**Supplementary Material**

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| **Supplementary Table S1: Origin or ID of original *waxy* landraces, their actual *waxy* purity, allele type and amylose content** | | | |
| ID | Origin and name | Studied in Experiment | LR purity |
| TH01 | GC Ratchaburi | A | 1 |
| TH02 | GC Kaoneo Ayuthaya | A; B; C | 2 |
| TH03 | GC Sankaline Singburi | A | nd |
| TH04 | GC Talaikanyoa Angtong | A; B; C; D; E | 2 |
| TH05 | GC Kaoneo Lopburi | A; B; C | 2 |
| TH06 | GC Eelon Uthaitani | A; B; C; D; E | 3 |
| TH07 | GC Kasikonlak 6 Pathumtani | A; B; C; D; E | 4 |
| TH08 | GC Kaoneo No. 45 Tak | A; B; C | 3 |
| TH09 | GC Kaoneo Tabononkai | A | 3 |
| TH10 | K 005 Nakhonpathom | A; B; C | 2 |
| TH11 | K 011 Lopburi | A; B; C; D; E | 2 |
| TH12 | K 078 Uttaradit | A; B; C; D; E | 1 |
| TH13 | K 081 Chiangmai | A; B; C; D; E | 1 |
| TH14 | K 085 Lampang | A; B; C; D; E | 2 |
| TH15 | K 089 Tak | A; B; C | 2 |
| TH16 | T 042 Lamphun | A; B; C; D; E | 4 |
| TH17 | T 020 Phayao | A | 1 |
| TH18 | T 043 Lamphun | A; B; C | 2 |
| TH19 | T 026 Chiangmai | A; B; C; D; E | 1 |
| TH20 | T 040 Lamphun | A; B; C | 3 |
| TH21 | T 029 Chiangmai | A; B; C | 2 |
| TH22 | T 019 Nan | A; B; C; D; E | 1 |
| TH23 | T 023 Phayao | A | 4 |
| TH24 | T 035 Lamphun | A; B; C | 2 |
| TH25 | Kaoneo Mu Zir | A; B; C | 2 |
| TH26 | Krab Ngoo | A; B; C; D; E | 2 |
| TH27 | Kaoneo Muang | A; B; C | 2 |
| TH28 | Kaoneo Suan | A; B; C | 2 |
| TH29 | Pad Taew | A; B; C; D; E | 1 |
| V01 | WVN 1 Quangnam | A; B; C; D; E | 1 |
| V02 | WVN 2 Krongana | A; B; C; D; E | 1 |
| V03 | WVN 3 Caobang 3 | A | 1 |
| V04 | WVN 4 Daoduc | A; C; D | 1 |
| V05 | WVN 5 Chithao | A; B; C; D; E | 1 |
| V06 | WVN 6 Dongxuan | A; B; C; D; E | 1 |
| V07 | WVN 7 Gialai | A; B; C; D; E | 1 |
| V08 | WVN 8 Dacmin 2 | A | nd |
| V09 | WVN 9 Krongpach 2 | A | 1 |
| V10 | WVN 10 S2 | A | 1 |
| V11 | WVN 11 Caobang 2 | A; B; C; D; E | 1 |
| V12 | WVN12 Banro | A; B; C; D; E | 1 |
| WxH | *Waxy* hybrid | B; C; D; E | 1 |
| Studied in Experiment: Field trial (A); Amylose content (B) DSC thermal analysis (C); CLD structural analysis (D) and starch granule size (E). Landraces studied in experiment C, D and E are part of the core set.  LR purity: Based on amylose/iodine staining of individual plants; all plants *waxy/waxy* (1); at least one plant *waxy/waxy* (2); at least one plant *WAXY/waxy* (3); no *waxy* allele found (4) or not determined (nd). | | | |

