**Supplementary Materials**

Table S1. Parameters used to classify collected weedy rice into different accessions

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| Parameters | Classification and codes |
| Hull color | Straw (SH); Brownhull (BR); Black (BH) |
| Seed length (S) | ≥7 mm (S1); <7 mm (S2) |
| Awn presence (L) | No (L0); Yes (L1) |
| Awn color (A) | None (A0); Straw (A1); Brown (A2) |
| Pericarp color (P) | White (P1); Red (P2); Green (P3); Black (P4) |
| Plant height (Ht) | Higher than cultivated rice (Ht1); Same height as cultivated rice (Ht2) |
| Panicle orientation (Pb) | Open (Pb1); Closed (Pb2) |