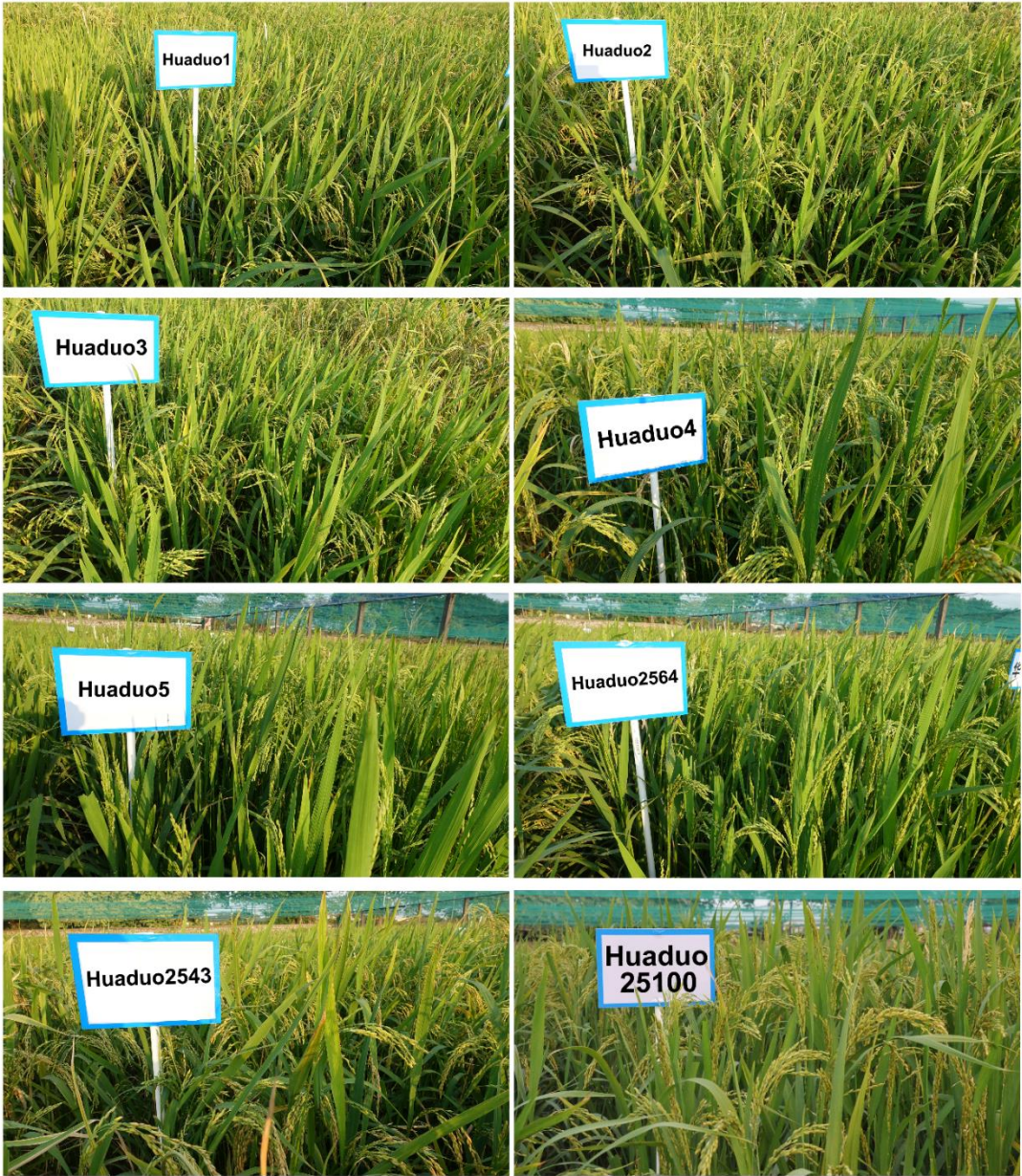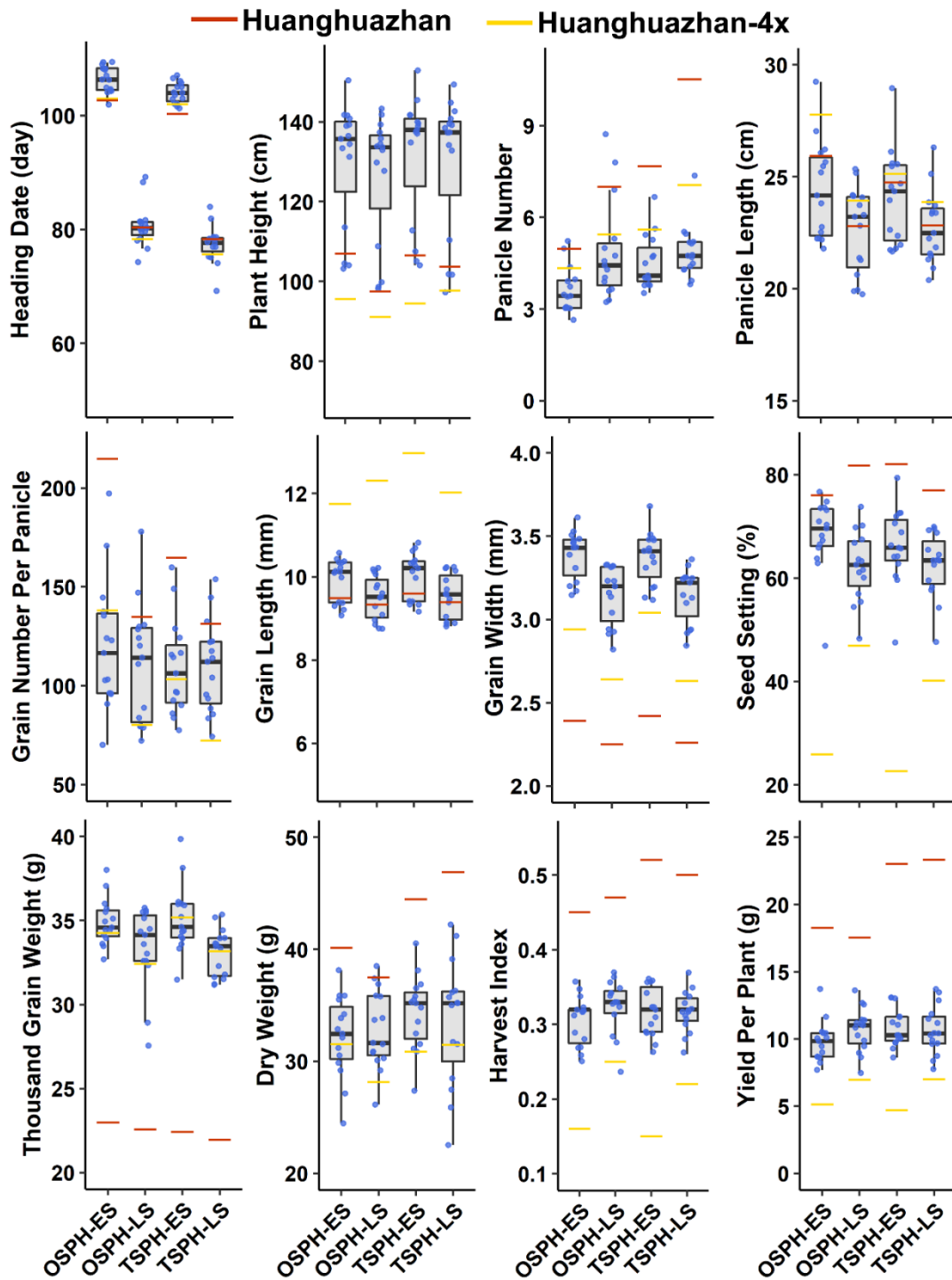**Additional file 1**

**Figure S1a** The performance of 15 neo-tetraploid rice (NTR) lines in field experiments.

**Figure S1b** The performance of 15 neo-tetraploid rice (NTR) lines in field experiments.

Figure S2 Yield performance and production assessment of neo-tetraploid rice lines compared with Huanghuazhan and Huanghuazhan-4x.

