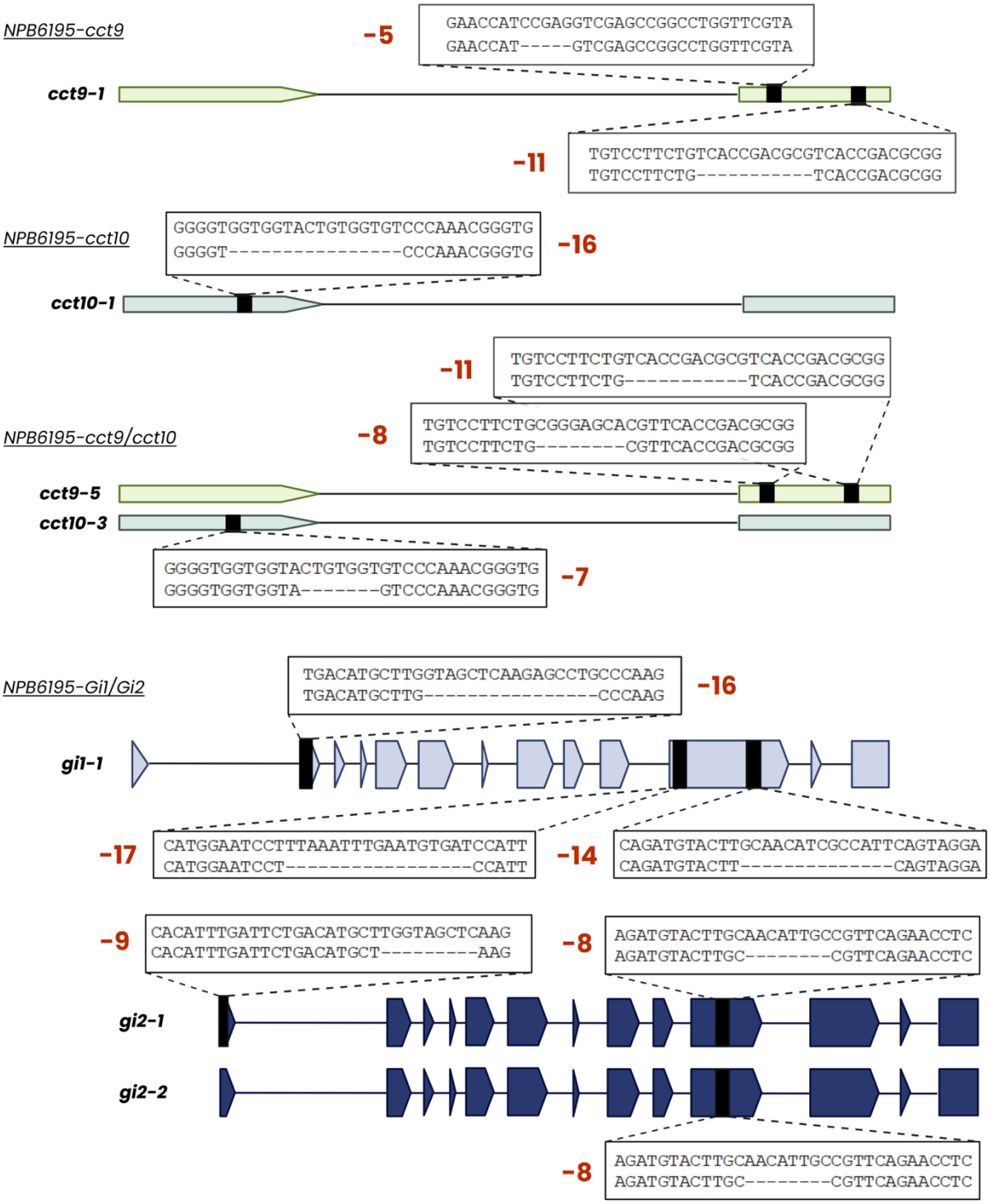
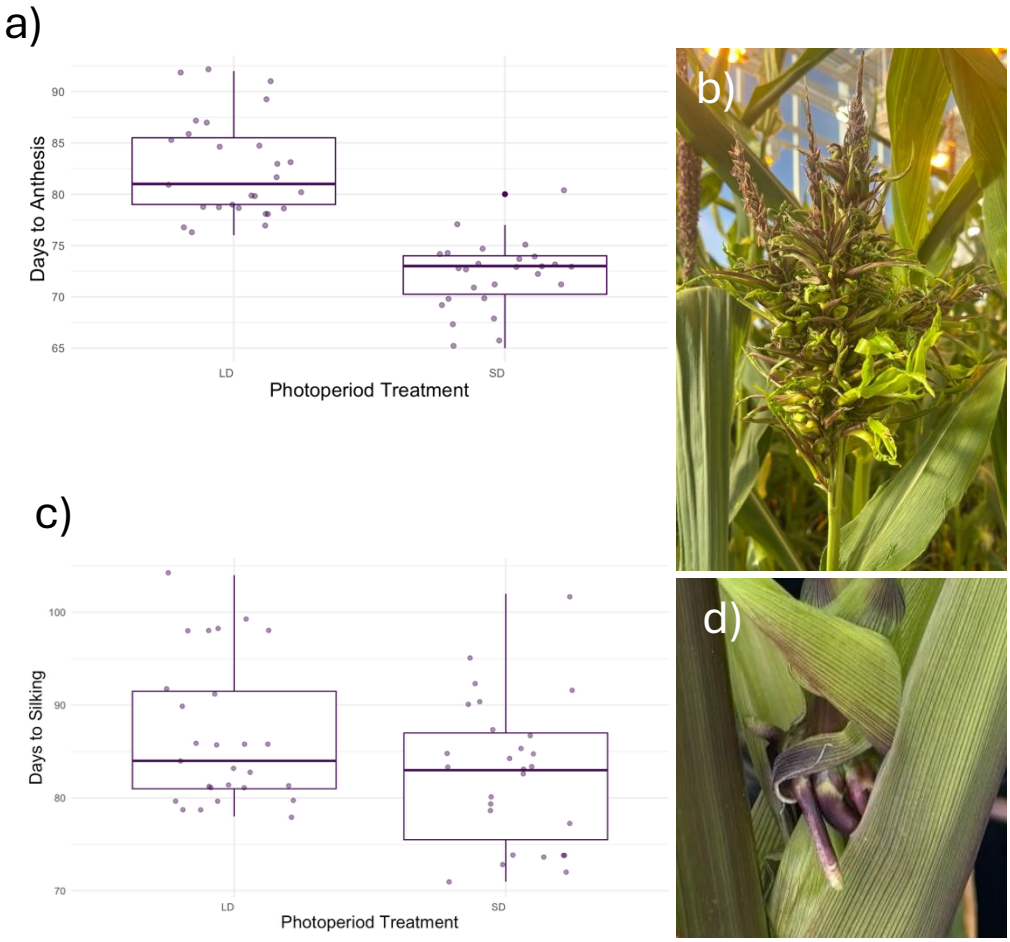
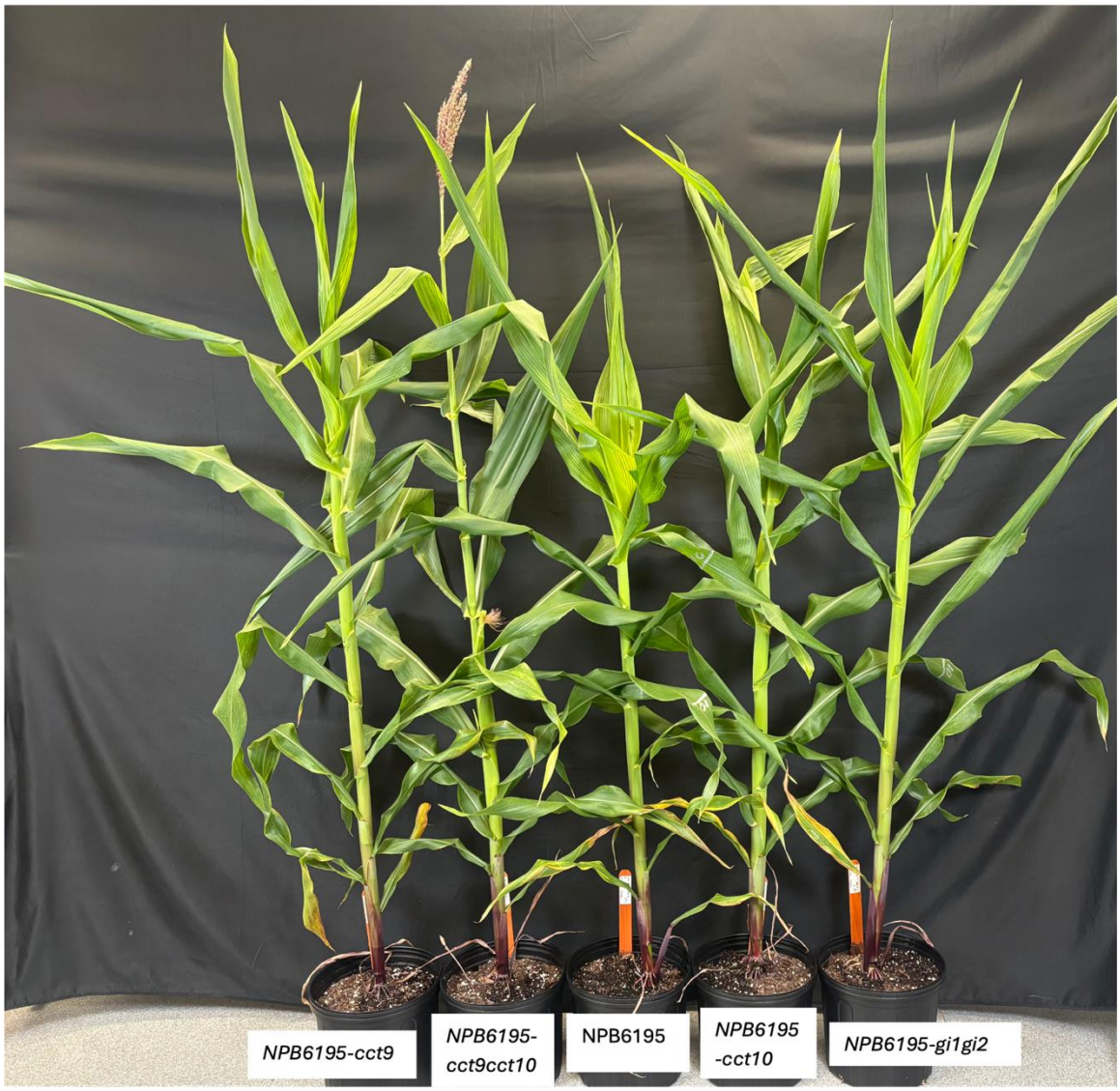


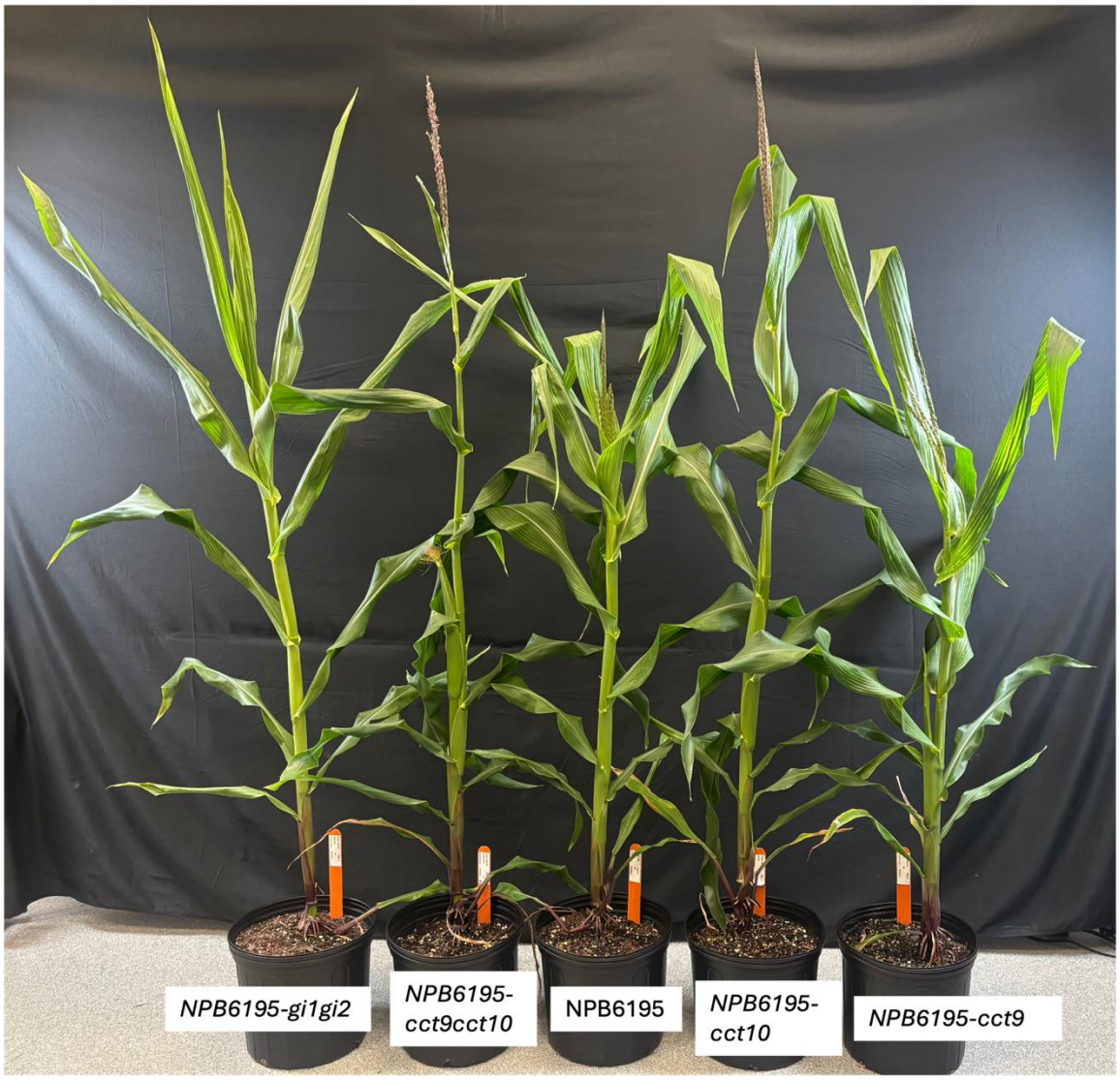
Supplementary Figure 1. Gene model and CRISPR edit details for *NPB6195-cct9, NPB6195-cct10, NPB6195-cct9, NPB6195-cct9cct10, NPB6195-gi1gi2*. Allelic variant for the editing pattern is indicated in bold text adjacent