ZmCP03-sgRNA1:
GTGCTGCAGCCTCATAATGCTGG

ZmCP03-sgRNA2:
CGGTGGTGACAGGCTGATGATGG

ZmCP03-sgRNA3:
CCGCAACATTGAGCACATCGAGG

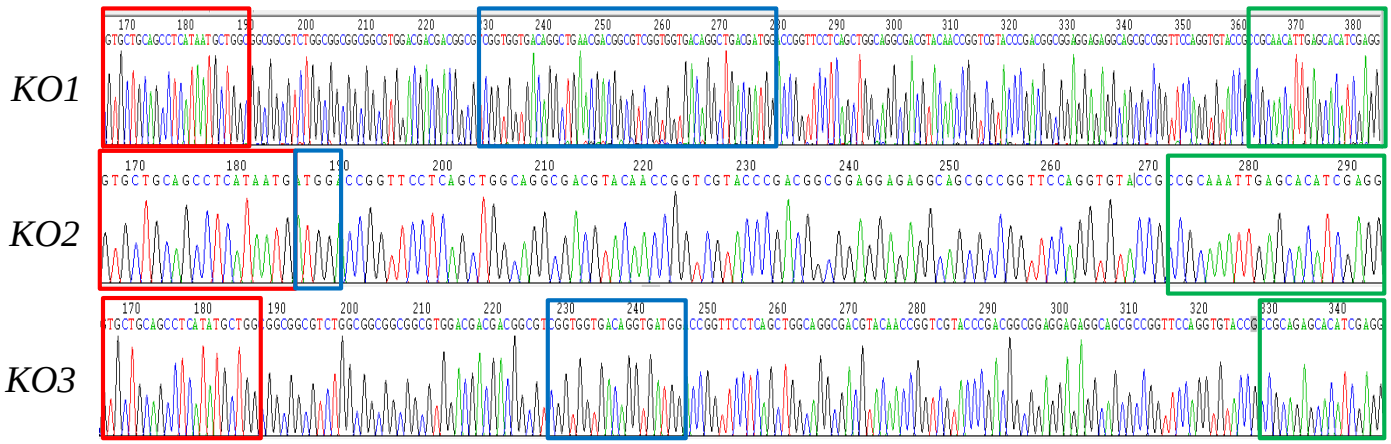

Fig. S1. The sequencing results of pollen grains of T2 mutants.

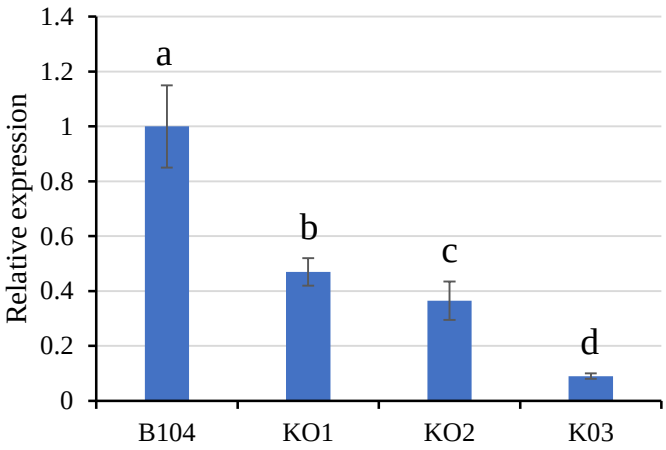

Fig. S2The relative expression levels of *PCP* were analyzed via RT-qPCR in *pcp* mutant lines. Data represent means ± SD of three replicates. Significant differences were indicated with different letters ($P < 0.05$, one-way ANOVA).

