Table S1.

|  |  |  |  |
| --- | --- | --- | --- |
| Entry | **Accessions** | Lutein concentration (ug/g) | Maturity group |
| 1 | PI592924 | 10.02 | O |
| 2 | PI612740 | 6.32 | O |
| 3 | PI361066A | 4.11 | I |
| 4 | PI370059 | 10.26 | I |
| 5 | PI384469A | 8.27 | I |
| 6 | PI437851A | 6.80 | I |
| 7 | PI438151 | 5.81 | I |
| 8 | PI438205 | 7.16 | I |
| 9 | PI438206 | 7.92 | I |
| 10 | PI445837 | 5.69 | I |
| 11 | PI467317 | 7.63 | I |
| 12 | PI592919 | 8.50 | I |
| 13 | PI592921 | 7.19 | I |
| 14 | PI597397B | 6.80 | I |
| 15 | PI612708C | 10.83 | I |
| 16 | PI612715 | 11.22 | I |
| 17 | PI612717 | 8.76 | I |
| 18 | PI612735 | 8.72 | I |
| 19 | PI612736 | 7.48 | I |
| 20 | PI612738 | 7.57 | I |
| 21 | PI068522 | 3.48 | II |
| 22 | PI068600 | 6.71 | II |
| 23 | PI068658 | 5.87 | II |
| 24 | PI080471 | 4.72 | II |
| 25 | PI091091 | 8.51 | II |
| 26 | PI261474 | 7.74 | II |
| 27 | PI290126B | 7.77 | II |
| 28 | PI297515 | 8.48 | II |
| 29 | PI297544 | 8.36 | II |
| 30 | PI361064 | 5.43 | II |
| 31 | PI384471 | 6.99 | II |
| 32 | PI384474 | 7.77 | II |
| 33 | PI416762 | 5.01 | II |
| 34 | PI417091 | 5.37 | II |
| 35 | PI437488 | 6.83 | II |
| 36 | PI437909B | 5.02 | II |
| 37 | PI438503A | 2.37 | II |
| 38 | PI458511 | 6.23 | II |
| 39 | PI464901 | 8.84 | II |
| 40 | PI467332 | 5.34 | II |
| 41 | PI468903 | 4.39 | II |
| 42 | PI491548 | 5.18 | II |
| 43 | PI503338 | 3.95 | II |
| 44 | PI507543 | 4.99 | II |
| 45 | PI532434 | 1.68 | II |
| 46 | PI561336 | 6.92 | II |
| 47 | PI561377 | 6.20 | II |
| 48 | PI578500 | 6.51 | II |
| 49 | PI592936 | 6.35 | II |
| 50 | PI592938 | 8.59 | II |
| 51 | PI592979 | 5.14 | II |
| 52 | PI593959 | 4.47 | II |
| 53 | PI603571A | 7.43 | II |
| 54 | PI79609 | 3.75 | II |
| 55 | FC004007B | 10.24 | III |
| 56 | PI060272 | 2.76 | III |
| 57 | PI071461 | 10.27 | III |
| 58 | PI072232 | 2.45 | III |
| 59 | PI080847-1 | 6.06 | III |
| 60 | PI081027 | 2.40 | III |
| 61 | PI083940 | 8.97 | III |
| 62 | PI084578 | 4.54 | III |
| 63 | PI084579 | 2.01 | III |
| 64 | PI086425 | 2.95 | III |
| 65 | PI087540 | 2.00 | III |
| 66 | PI087618 | 4.14 | III |
| 67 | PI087619 | 8.74 | III |
| 68 | PI088310 | 5.47 | III |
| 69 | PI090463 | 3.77 | III |
| 70 | PI091730-1 | 5.36 | III |
| 71 | PI092718-2 | 6.37 | III |
| 72 | PI200453 | 1.29 | III |
| 73 | PI200458 | 3.01 | III |
| 74 | PI200471 | 2.58 | III |
| 75 | PI200473 | 2.62 | III |
| 76 | PI253665D | 5.20 | III |
| 77 | PI393535 | 3.36 | III |
| 78 | PI393537 | 4.10 | III |
| 79 | PI393538 | 3.80 | III |
| 80 | PI398416 | 4.30 | III |
| 81 | PI398451 | 5.28 | III |
| 82 | PI398832 | 3.78 | III |