to the gene model. Deletion size is highlighted in red text next to the sequence information.



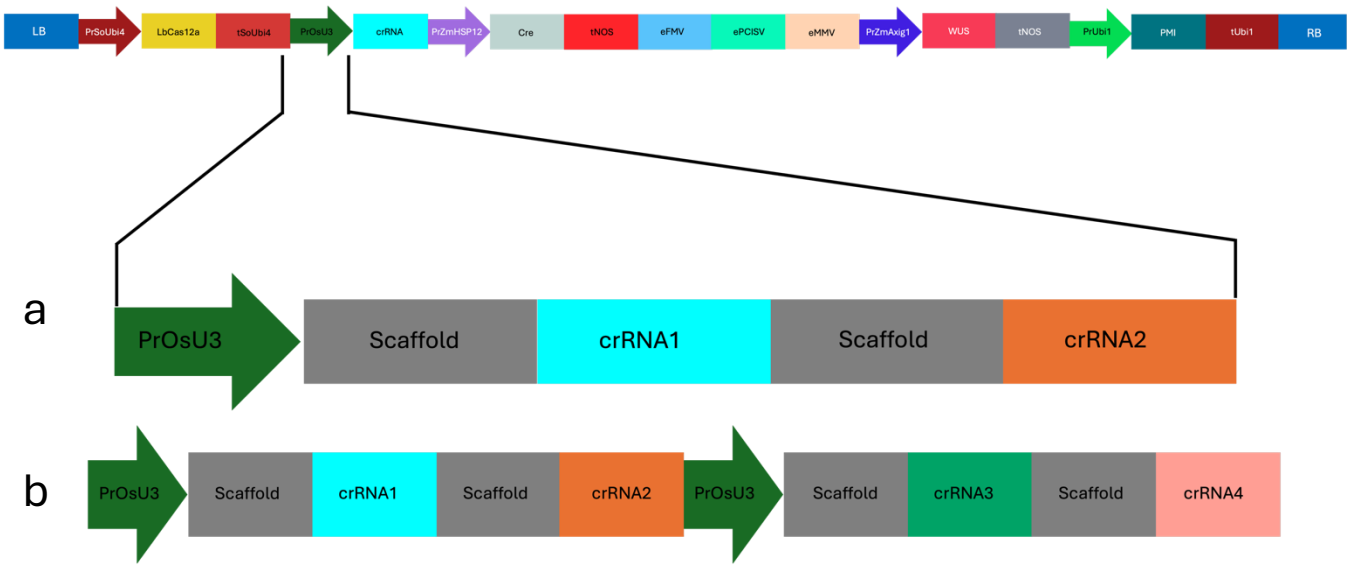
Supplementary Figure 2: Characteristics of WT NPB6195 a) Boxplots show the distribution of days to anthesis for genotype *NPB6195* grown under long-day (LD) and short-day (SD) conditions. Individual points represent biological replicates. Boxes indicate the interquartile range (25th–75th percentiles), the horizontal line within each box marks the median, and whiskers represent variability beyond the quartiles. The y-axis denotes days to anthesis. **b)** Tassel morphology. **c)** Boxplots show the distribution of days to silking for genotype *NPB6195* grown under long-day (LD) and short-day (SD) conditions. Individual points represent biological replicates. Boxes indicate the interquartile range (25th–75th percentiles), the horizontal line within each box marks the median, and whiskers represent variability beyond the quartiles. The y-axis denotes days to silking and, d**)** Ear morphology of the wild-type tropical inbred, NPB6195, under short-day treatments, showing developmental abnormalities.