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| **Supplementary Table S2.** Primers used for *WAXY* gene sequencing | |
| **Primer name** | **Genotyping primers used in this study (shown 5’ to 3’)** |
| Wx DNA for1 | GAC AAG TAC ATC GCC GTG AA |
| Wx DNA rev1 | AGC ACA AGC AAG CAG CTA CA |
| Wx DNA for2 | AGT ACC AGC ACA GCA CGT TG |
| Wx DNA rev2 | GTA CCC GTC TCC CAT CTT GA |
| Wx DNA for3 | GTC TTC TTC GTG CTC TTG CC |
| Wx DNA rev3 | GAT GCC GTG GGA CTG GTA G |
| Wx DNA for4 | AAC TAC CAG TCC CAC GGC ATC T |
| Wx DNA rev4 | CAC GTC CTC CAC CAT CTC CAT |
| Wx DNA for5 | TGC GAG CTC GAC AAC ATC ATG CG |
| Wx DNA rev5 | AGG GCG CGG CCA CGT TCT CC |
| Wx DNA for6 | GAG AAG TTC CCA GGC AAG GT |
| Wx DNA rev6 | AGC ACA AGC AAG CAG CTA CA |
| Wx DNA for10 | AGAAATACCGAGGCCTGGAC |
| Wx DNA rev10 | CCTGACCGTCTCGTACCCGT |
| Wx DNA for11 | TGAGCAGAGCAGCAACAGC |
| Wx DNA rev11 | ACGAAGACGACGTTCATGC |
| Wx DNA for12 | CGGCGGACACGCTCAGCATG |
| Wx DNA rev12 | CATGCTGAGCGTGTCCGCCG |
| Wx DNA for13 | GGCATGAACGTCGTCTTCGT |
| Wx DNA rev13 | ACGAAGACGACGTTCATGCC |

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| **Supplementary Table S3: Field trial data of 29 Thai and 12 Vietnamese maize landraces** | | | | | | | |
| ID | **Silking**  **(days)** | **Yield/ ear (g)** | **Kernel rows (no.)** | **Kernels/ row (no.)** | **1000 Kernel weight (g)** | **Ears/ 100 plants (%)** | **Kernels/ear (no.)** |
|
| TH01 | 62 | 97.9 | 12.8 | 26.6 | 288 | 96.1 | 340 |
| TH02 | 66 | 81.7 | 14.2 | 24.6 | 234 | 91.3 | 349 |
| TH03 | 64 | 59.9 | 12.0 | 22.5 | 222 | 101.1 | 270 |
| TH04 | 63 | 58.7 | 12.2 | 19.1 | 252 | 96.3 | 233 |
| TH05 | 61 | 72.8 | 11.9 | 23.5 | 260 | 97.6 | 280 |
| TH06 | 62 | 72.8 | 11.7 | 20.7 | 301 | 91.3 | 242 |
| TH07 | 65 | 73.9 | 11.3 | 27.4 | 239 | 84.1 | 309 |
| TH08 | 65 | 70.5 | 11.3 | 24.9 | 251 | 80.0 | 281 |
| TH09 | 64 | 61.7 | 12.6 | 21.7 | 226 | 57.7 | 273 |
| TH10 | 73 | 52.0 | 11.6 | 19.9 | 226 | 70.2 | 230 |
| TH11 | 65 | 80.4 | 12.1 | 25.4 | 262 | 89.8 | 307 |
| TH12 | 67 | 89.4 | 13.5 | 29.2 | 227 | 94.2 | 394 |
| TH13 | 60 | 64.7 | 12.4 | 22.0 | 237 | 98.4 | 273 |
| TH14 | 60 | 47.5 | 11.9 | 18.5 | 216 | 84.9 | 220 |
| TH15 | 65 | 69.4 | 12.7 | 25.2 | 217 | 83.7 | 320 |
| TH16 | 63 | 48.4 | 10.8 | 22.4 | 201 | 52.4 | 241 |
| TH17 | 72 | 29.2 | 8.5 | 22.2 | 155 | 86.9 | 189 |
| TH18 | 67 | 38.4 | 11.4 | 22.6 | 149 | 77.0 | 258 |
| TH19 | 70 | 63.9 | 11.7 | 26.8 | 204 | 95.2 | 313 |
| TH20 | 77 | 25.6 | 9.1 | 16.9 | 166 | 54.9 | 154 |