| 83 | PI398841 | 3.90 | III |
| 84 | PI398992 | 3.21 | III |
| 85 | PI398993 | 3.18 | III |
| 86 | PI399068 | 3.80 | III |
| 87 | PI404166 | 1.88 | III |
| 88 | PI407730 | 5.90 | III |
| 89 | PI407851 | 3.12 | III |
| 90 | PI407933 | 4.80 | III |
| 91 | PI407974A | 7.00 | III |
| 92 | PI408005 | 3.66 | III |
| 93 | PI416753 | 4.27 | III |
| 94 | PI416763 | 2.65 | III |
| 95 | PI416789 | 1.68 | III |
| 96 | PI416833 | 2.45 | III |
| 97 | PI416852 | 2.95 | III |
| 98 | PI416868A | 2.60 | III |
| 99 | PI416868B | 2.11 | III |
| 100 | PI416870 | 2.46 | III |
| 101 | PI416889 | 3.72 | III |
| 102 | PI416918 | 3.53 | III |
| 103 | PI417017 | 1.81 | III |
| 104 | PI417032 | 1.79 | III |
| 105 | PI417077 | 5.74 | III |
| 106 | PI417186 | 4.01 | III |
| 107 | PI417323 | 1.56 | III |
| 108 | PI417328 | 1.57 | III |
| 109 | PI437655 | 5.39 | III |
| 110 | PI437690 | 5.77 | III |
| 111 | PI437770 | 2.55 | III |
| 112 | PI438496B | 3.74 | III |
| 113 | PI438497 | 2.48 | III |
| 114 | PI445845 | 2.28 | III |
| 115 | PI475822B | 3.79 | III |
| 116 | PI475822C | 6.53 | III |
| 117 | PI490769 | 4.44 | III |
| 118 | PI495017A | 1.46 | III |
| 119 | PI506572 | 4.60 | III |
| 120 | PI507295 | 9.65 | III |
| 121 | PI518716 | 4.87 | III |
| 122 | PI532457 | 2.01 | III |
| 123 | PI54591 | 2.92 | III |
| 124 | PI547842 | 7.92 | III |
| 125 | PI547862 | 5.38 | III |
| 126 | PI548317 | 0.05 | III |
| 127 | PI549031 | 2.41 | III |
| 128 | PI567243 | 4.27 | III |
| 129 | PI567244 | 2.16 | III |
| 130 | PI567251 | 1.75 | III |
| 131 | PI567252 | 1.80 | III |
| 132 | PI567259 | 2.63 | III |
| 133 | PI567261C | 1.98 | III |
| 134 | PI567261E | 1.80 | III |
| 135 | PI567262C | 1.51 | III |
| 136 | PI567263 | 1.50 | III |
| 137 | PI567264D | 2.18 | III |
| 138 | PI567266C | 2.27 | III |
| 139 | PI567266D | 2.38 | III |
| 140 | PI567267B | 1.95 | III |
| 141 | PI567351B | 5.09 | III |
| 142 | PI567357 | 5.27 | III |
| 143 | PI567361 | 9.73 | III |
| 144 | PI567362B | 5.32 | III |
| 145 | PI567363B | 3.99 | III |
| 146 | PI567364 | 5.80 | III |
| 147 | PI567365 | 8.63 | III |
| 148 | PI567366A | 3.00 | III |
| 149 | PI567369A | 4.40 | III |
| 150 | PI567424A | 3.91 | III |
| 151 | PI567425B | 8.52 | III |
| 152 | PI567430 | 7.10 | III |
| 153 | PI567435A | 5.58 | III |
| 154 | PI567435B | 3.52 | III |
| 155 | PI567444 | 5.14 | III |
| 156 | PI567452 | 6.42 | III |
| 157 | PI567454 | 3.57 | III |
| 158 | PI567457 | 4.26 | III |
| 159 | PI567465 | 3.70 | III |
| 160 | PI567469A | 5.49 | III |
| 161 | PI567510A | 3.46 | III |
| 162 | PI567686 | 3.54 | III |
| 163 | PI567688A | 2.80 | III |
