2 | 33.7 | 56.1 |
| TVSu-1797 | 832 | 75.8 | 1.2 | 1.2 | 29.1 | 1.4 | 2.6 | 20.6 | 36.5 | 56.4 |
| TVSu-1831 | 220 | 64.6 | 1.0 | 1.3 | 19.5 | 1.4 | 2.1 | 17.1 | 27.0 | 56.0 |
| TVSu-1874 | 268 | 68.9 | 1.0 | 1.1 | 23.1 | 1.3 | 2.3 | 22.6 | 35.8 | 56.0 |
| TVSu-1888 | 143 | 46.5 | 1.0 | 1.4 | 7.8 | 1.4 | 2.2 | 19.9 | 30.1 | 56.8 |
| TVSu-1929 | 1083 | 67.1 | 1.0 | 1.4 | 21.1 | 1.6 | 2.3 | 21.6 | 36.4 | 56.6 |
| TVSu-193 | 384 | 57.5 | 1.0 | 1.3 | 19.8 | 1.4 | 2.3 | 17.1 | 26.8 | 55.5 |
| TVSu-1939 | 1193 | 55.6 | 1.0 | 1.4 | 33.8 | 1.4 | 2.1 | 21.1 | 33.6 | 56.4 |
| TVSu-200 | 505 | 60.1 | 1.0 | 1.0 | 19.8 | 1.4 | 2.3 | 20.0 | 34.6 | 57.0 |
| TVSu-250 | 104 | 57.1 | 1.1 | 1.2 | 24.3 | 1.5 | 2.4 | 17.6 | 30.3 | 55.3 |
| TVSu-288 | 668 | 70.4 | 1.0 | 1.1 | 18.1 | 1.2 | 2.1 | 18.2 | 29.1 | 56.2 |
| TVSu-368 | 766 | 76.4 | 1.0 | 1.4 | 10.8 | 1.5 | 2.4 | 19.2 | 31.6 | 55.6 |
| TVSu-388 | 865 | 76.0 | 1.0 | 1.3 | 11.7 | 1.4 | 2.3 | 21.5 | 33.4 | 56.7 |
| TVSu-416 | 975 | 73.5 | 1.0 | 1.2 | 17.9 | 1.5 | 2.3 | 20.1 | 35.4 | 56.0 |
| TVSu-466 | 497 | 53.1 | 1.0 | 1.4 | 15.8 | 1.4 | 2.3 | 21.0 | 31.3 | 57.1 |
| TVSu-49 | 551 | 62.1 | 1.1 | 1.1 | 7.2 | 1.5 | 2.4 | 18.6 | 32.5 | 56.8 |
| TVSu-534 | 356 | 60.8 | 1.1 | 1.0 | 15.7 | 1.4 | 2.1 | 20.7 | 34.2 | 56.3 |
| TVSu-542 | 639 | 65.4 | 1.0 | 1.3 | 17.8 | 1.6 | 2.6 | 21.5 | 34.8 | 56.6 |
| TVSu-637 | 494 | 73.4 | 1.1 | 1.3 | 25.2 | 1.4 | 2.4 | 21.5 | 34.6 | 55.2 |
| TVSu-758 | 918 | 47.8 | 1.1 | 1.2 | 39.4 | 1.2 | 2.4 | 20.7 | 33.4 | 55.4 |
| TVSu-793 | 895 | 62.3 | 1.1 | 1.3 | 33.0 | 1.3 | 2.2 | 21.3 | 36.8 | 55.5 |
| TVSu-868 | 1001 | 60.2 | 1.1 | 1.3 | 48.3 | 1.3 | 2.1 | 19.8 | 36.6 | 57.0 |
| Mean | 712 | 64.2 | 1.1 | 1.3 | 23.9 | 1.4 | 2.3 | 20.3 | 33.2 | 56.2 |
| SE± | 274 | 8.5 | 0.05 | 0.14 | 4.2 | 0.1 | 0.14 | 0.94 | 1.53 | 0.73 |
| P-Value | <0.01 | <0.05 | <0.001 | >0.05 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | >0.05 |