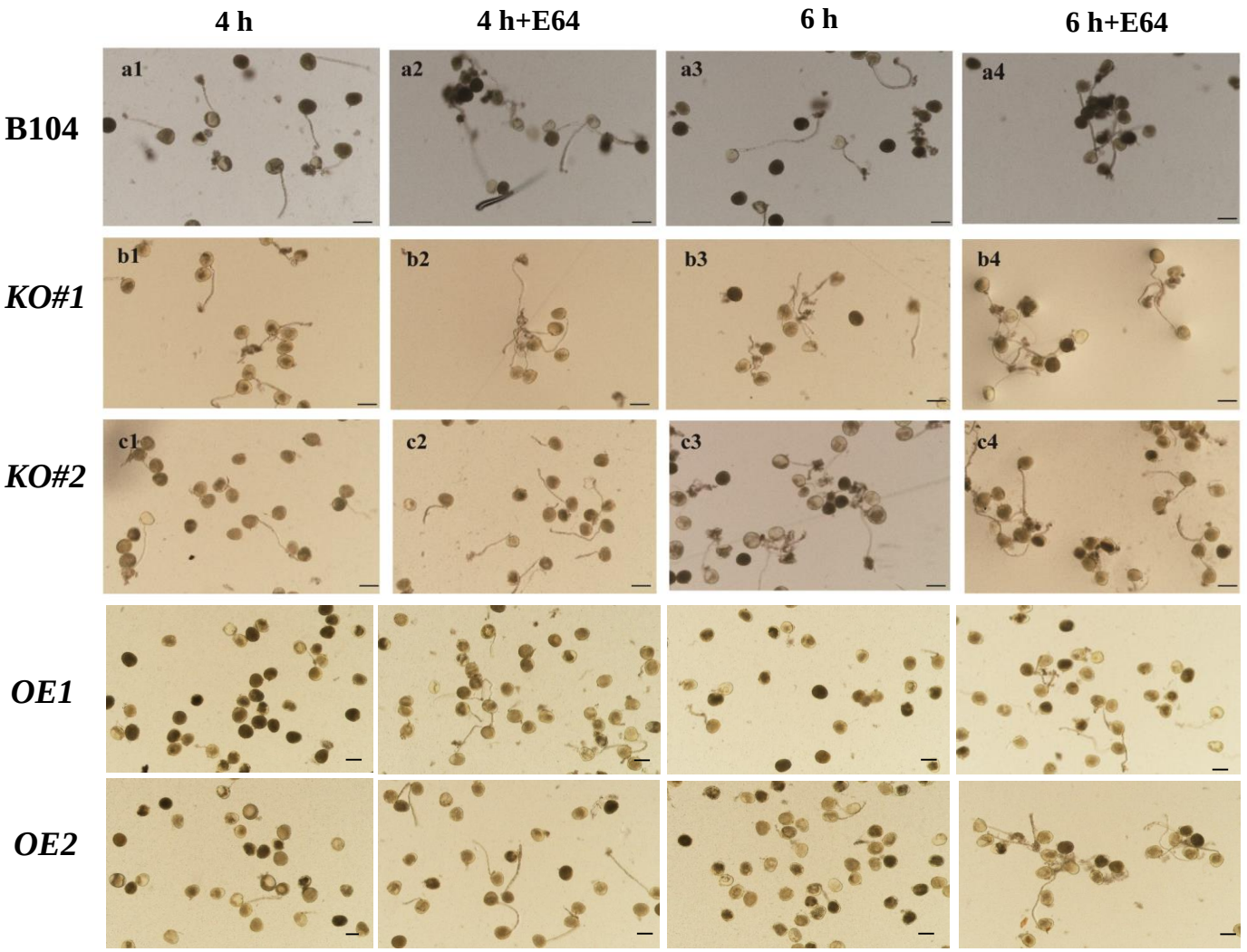

Fig. S3. Pictures of pollen germination and growth *in vitro* between wild type and transgenic lines after 4 h and 6 h incubation. Scale bar: 100 μm.

