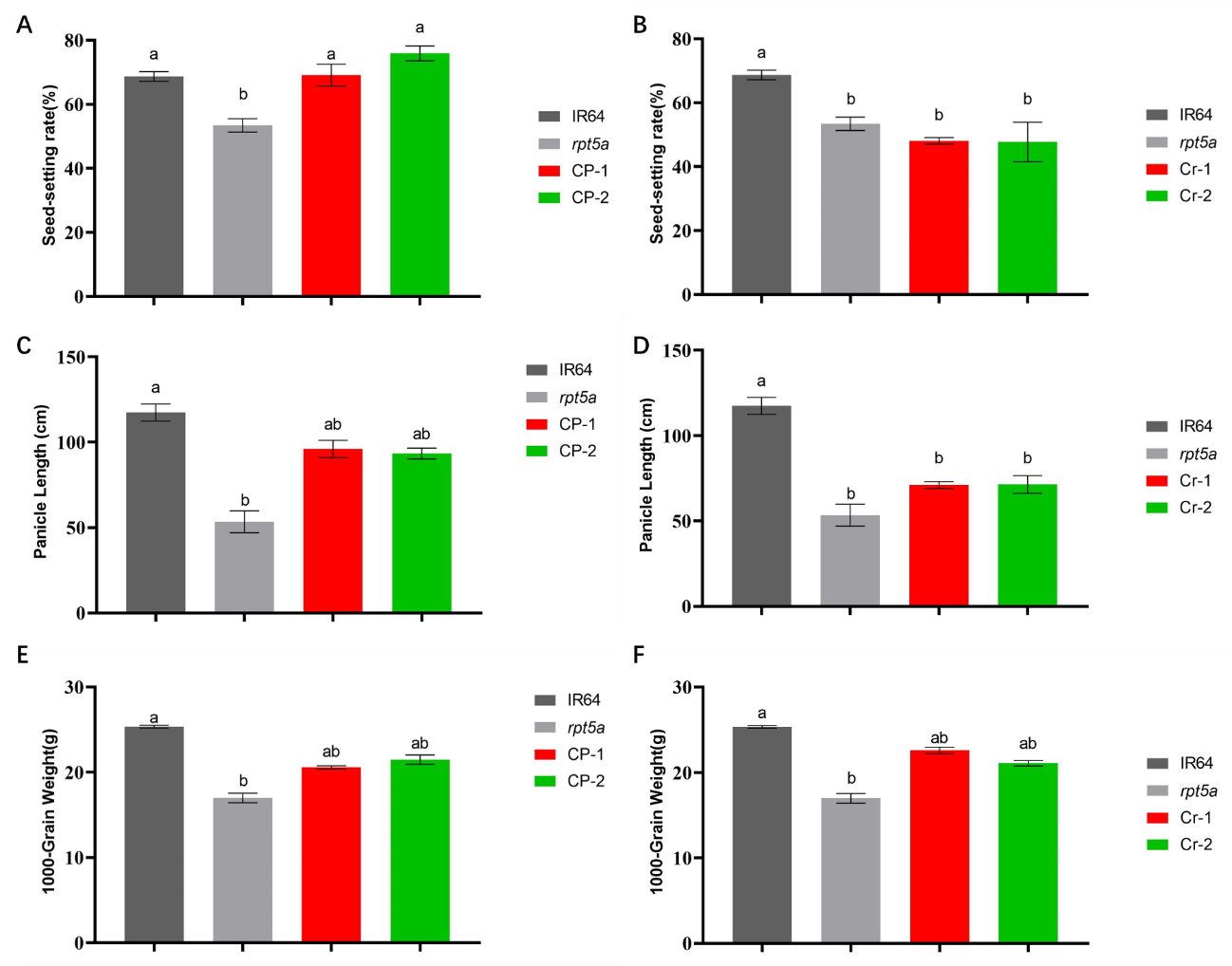


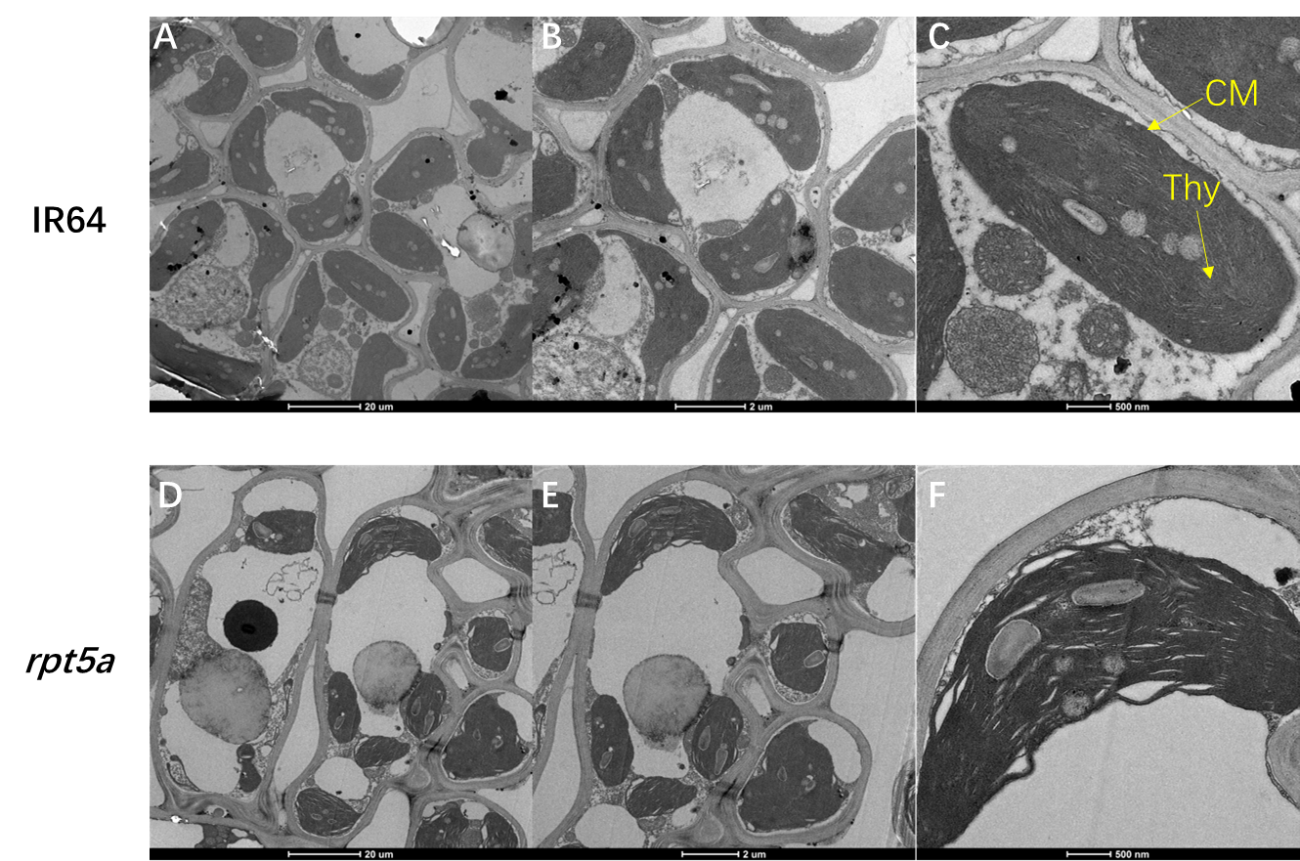
Supplemental Figure S1 The phenotypes of IR64 and *rpt5a*.

(A): Phenotypes of IR64 and *rpt5a* at 8 weeks, 12 weeks and 16 weeks. Bar = 20 cm; (B): Leaf phenotypes of IR64 and *rpt5a* at 8 weeks, 12 weeks and 16 weeks. Bar = 1 cm;



Supplemental Figure S2 Agronomic traits of IR64, *rpt5a* and complementary lines (CP-1, CP-2), knockout lines (Cr-1, Cr-2).

(A, B): Seed-setting rate; (C, D): Panicle length; (E, F): 1000-Grain weight. Different letters signify statistically significant differences, as assessed by one-way ANOVA followed by Duncan's multiple range test, with a significance threshold of *P* ≤ 0.05; Error bars represent SD (n = 3).



Supplemental Figure S3 TEM observation of the chloroplasts

(A, B, C): TEM observation of the chloroplast in IR64 at the tillering stage; (D, E, F): TEM observation of the chloroplast in *rpt5a* at the tillering stage. Thy, thylakoid lamellae; CM, chloroplast membrane.

Table S1 Primers used in this study

|  |  |  |