CNN=Chikope cha nyani, KL-1=Khaki light 1, MAM=Mazira a mpheta, GYLD=Grain yield (kg/ha), S100W= Weight of 100 seeds, SDL=Seed length, NSP=Number of seeds per pod, NPP=Number of pods per plant, PDW=Pod width, PDL=Pod length, D50F=Number of days from first flowering to 50% flowering, PHT=Plant height, CNS=Canopy spread, DFF=Number of days from sowing to first flowering

Table S3. Mean performance of Bambara genotypes for the 2021/2022 growing season

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Genotype | D50F | NSTP | NBS | NNS | INL | PTL | TLW | TLL | NLP | PEDL |
| BC12 | 63.0 | 10.6 | 5.8 | 6.0 | 3.0 | 12.6 | 2.4 | 6.7 | 104.8 | 3.4 |
| BC13 | 63.8 | 10.5 | 5.5 | 6.5 | 3.6 | 16.9 | 2.5 | 7.0 | 100.7 | 3.4 |
| BC14 | 61.1 | 8.9 | 5.2 | 4.9 | 3.1 | 13.7 | 2.4 | 6.5 | 127.5 | 3.3 |
| BC15 | 64.7 | 11.1 | 6.9 | 4.9 | 3.1 | 13.1 | 2.2 | 7.4 | 103.7 | 3.4 |
| BC16 | 60.8 | 11.2 | 5.8 | 5.4 | 3.2 | 13.2 | 2.8 | 7.2 | 87.0 | 3.3 |
| BC17 | 61.5 | 9.9 | 6.0 | 5.1 | 2.9 | 13.7 | 2.5 | 6.9 | 172.0 | 3.2 |
| BC3 | 62.6 | 10.0 | 6.0 | 7.0 | 3.4 | 16.7 | 2.8 | 6.9 | 104.5 | 3.3 |
| BC4 | 60.8 | 8.8 | 4.8 | 5.4 | 3.2 | 13.8 | 2.8 | 7.3 | 86.0 | 3.9 |
| BC5 | 61.3 | 8.7 | 5.6 | 7.5 | 4.4 | 13.7 | 3.1 | 8.2 | 98.8 | 3.8 |
| BC6 | 62.7 | 8.3 | 5.8 | 6.0 | 3.1 | 14.9 | 3.2 | 8.5 | 62.6 | 3.7 |
| BC7 | 62.1 | 11.0 | 6.7 | 6.0 | 3.3 | 16.1 | 3.0 | 7.4 | 116.8 | 4.0 |
| CCN | 61.1 | 10.6 | 5.8 | 6.8 | 3.4 | 15.1 | 2.7 | 7.1 | 129.5 | 3.6 |
| Kayera | 61.9 | 10.9 | 6.9 | 5.8 | 3.1 | 14.7 | 2.6 | 7.5 | 79.3 | 4.0 |
| Khaki-light | 62.1 | 10.8 | 6.2 | 5.9 | 3.2 | 17.0 | 2.6 | 7.1 | 152.5 | 3.7 |
| KL-1 | 61.4 | 10.1 | 5.4 | 6.2 | 3.1 | 15.4 | 2.4 | 6.7 | 103.7 | 3.3 |
| MAM | 62.5 | 10.0 | 5.5 | 5.3 | 3.4 | 15.1 | 2.8 | 6.7 | 124.5 | 4.2 |
| MAM-1 | 60.7 | 10.6 | 6.1 | 6.2 | 3.0 | 15.1 | 2.6 | 6.6 | 128.6 | 3.2 |