| 164 | PI567690 | 2.81 | III |
| 165 | PI567695 | 3.92 | III |
| 166 | PI567696A | 4.01 | III |
| 167 | PI567697 | 3.28 | III |
| 168 | PI567699 | 4.05 | III |
| 169 | PI567700 | 2.49 | III |
| 170 | PI567705 | 3.93 | III |
| 171 | PI567706A | 3.56 | III |
| 172 | PI567706B | 3.88 | III |
| 173 | PI567712 | 3.88 | III |
| 174 | PI567717A | 3.50 | III |
| 175 | PI567720A | 3.00 | III |
| 176 | PI567729 | 3.22 | III |
| 177 | PI567731 | 3.21 | III |
| 178 | PI567732 | 1.94 | III |
| 179 | PI567753B | 2.63 | III |
| 180 | PI567761 | 4.11 | III |
| 181 | PI567770A | 2.81 | III |
| 182 | PI567771B | 3.19 | III |
| 183 | PI567774B | 1.56 | III |
| 184 | PI567775A | 3.45 | III |
| 185 | PI567776 | 6.31 | III |
| 186 | PI567778 | 4.14 | III |
| 187 | PI574482 | 2.59 | III |
| 188 | PI578494B | 3.60 | III |
| 189 | PI587637 | 3.18 | III |
| 190 | PI588050A | 2.13 | III |
| 191 | PI591505 | 5.61 | III |
| 192 | PI591507 | 6.92 | III |
| 193 | PI591509 | 4.94 | III |
| 194 | PI591510 | 4.97 | III |
| 195 | PI591512 | 5.21 | III |
| 196 | PI591518 | 4.55 | III |
| 197 | PI592935 | 3.45 | III |
| 198 | PI592942 | 3.66 | III |
| 199 | PI592971 | 5.73 | III |
| 200 | PI594282 | 4.23 | III |
| 201 | PI594401B | 2.66 | III |
| 202 | PI594401D | 3.26 | III |
| 203 | PI594402 | 4.13 | III |
| 204 | PI594404 | 5.36 | III |
| 205 | PI594405 | 2.82 | III |
| 206 | PI603421B | 4.76 | III |
| 207 | PI603423B | 9.76 | III |
| 208 | PI603428C | 7.91 | III |
| 209 | PI603428D | 5.19 | III |
| 210 | PI603434 | 6.83 | III |
| 211 | PI603444D | 4.31 | III |
| 212 | PI603444E | 4.47 | III |
| 213 | PI603549 | 3.08 | III |
| 214 | PI603550 | 2.82 | III |
| 215 | PI603552 | 2.80 | III |
| 216 | PI603553 | 3.03 | III |
| 217 | PI603556 | 4.88 | III |
| 218 | PI603558 | 4.61 | III |
| 219 | PI603560 | 3.85 | III |
| 220 | PI603567A | 6.68 | III |
| 221 | PI603576A | 7.70 | III |
| 222 | PI603585A | 5.10 | III |
| 223 | PI603585B | 3.54 | III |
| 224 | PI603592 | 3.75 | III |
| 225 | PI603596 | 3.01 | III |
| 226 | PI603597 | 2.35 | III |
| 227 | PI603655 | 3.73 | III |
| 228 | PI603670 | 2.29 | III |
| 229 | PI603672B | 3.37 | III |
| 230 | PI603673A | 4.09 | III |
| 231 | PI603674 | 3.91 | III |
| 232 | PI603675 | 5.05 | III |
| 233 | PI603682 | 3.84 | III |
| 234 | PI603694A | 6.26 | III |
| 235 | PI603705A | 3.42 | III |
| 236 | PI603753B | 3.16 | III |
| 237 | PI603755C | 3.60 | III |
| 238 | PI603755D | 2.06 | III |
| 239 | PI603759B | 3.85 | III |
| 240 | PI603911A | 4.00 | III |
| 241 | PI603913A | 5.16 | III |
| 242 | PI88788 | 6.22 | III |
| 243 | PI92720 | 1.92 | III |