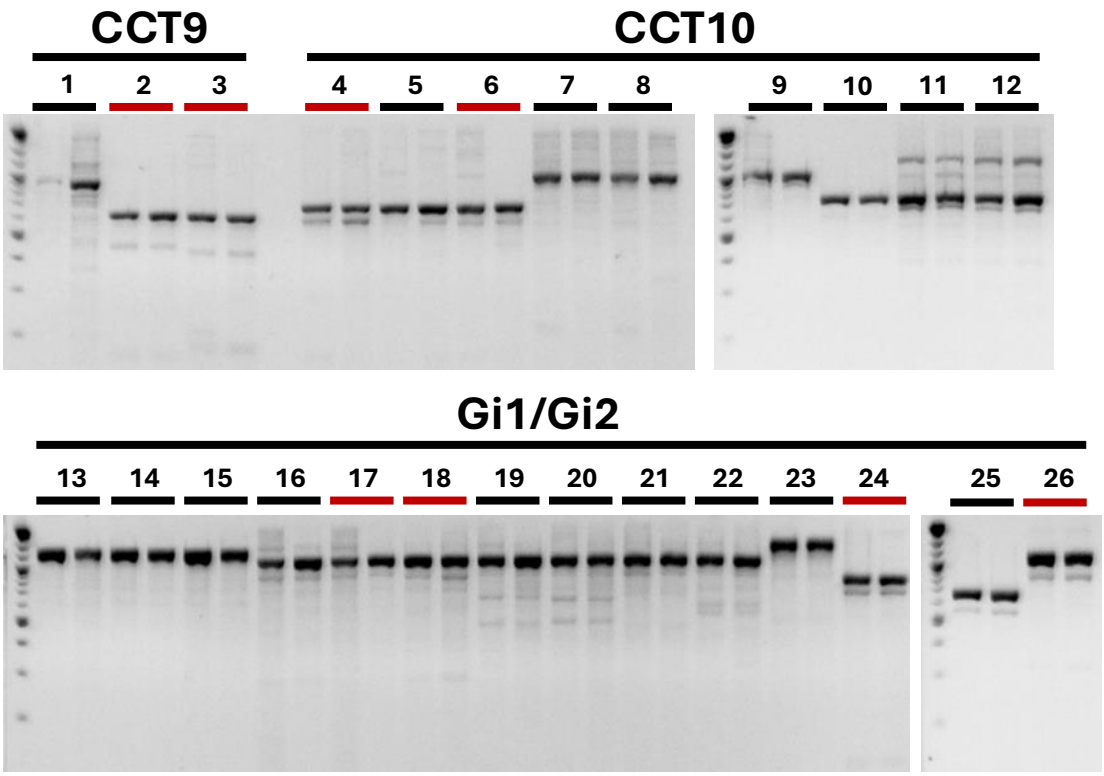
Supplementary Figure 3: Side-by-side capture of NBP6195 and GE mutant lines grown under long daylength conditions. (L-R): *NPB6195-cct9*, *NPB6195-cct9cct10*, *NPB6195* wild type tropical inbred, *NPB6195-cct10*, and *NPB6195-gi1/gi2*-edited maize plants grown under long daylength (LD) conditions for 72 days. The double knockout *cct9cct10 showing the* earliest flowering among all the genotypes, second position from the left.



Supplementary Figure 4: (L-R): *NPB6195-cct9*, *NPB6195-cct10*, *NPB6195 wild type tropical inbred, NPB6195-cct9cct10*, and *NPB6195-gi1gi2* knockout plants after 30 d of SD photoperiod treatment, followed by 35 d of growth under LD photoperiod. Double edited, *NPB6195-cct9cct10* and *NPB6195-cct10* single mutant can be seen with tassel development in the second from the left and second from the right positions, respectively.



Supplementary Figure 5: Schematic representation of the T-DNA region of the parental vector backbone used for generation of all four editing vectors, shown from the left border (LB) to the right border (RB). Enlarged views of the crRNA cassette illustrate configurations containing either two or four crRNAs. (a) Single-gene target crRNA cassette. (b) Two-gene target crRNA cassette.



Supplementary Figure 6. T7E1 editing assay result on agarose gel for the 26 crRNA screened in protoplast transient experiment. gRNA selected for subsequent characterization are highlighted in red.