| TVSu-1045 | 61.4 | 10.7 | 6.0 | 6.0 | 2.8 | 13.2 | 2.0 | 5.9 | 118.1 | 3.3 |
| TVSu-1108 | 61.2 | 9.8 | 5.9 | 3.7 | 2.7 | 15.3 | 2.4 | 6.9 | 101.4 | 3.8 |
| TVSu-1169 | 61.7 | 11.1 | 6.9 | 5.1 | 2.8 | 10.7 | 2.4 | 6.5 | 85.0 | 3.3 |
| TVSu-1175 | 61.9 | 9.5 | 5.6 | 6.6 | 3.0 | 12.3 | 2.3 | 7.1 | 90.0 | 3.0 |
| TVSu-1244 | 62.8 | 10.0 | 5.6 | 5.1 | 2.5 | 11.3 | 2.5 | 6.0 | 100.9 | 3.6 |
| TVSu-1256 | 62.7 | 9.9 | 4.9 | 5.8 | 3.4 | 10.5 | 2.5 | 6.4 | 108.9 | 3.6 |
| TVSu-1258 | 61.1 | 9.4 | 5.1 | 6.5 | 3.0 | 12.6 | 2.4 | 6.7 | 124.2 | 3.1 |
| TVSu-1311 | 61.5 | 11.4 | 6.1 | 5.9 | 2.9 | 15.3 | 2.8 | 6.6 | 107.5 | 2.8 |
| TVSu-1312 | 61.9 | 11.1 | 6.3 | 5.2 | 2.6 | 14.1 | 2.6 | 7.2 | 117.9 | 2.9 |
| TVSu-1316 | 62.4 | 11.3 | 6.7 | 4.8 | 2.5 | 14.8 | 2.7 | 6.8 | 95.1 | 3.3 |
| TVSu-1321 | 61.2 | 13.0 | 6.9 | 4.8 | 3.0 | 14.3 | 2.7 | 7.5 | 100.4 | 2.8 |
| TVSu-1380 | 62.6 | 8.6 | 4.7 | 4.5 | 3.1 | 10.6 | 1.9 | 6.5 | 88.1 | 3.1 |
| TVSu-1426 | 62.5 | 10.5 | 5.7 | 4.8 | 3.0 | 9.0 | 2.5 | 6.3 | 86.3 | 3.4 |
| TVSu-1438 | 61.5 | 9.8 | 5.3 | 5.3 | 3.3 | 15.1 | 2.5 | 7.3 | 108.3 | 3.6 |
| TVSu-1448 | 62.3 | 8.7 | 4.8 | 6.2 | 3.3 | 11.4 | 2.4 | 6.5 | 97.3 | 3.8 |
| TVSu-1557 | 60.4 | 10.2 | 5.5 | 5.8 | 3.0 | 14.0 | 2.7 | 7.1 | 94.5 | 3.4 |
| TVSu-1604 | 63.0 | 9.4 | 5.8 | 5.0 | 3.4 | 11.0 | 2.0 | 6.3 | 70.9 | 3.4 |
| TVSu-1667 | 61.4 | 9.9 | 4.9 | 4.8 | 2.8 | 12.8 | 2.5 | 6.3 | 110.9 | 3.2 |
| TVSu-1733 | 62.4 | 10.4 | 5.4 | 7.7 | 3.3 | 13.7 | 2.6 | 6.8 | 109.3 | 3.6 |
| TVSu-1755 | 62.1 | 10.0 | 5.6 | 5.8 | 3.3 | 14.4 | 2.7 | 6.8 | 98.1 | 3.2 |
| TVSu-1780 | 62.8 | 10.8 | 6.0 | 6.0 | 3.6 | 14.9 | 3.6 | 7.3 | 116.6 | 3.6 |
| TVSu-1794 | 62.3 | 11.1 | 6.2 | 6.0 | 3.3 | 15.5 | 3.2 | 7.0 | 155.1 | 3.4 |
| TVSu-1797 | 62.1 | 12.0 | 5.1 | 5.7 | 3.5 | 16.4 | 2.6 | 7.6 | 82.0 | 3.8 |