| TH21 | 75 | 49.1 | 11.7 | 25.3 | 166 | 90.5 | 296 |
| TH22 | 77 | 27.1 | 9.0 | 19.5 | 154 | 81.6 | 176 |
| TH23 | 72 | 50.8 | 11.1 | 24.3 | 188 | 92.1 | 270 |
| TH24 | 62 | 39.2 | 9.1 | 21.6 | 199 | 65.9 | 197 |
| TH25 | 70 | 79.3 | 13.4 | 26.2 | 226 | 90.4 | 351 |
| TH26 | 69 | 53.4 | 11.3 | 22.8 | 207 | 93.1 | 258 |
| TH27 | 80 | 20.6 | 8.7 | 13.5 | 176 | 71.6 | 117 |
| TH28 | 66 | 65.9 | 12.3 | 23.5 | 228 | 94.4 | 289 |
| TH29 | 58 | 38.2 | 9.0 | 18.3 | 232 | 79.9 | 165 |
| V01 | 60 | 62.3 | 11.1 | 16.3 | 344 | 77.0 | 181 |
| V02 | 64 | 58.1 | 13.9 | 23.1 | 181 | 88.9 | 321 |
| V03 | 62 | 54.7 | 10.4 | 21.5 | 244 | 81.7 | 224 |
| V04 | 67 | 63.9 | 12.6 | 21.6 | 235 | 111.9 | 272 |
| V05 | 68 | 54.0 | 9.6 | 22.7 | 248 | 95.9 | 218 |
| V06 | 59 | 77.1 | 11.4 | 19.7 | 343 | 103.2 | 225 |
| V07 | 62 | 75.5 | 13.4 | 23.3 | 242 | 102.4 | 312 |
| V08 | 73 | 62.5 | 14.1 | 24.6 | 180 | 95.4 | 347 |
| V09 | 75 | 67.4 | 13.0 | 23.1 | 194 | 82.3 | 300 |
| V10 | 71 | 63.6 | 14.4 | 26.0 | 170 | 88.1 | 374 |
| V11 | 68 | 72.2 | 11.9 | 23.8 | 255 | 71.7 | 283 |
| V12 | 77 | 40.7 | 11.8 | 23.1 | 149 | 41.3 | 273 |

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| **Supplementary Table S4: Amylose content and DSC transition parameters of starch from different landraces, individual plants.** | | | | | |
| **ID** | **Plant #** | **Amylose (%)** | **Onset T*o*  (°C)** | **Peak *Tp* (°C)** | **Enthalpy Δ*H* (J g-1)** |
| TH02 | 1 | 2.59 | 67.07 | 72.11 | 10.86 |
| TH02 | 2 | 12.20 | 64.95 | 70.39 | 13.57 |
| TH04 | 1 | 30.64 | 65.39 | 68.95 | 11.87 |
| TH04 | 2 | -0.26 | 62.88 | 69.94 | 10.02 |
| TH04 | 3 | 28.50 | 66.64 | 70.72 | 13.76 |
| TH04 | 4 | 15.61 | 65.43 | 70.63 | 13.55 |
| TH05 | 1 | 16.49 | 66.46 | 70.87 | 13.6 |
| TH05 | 2 | 1.48 | 65.58 | 70.66 | 12.22 |
| TH06 | 1 | 27.98 | 67.28 | 70.89 | 11.68 |
| TH06 | 2 | 28.58 | 64.6 | 69.4 | 12.04 |
| TH06 | 3 | 18.67 | 66.26 | 70.02 | 14.26 |
| TH07 | 1 | 27.94 | 64.39 | 69.73 | 16.1 |
| TH07 | 2 | 27.35 | 65.64 | 69.94 | 12.49 |
| TH08 | 1 | 18.92 | 67.35 | 71.58 | 13.08 |
| TH08 | 2 | 23.02 | 65.9 | 70.83 | 12.26 |
| TH10 | 1 | 18.87 | 64.36 | 68.18 | 11.75 |
| TH10 | 2 | -0.20 | 65.15 | 70.03 | 11.28 |
| TH11 | 1 | 0.70 | 65.27 | 71.76 | 16.51 |
| TH11 | 2 | 16.52 | 65.3 | 69.7 | 11.16 |
| TH11 | 3 | 0.72 | 65.56 | 70.73 | 13.4 |
| TH12 | 1 | 0.30 | 64.86 | 71.39 | 13.39 |
| TH12 | 2 | -0.12 | 63.22 | 69.28 | 9.386 |
| TH13 | 1 | 0.70 | 67.51 | 73.85 | 13.07 |
| TH13 | 2 | -0.11 | 64.31 | 71.06 | 11.59 |