The average values of traits with three replications were used. OSPH, one seedling per hole; TSPH, three seedlings per hole; ES, early season; LS, late season. The blue dots indicate the values of traits of neo-tetraploid rice lines.
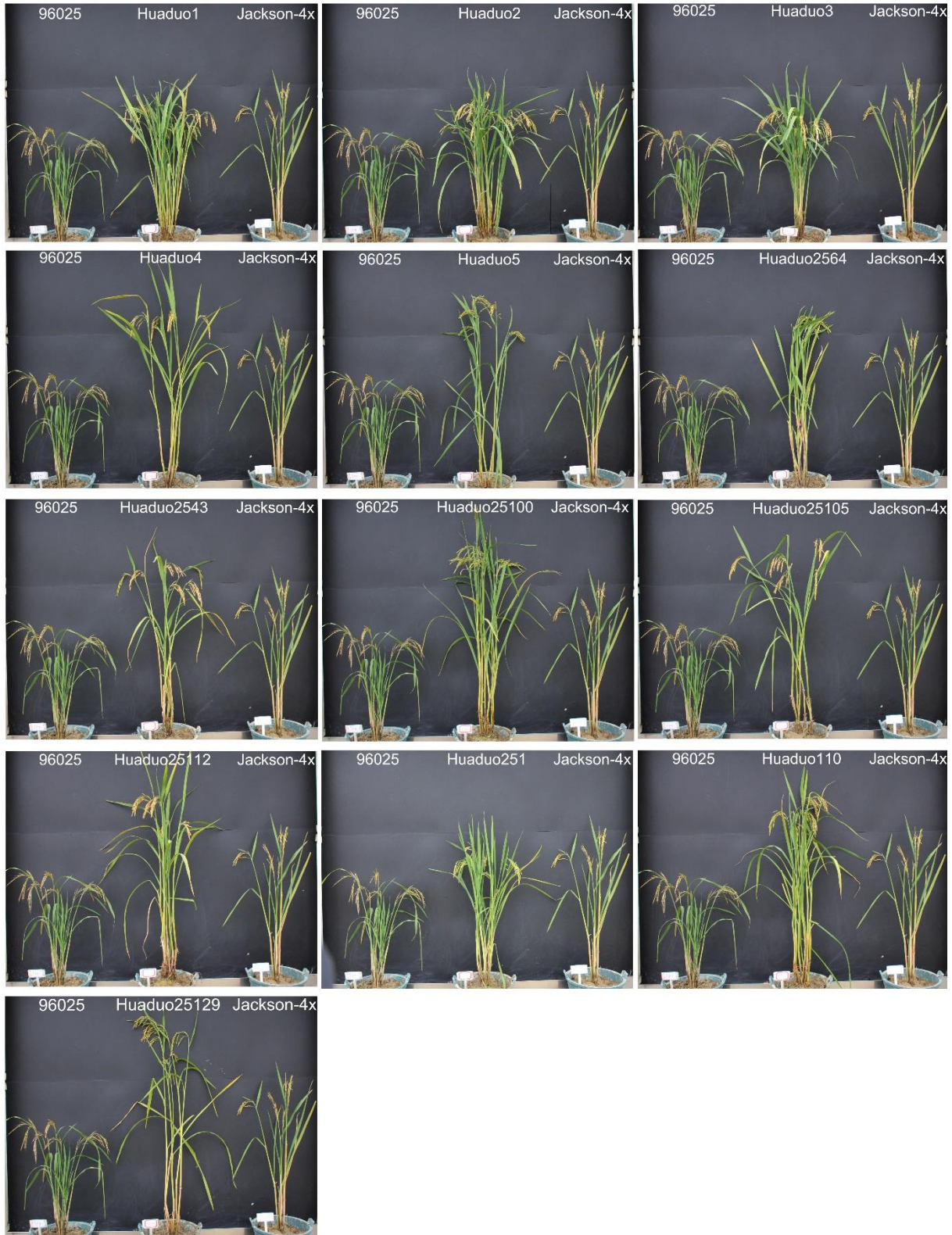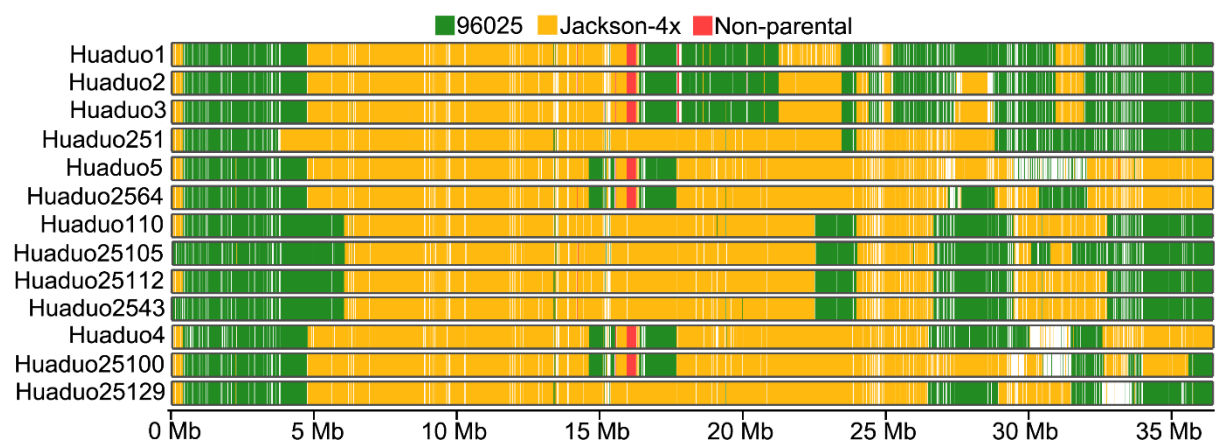
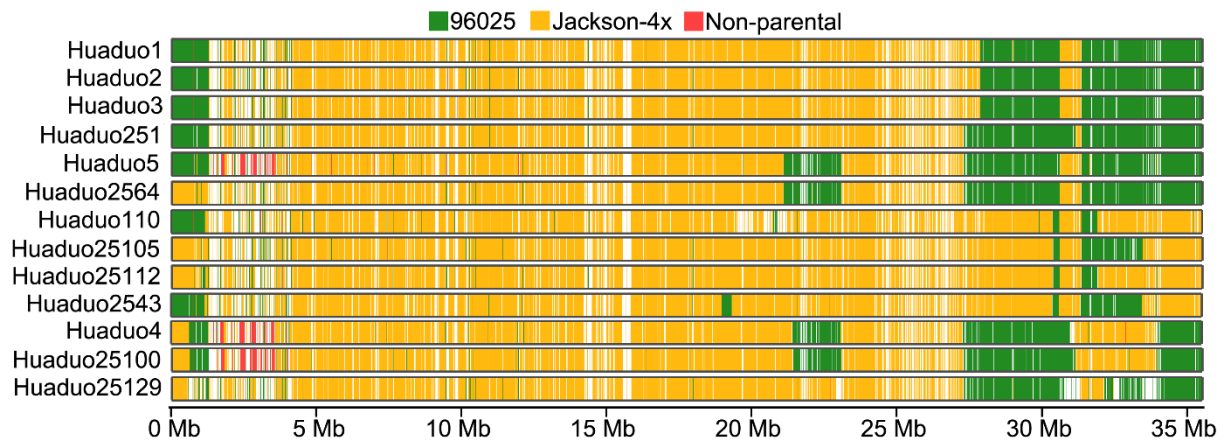**Figure S3** Plant morphology of 13 NTRs and their parental lines.