| TVSu-1831 | 61.5 | 10.4 | 5.3 | 5.7 | 2.7 | 10.7 | 1.8 | 6.1 | 69.9 | 3.2 |
| TVSu-1874 | 62.8 | 11.0 | 6.4 | 5.5 | 3.3 | 16.0 | 2.3 | 6.7 | 103.8 | 3.1 |
| TVSu-1888 | 62.3 | 9.4 | 5.4 | 6.3 | 3.2 | 12.8 | 2.6 | 7.0 | 68.9 | 2.7 |
| TVSu-1929 | 62.2 | 10.8 | 6.2 | 5.4 | 2.8 | 14.5 | 3.1 | 7.0 | 111.1 | 2.8 |
| TVSu-193 | 61.6 | 8.4 | 4.5 | 5.1 | 2.6 | 11.5 | 2.1 | 6.6 | 79.7 | 3.4 |
| TVSu-1939 | 62.3 | 9.7 | 5.7 | 5.6 | 2.7 | 14.1 | 2.9 | 7.0 | 98.2 | 3.2 |
| TVSu-200 | 62.7 | 10.4 | 6.0 | 5.4 | 3.1 | 13.1 | 2.6 | 6.7 | 94.9 | 3.0 |
| TVSu-250 | 60.9 | 8.3 | 4.7 | 5.1 | 2.8 | 10.5 | 2.1 | 7.4 | 86.5 | 3.3 |
| TVSu-288 | 62.9 | 8.9 | 4.9 | 5.3 | 2.4 | 12.3 | 2.3 | 6.5 | 100.4 | 3.9 |
| TVSu-368 | 61.3 | 11.0 | 6.6 | 4.7 | 2.7 | 11.9 | 2.6 | 6.3 | 95.8 | 4.0 |
| TVSu-388 | 62.4 | 10.3 | 6.1 | 5.8 | 2.9 | 13.9 | 2.7 | 7.3 | 81.1 | 3.2 |
| TVSu-416 | 61.7 | 9.4 | 5.6 | 5.5 | 3.1 | 12.7 | 2.5 | 6.6 | 100.5 | 3.5 |
| TVSu-466 | 63.2 | 9.8 | 5.4 | 4.9 | 3.0 | 14.7 | 2.7 | 6.7 | 103.0 | 4.0 |
| TVSu-49 | 62.4 | 8.5 | 4.6 | 5.1 | 2.9 | 10.1 | 2.4 | 7.7 | 101.5 | 3.2 |
| TVSu-534 | 62.2 | 10.5 | 6.1 | 6.5 | 3.3 | 13.7 | 2.8 | 7.5 | 106.1 | 3.2 |
| TVSu-542 | 62.1 | 8.7 | 5.3 | 5.7 | 3.3 | 14.0 | 2.6 | 7.1 | 131.1 | 3.7 |
| TVSu-637 | 61.6 | 10.5 | 5.8 | 5.2 | 3.5 | 14.7 | 3.1 | 7.5 | 91.3 | 4.2 |
| TVSu-758 | 61.1 | 10.8 | 6.0 | 5.1 | 3.0 | 14.7 | 2.4 | 6.7 | 119.7 | 4.2 |
| TVSu-793 | 61.1 | 11.1 | 6.8 | 5.0 | 3.0 | 14.9 | 2.8 | 6.4 | 91.2 | 3.4 |
| TVSu-868 | 62.4 | 11.6 | 6.5 | 5.8 | 3.2 | 15.0 | 2.6 | 6.4 | 134.0 | 3.5 |
| GM | 62.0 | 10.2 | 5.7 | 5.6 | 3.1 | 13.7 | 2.6 | 6.9 | 103.6 | 3.4 |
| SE | 0.79 | 0.74 | 0.46 | 0.51 | 0.22 | 0.73 | 0.14 | 0.26 | 7.08 | 0.26 |
| P-Value | >0.05 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