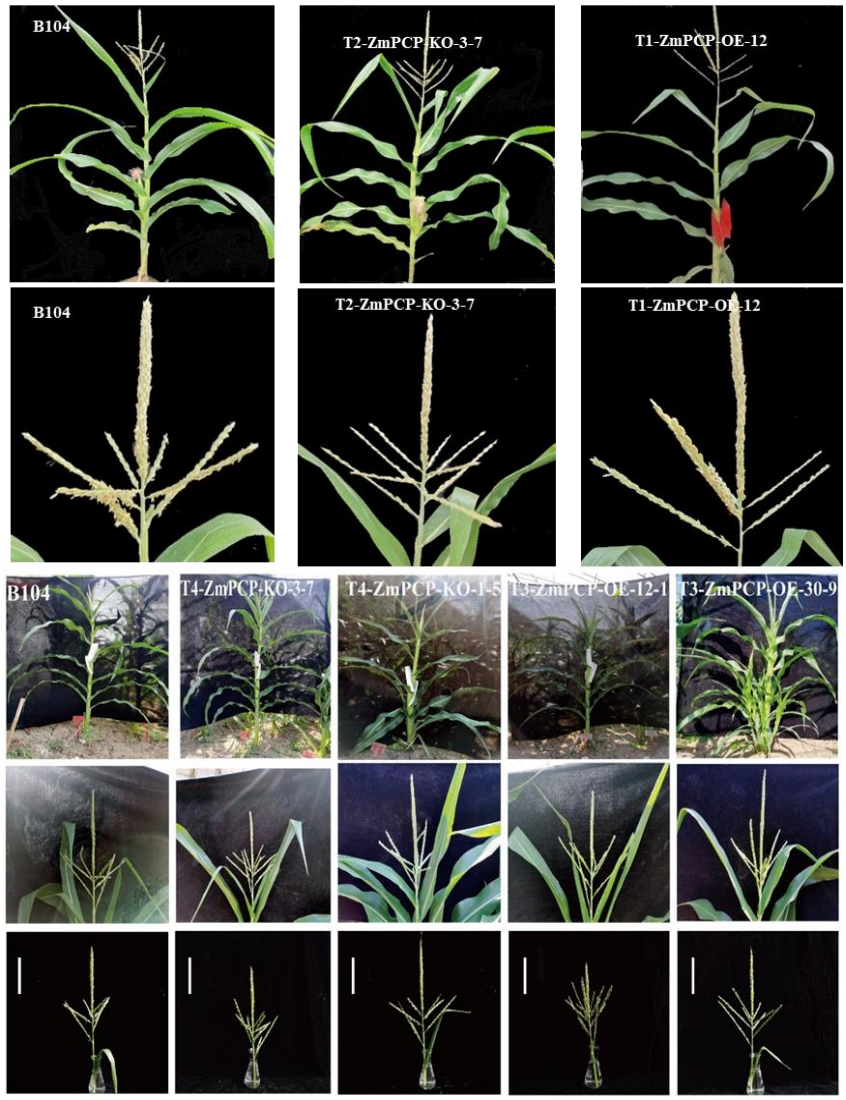

Fig. S4. Phenotypic observation of WT and transgenic maize at flowering stage. Scale bar: 10 cm.

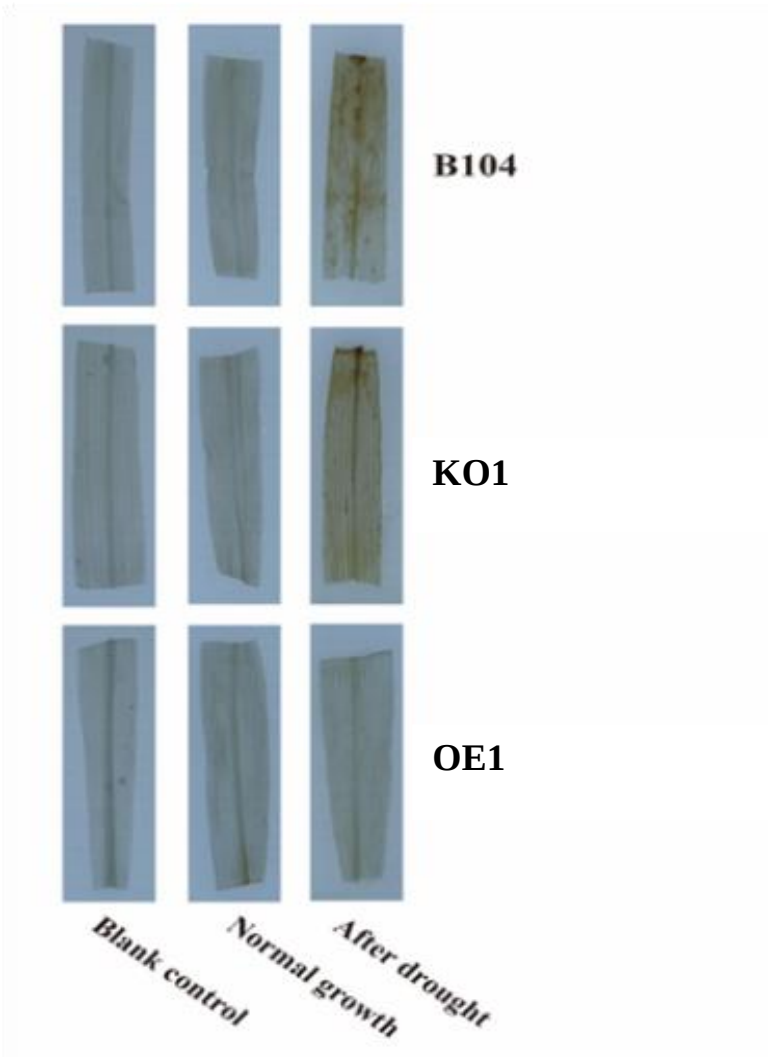

Fig. S5. Measurement of H_2O_2 content in WT and transgenic maize in response to drought stress by DAB staining.

Table S1. PCR primers used in this study.

Primer name	Primer sequence (5'-3')	Usage
sgRNA-T1-F	cagt ggtctca GGCA CCTCGATGTGCTCAATGTTG	Synthesis of sgRNA
sgRNA-T1-R	cagt ggtctca AAACCAACATTGAGCACATCGAGG	
sgRNA-T2-F	cagt ggtctca GCCG TGCTGCAGCCTCATAATGC	
sgRNA-T2-R	cagt ggtctca AAAC GCATTATGAGGCTGCAGCA	
sgRNA-T3-F	cagtggtctcaTGTGCGGTGGTGACAGGCTGATGA	
sgRNA-T3-R	cagt ggtctca AAACTCATCAGCCTGTCACCACCG	
psgA-T1	GACCATAGCACAAGACAGGCGT	Detection of intermediate vectors
psgB-T2	CGAATGAGCCCTGAAGTCTGAAC	
psgC-T3	CATTTCATTACCTCTTTCTCC	
pOSCas9-ZmCP03-F	GATGGGTTTTTATGATTAGAGTCC	Detection of expression vectors
pOSCas9-ZmCP03-R	GGCTCGTATGTTGTGTGG	