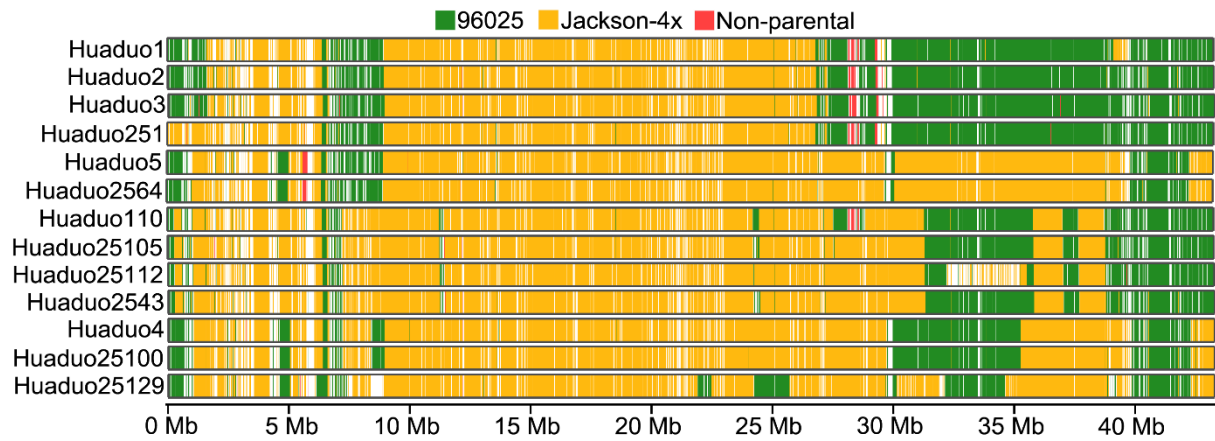
Figure S4a Inherited blocks inference in chromosome 1 of 13 NTRs lines that developed from 96025 and Jackson-4x.
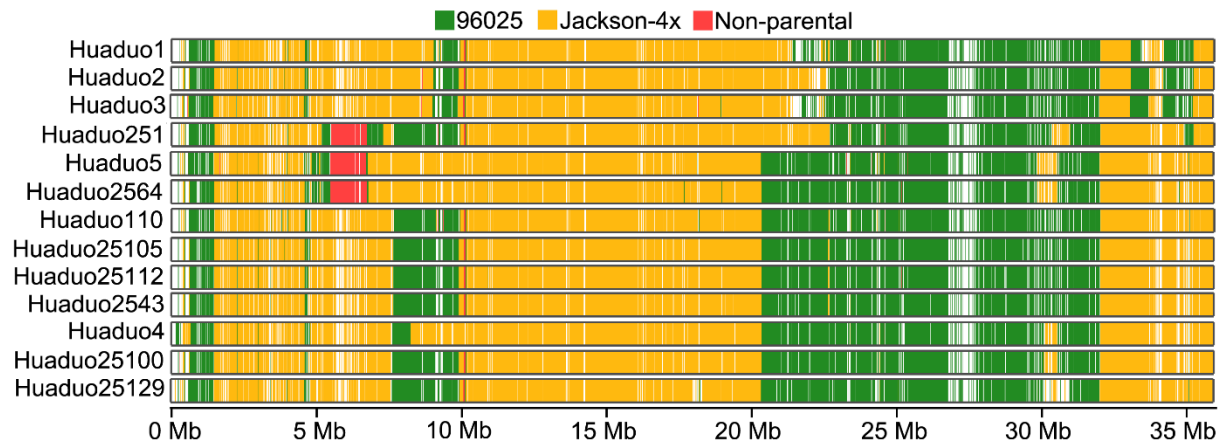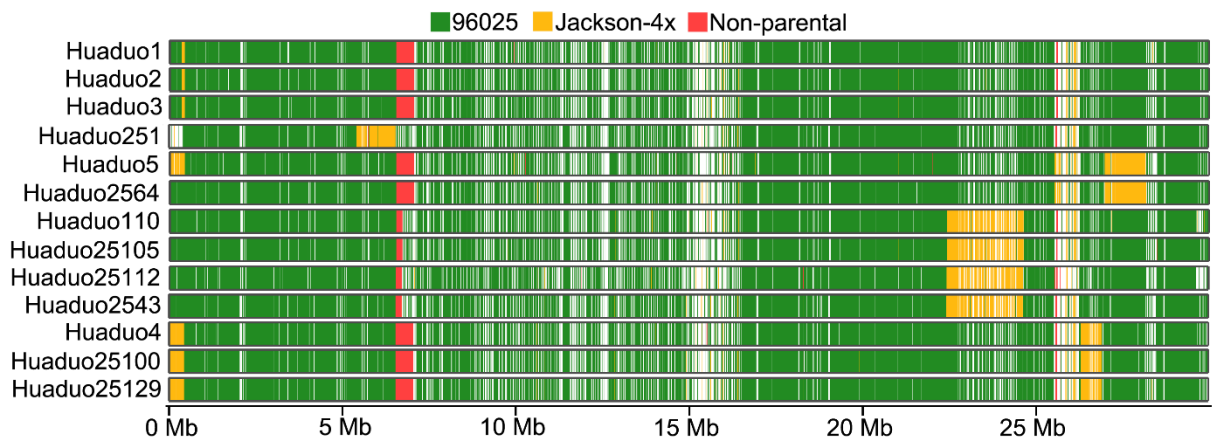

Figure S4b Inherited blocks inference in chromosome 2 of 13 NTRs lines that developed from 96025 and Jackson-4x.