| TH14 | 1 | 11.16 | 64.57 | 69.23 | 14.62 |
| TH14 | 2 | -0.34 | 64 | 69.08 | 11.67 |
| TH14 | 3 | -0.01 | 67.43 | 71.15 | 13.63 |
| TH15 | 1 | -0.46 | 65.12 | 71.49 | 10.96 |
| TH15 | 2 | 17.74 | 64.45 | 68.74 | 10.68 |
| TH16 | 1 | 28.83 | 66.93 | 69.71 | 11.79 |
| TH16 | 2 | 28.81 | 65.63 | 68.66 | 11.06 |
| TH18 | 1 | 16.36 | 65.17 | 69.19 | 11.95 |
| TH18 | 2 | 0.29 | 64.22 | 70.54 | 10.32 |
| TH19 | 1 | 0.68 | 64.07 | 70.2 | 12 |
| TH19 | 2 | 0.62 | 64.54 | 68.96 | 11.2 |
| TH20 | 1 | 10.76 | 67.58 | 71.78 | 11.94 |
| TH20 | 2 | 17.99 | 66.44 | 70.95 | 12.09 |
| TH21 | 1 | 3.49 | 67.35 | 72.1 | 14.1 |
| TH21 | 2 | 27.93 | 66.04 | 70.24 | 13.39 |
| TH22 | 1 | 2.36 | 66.59 | 71.12 | 11.51 |
| TH22 | 2 | 2.25 | 67.19 | 71.91 | 14.07 |
| TH24 | 1 | 31.00 | 64.79 | 68.66 | 9.989 |
| TH24 | 2 | 1.91 | 65.91 | 70.6 | 13.11 |
| TH25 | 1 | 18.31 | 64.75 | 70.01 | 12.41 |
| TH25 | 2 | 25.26 | 64.14 | 69.42 | 9.88 |
| TH26 | 1 | 26.15 | 66.57 | 70.55 | 14.14 |
| TH26 | 2 | 0.45 | 65.81 | 70.63 | 13.1 |
| TH26 | 3 | 0.48 | 64.26 | 70.12 | 11.14 |
| TH27 | 1 | 29.39 | 66.17 | 70.27 | 11.58 |
| TH27 | 2 | 11.15 | 66.93 | 71.44 | 15.86 |
| TH27 | 3 | 28.41 | 66.57 | 70.26 | 12.39 |
| TH28 | 1 | 18.82 | 65.3 | 69.67 | 11.44 |
| TH28 | 2 | 18.22 | 64.81 | 70.01 | 11.78 |
| TH28 | 3 | 1.00 | 66.39 | 69.93 | 13.89 |
| TH29 | 1 | 0.94 | 65.41 | 71.79 | 14.74 |
| TH29 | 2 | 1.54 | 67.07 | 71.47 | 12.17 |
| V01 | 1 | -0.85 | 65.11 | 71.11 | 11.92 |
| V01 | 2 | -0.88 | 63.37 | 70.98 | 11.26 |
| V02 | 1 | -0.24 | 64.12 | 72.18 | 11.86 |
| V02 | 2 | 0.44 | 64.12 | 71.27 | 12.59 |
| V04 | 1 | -0.29 | 67.53 | 72.09 | 13.09 |
| V04 | 2 | -0.26 | 66.51 | 71.49 | 11.84 |
| V05 | 1 | 0.10 | 67.03 | 72.67 | 15.05 |
| V05 | 2 | 1.14 | 65.58 | 70.89 | 13.51 |
| V06 | 1 | -0.59 | 65.76 | 71.43 | 11.92 |
| V06 | 2 | 0.95 | 66.06 | 71.21 | 15.1 |
| V07 | 1 | 0.49 | 65.7 | 72.31 | 13.62 |
| V07 | 2 | 0.23 | 64.34 | 72.15 | 12.26 |
| V11 | 1 | -0.09 | 65.44 | 71.35 | 11.3 |
| V11 | 2 | 0.38 | 66.47 | 71.66 | 13.87 |
| V12 | 1 | 0.75 | 64.27 | 70.52 | 11.99 |
| V12 | 2 | 1.45 | 64.66 | 69.91 | 12.23 |
| WxH | 1 | 0.46 | 66.04 | 70.54 | 14.97 |
| WxH | 2 | -0.23 | 66.26 | 71.41 | 10.74 |
| Amylose content, onset Temperature To (°C), peak Temperature Tp (°C) and gelatinization Enthalpy (ΔH, J g-1) were determined from five pooled kernel of individual plants. Color indicates genotype of the mother plant (yellow: *waxy*/*waxy*; green: *waxy*/*WAXY* and black: *WAXY*/*WAXY*) | | | | | |