| 244 | PI209332 | 1.82 | IV |
| 245 | PI339868B | 5.60 | IV |
| 246 | PI398880 | 0.11 | IV |
| 247 | PI404198A | 3.33 | IV |
| 248 | PI404198B | 3.44 | IV |
| 249 | PI424159B | 7.18 | IV |
| 250 | PI437679 | 3.11 | IV |
| 251 | PI437725 | 2.55 | IV |
| 252 | PI438489B | 3.01 | IV |
| 253 | PI438498 | 2.07 | IV |
| 254 | PI464912 | 2.49 | IV |
| 255 | PI495017C | 0.05 | IV |
| 256 | PI518719 | 1.56 | IV |
| 257 | PI548327 | 4.14 | IV |
| 258 | PI548402 | 3.92 | IV |
| 259 | PI548415 | 0.37 | IV |
| 260 | PI567562A | 1.84 | IV |
| 261 | PI567568A | 2.70 | IV |
| 262 | PI567577 | 0.85 | IV |
| 263 | PI567581 | 1.51 | IV |
| 264 | PI567583D | 3.58 | IV |
| 265 | PI567636 | 3.68 | IV |
| 266 | PI567660B | 1.51 | IV |
| 267 | PI574477 | 8.00 | IV |
| 268 | PI574483 | 6.50 | Iv |
| 269 | PI594208 | 5.70 | IV |
| 270 | PI603915D | 9.11 | IV |
| 271 | PI84751 | 5.46 | IV |
| 272 | PI89772 | 9.58 | IV |
| 273 | PI90763 | 1.96 | IV |
| 274 | PI303652 | 4.90 | V |
| 275 | PI398833 | 2.06 | V |
| 276 | PI398976 | 2.66 | V |
| 277 | PI399044 | 3.05 | V |
| 278 | PI399045 | 2.95 | V |
| 279 | PI407944 | 2.24 | V |
| 280 | PI408250 | 2.80 | V |
| 281 | PI408337 | 3.44 | V |
| 282 | PI408339 | 3.31 | V |
| 283 | PI416793 | 2.47 | V |
| 284 | PI424137B | 5.72 | V |
| 285 | PI438302B | 1.79 | V |
| 286 | PI471931 | 2.71 | V |
| 287 | PI471938 | 1.94 | V |
| 288 | PI508294 | 3.42 | V |
| 289 | PI509098 | 3.05 | V |
| 290 | PI518772 | 1.81 | V |
| 291 | PI561395 | 2.51 | V |
| 292 | PI567328 | 4.29 | V |
| 293 | PI567342 | 4.27 | V |
| 294 | PI567373B | 3.89 | V |
| 295 | PI567445C | 1.23 | V |
| 296 | PI619083 | 6.69 | V |
| 297 | PI632950 | 3.74 | V |
| 298 | PI227557 | 4.26 | V |
| 299 | PI221717 | 4.82 | VI |
| 300 | PI399061 | 2.21 | VI |
| 301 | PI424595 | 5.47 | VI |
| 302 | PI437726 | 2.89 | VI |
| 303 | PI438342 | 2.00 | VI |
| 304 | PI494851 | 3.76 | VI |
| 305 | PI506675 | 2.48 | VI |
| 306 | PI507422 | 2.31 | VI |
| 307 | PI507423 | 3.48 | VI |
| 308 | PI507476 | 3.77 | VI |
| 309 | PI567312 | 3.70 | VI |
| 310 | PI567334 | 3.14 | VI |
| 311 | PI423923 | 1.93 | VII |
| 312 | PI506764 | 2.05 | VII |
| 313 | PI509095 | 2.07 | VII |
| 314 | PI509100 | 1.87 | VII |
|  | Mean | 4.32 |  |
|  | Max | 11.22 |  |
|  | Min | 0.05 |  |
|  | SD | 2.20 |  |

Table S2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source of  variance | DF | SS | MS | F value | Pr>F |
| Environment (E) | 5 | 851.5091 | 170.3018 | 118.86 | <.0001 |
| Genotype (G) | 24 | 861.2492 | 35.88538 | 25.05 | <.0001 |
| G × E | 113 | 499.5139 | 4.420477 | 3.09 | <.0001 |
| Error | 285 | 2443.841 |  |  |  |