Figure S4c Inherited blocks inference in chromosome 3 of 13 NTRs lines that developed from 96025 and Jackson-4x.

Figure S4d Inherited blocks inference in chromosome 4 of 13 NTRs lines that developed from 96025 and Jackson-4x.
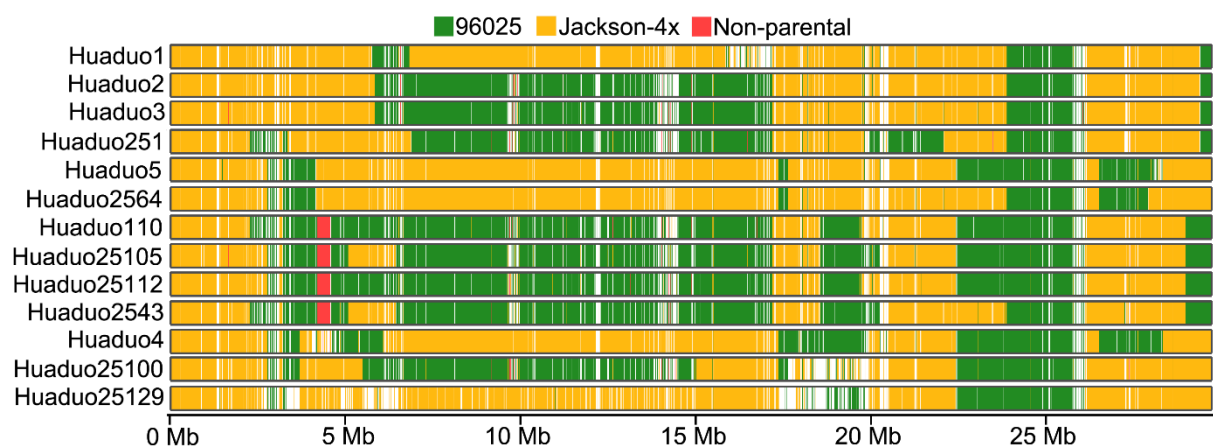

Figure S4e Inherited blocks inference in chromosome 5 of 13 NTRs lines that developed from 96025 and Jackson-4x.