D50F=Number of days from first flowering to 50% flowering, NSTP=Number of stems per plant, NBS=Number of branches per stem, NNS=Number of nodes per stem, INL=Internode length, PTL=Petiole length, TLW=Terminal leaflet width, TLL=Terminal leaflet length, NLP=Number of leaves per plant, PEDL=Peduncle length

Table S4. Trait contributions, eigenvalues, and cumulative percentage of the components

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | PC1 | PC2 | PC3 | PC4 | PC5 |
| GYLD | -0.28 | 0.15 | -0.30 | 0.18 | -0.18 |
| S100W | -0.19 | -0.10 | 0.10 | -0.14 | -0.73 |
| NPP | -0.24 | 0.27 | -0.33 | 0.14 | 0.16 |
| PDW | -0.11 | -0.30 | 0.19 | 0.37 | 0.09 |
| PDL | -0.25 | -0.39 | 0.09 | 0.26 | 0.03 |
| PHT | -0.39 | 0.05 | 0.09 | 0.00 | 0.14 |
| CNS | -0.34 | 0.04 | -0.15 | 0.10 | 0.10 |
| NSTP | -0.15 | 0.42 | 0.40 | -0.06 | -0.16 |
| NBS | -0.18 | 0.33 | 0.49 | 0.09 | -0.11 |
| NNS | -0.17 | -0.18 | -0.06 | -0.68 | -0.04 |
| INL | -0.25 | -0.26 | -0.12 | -0.38 | 0.06 |
| PTL | -0.36 | 0.16 | 0.04 | -0.08 | 0.08 |
| TLW | -0.33 | -0.06 | 0.15 | 0.00 | 0.15 |
| TLL | -0.25 | -0.35 | 0.20 | 0.05 | 0.18 |
| NLP | -0.16 | 0.31 | -0.33 | -0.10 | 0.19 |
| PEDL | -0.15 | -0.11 | -0.37 | 0.29 | -0.47 |
| Eigenvalue | 5.14 | 2.44 | 1.55 | 1.27 | 1.07 |
| Percentage of variance | 32.15 | 15.27 | 9.71 | 7.93 | 6.71 |
| Cumulative percentage of variance | 32.15 | 47.42 | 57.13 | 65.06 | 71.77 |

GYLD=Grain yield (kg/ha), S100W= Weight of 100 seeds, NPP=Number of pods per plant, PDW=Pod width, PDL=Pod length, PHT=Plant height, CNS=Canopy spread, NSTP=Number of stems per plant, NBS=Number of branches per stem, NNS=Number of nodes per stem, INL=Internode length, PTL=Petiole length, TLW=Terminal leaflet width, TLL=Terminal leaflet length, NLP=Number of leaves per plant, PEDL=Peduncle length,

Table S5. Clustering of Bambara Groundnut genotypes based on morphological traits

| GENOTYPE | LOCATION | CLUSTER |
| --- | --- | --- |
| TVSu-1169 | Burkina Faso | V |
| TVSu-1175 | Burkina Faso |
| TVSu-1244 | Nigeria |
| TVSu-1045 | Zimbabwe |
| TVSu-1258 | Nigeria |
| TVSu-1831 | Mali |
| TVSu-250 | Gambia |
| TVSu-288 | Benin |
| TVSu-1667 | Senegal |
| TVSu-1380 | United Kingdom |
| TVSu-1426 | Togo |
| BC12 | Malawi |
| TVSu-49 | Unknown |
| TVSu-368 | Nigeria |
| TVSu-1604 | Togo |
| TVSu-1888 | Tanzania |
| TVSu-193 | Benin |
| TVSu-1311 | Central African Republic | III |
| TVSu-1312 | Central African Republic |
| TVSu-1316 | Central African Republic |
| TVSu-1321 | Central African Republic |
| TVSu-388 | Sudan |
| TVSu-1874 | Zimbabwe |
| TVSu-1939 | Zimbabwe |
| TVSu-1755 | Malawi |
| TVSu-1929 | Malawi |
| TVSu-200 | Benin |
| TVSu-534 | Cameroon |
| BC15 | Malawi |
| TVSu-1108 | Burkina Faso | IV |
| TVSu-1438 | Ghana |
| TVSu-758 | Zambia |
| TVSu-793 | Kenya |
| TVSu-868 | Zambia |
| TVSu-1794 | Malawi |
| Chikope-cha-nyani | Malawi |
| Mazira-a-mpheta-1 | Malawi |
| Khaki-light-1 | Malawi |
| BC16 | Malawi |
| BC17 | Malawi |
| Khaki-light | Malawi |
| BC14 | Malawi |
| TVSu-416 | Cameroon | I |
| TVSu-466 | Cameroon |
| TVSu-542 | Cameroon |
| TVSu-1256 | Nigeria |
| TVSu-1448 | Ghana |
| TVSu-1557 | Unknown |
| Mazira-a-mpheta | Malawi |
| BC4 | Malawi |
| TVSu-1797 | Malawi | II |
| BC3 | Malawi |
| BC5 | Malawi |
| BC6 | Malawi |
| BC7 | Malawi |
| Kayera | Malawi |
| BC13 | Malawi |
| TVSu-637 | Nigeria |
| TVSu-1780 | Malawi |
| TVSu-1733 | Zambia |