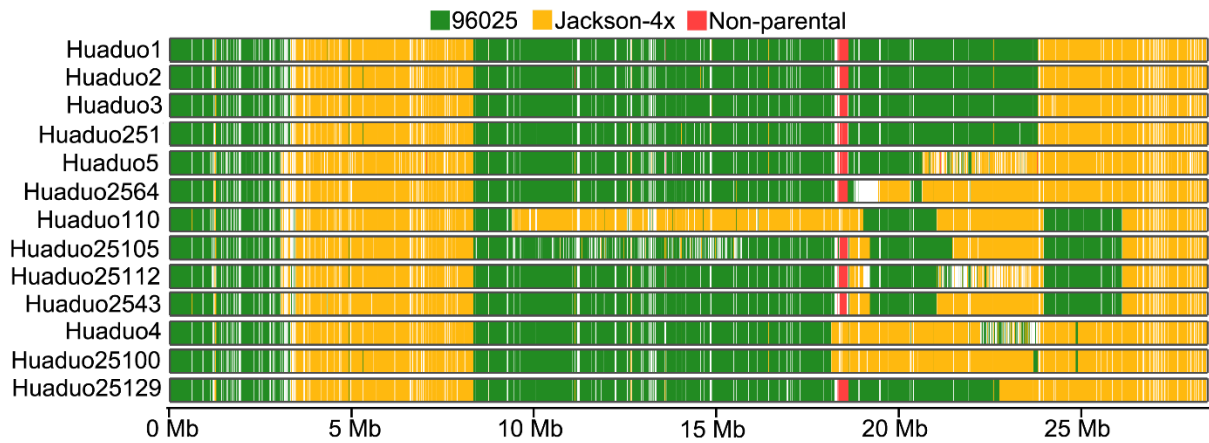

Figure S4f Inherited blocks inference in chromosome 7 of 13 NTRs lines that developed from 96025 and Jackson-4x.
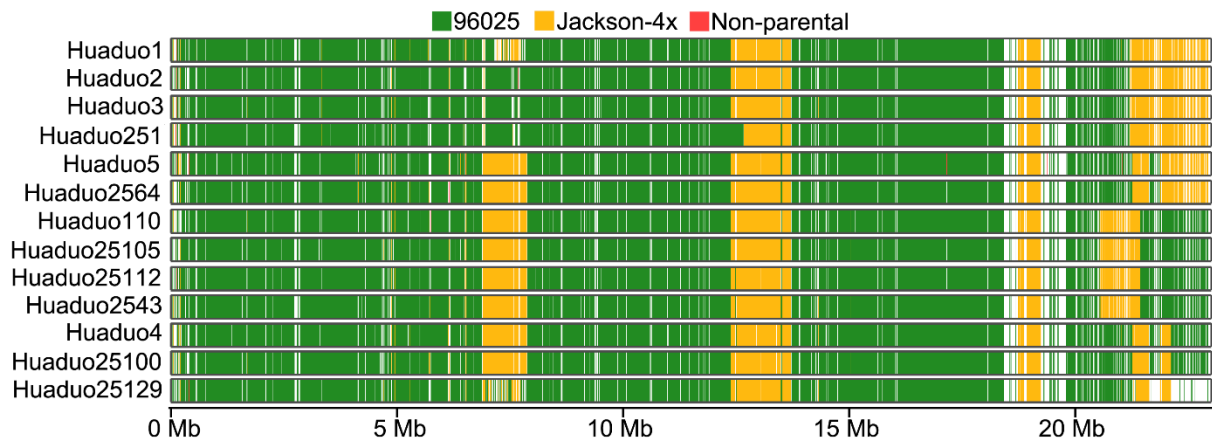
Figure S4g Inherited blocks inference in chromosome 8 of 13 NTRs lines that developed from 96025 and Jackson-4x.
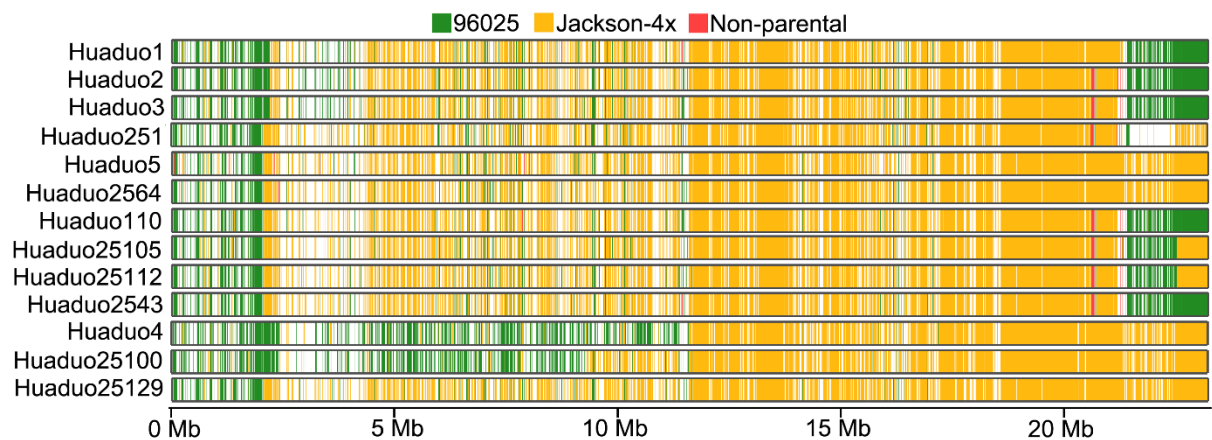

Figure S4h Inherited blocks inference in chromosome 9 of 13 NTRs lines that developed from 96025 and Jackson-4x.

Figure S4i Inherited blocks inference in chromosome 10 of 13 NTRs lines that developed from 96025 and Jackson-4x.

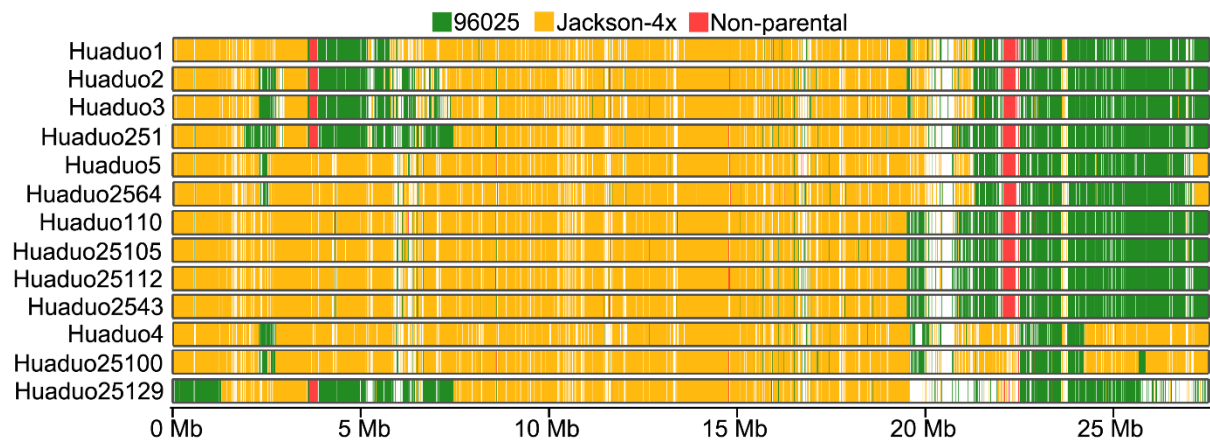**Figure S4j** Inherited blocks inference in chromosome 12 of 13 NTRs lines that developed from 96025 and Jackson-4x.