| --- | --- | --- |
| Name | Primer (5'-3') | Purpose |
| RM6-F | GTCCCCTCCACCCAATTC | Gene mapping |
| RM6-R | TCGTCTACTGTTGGCTGCAC | Gene mapping |
| RM250-F | GGTTCAAACCAAGCTGATCA | Gene mapping |
| RM250-R | GATGAAGGCCTTCCACGCAG | Gene mapping |
| RM14229-F | CCCAACCTTAATTCCTCCATCTGC | Gene mapping |
| RM14229-R | CCCATGGCCTTCCAAATTAAGG | Gene mapping |
| D237D-F | GGTCGGTCGAGACGTGTAGA | Gene mapping |
| D237D-R | TTCCCAGAGCACCTTTCATA | Gene mapping |
| D240A-F | TCTGTCAGTTCTGGCATTGTT | Gene mapping |
| D240A-R | GAGATTTCACGGGCTTTGTAT | Gene mapping |
| D240B-F | TGATCTCTCTCCGTAATTTACTG | Gene mapping |
| D240B-R | ATATGGTTTATGTGGACGCTATA | Gene mapping |
| C154-2-F | CGAGATACTCCCTCCGTATCA | Gene mapping |
| C154-2-R | AGCCTAGTTACCTTGGTCCT | Gene mapping |
| C154-11-F | GCCCTTCACCAATCATTGTA | Gene mapping |
| C154-11-R | TTGTCTAAGGAACTCAGATCACG | Gene mapping |
| C154-27-F | AGCAAACTCACTTCCAATAGCA | Gene mapping |
| C154-27-R | CAGCAGCATTGGCATGTTTA | Gene mapping |
| PCAMBIA1300-RPT5A-F | tatgaccatgattacgaattc  AGCTAGCACTGGAACAACATCT | Complementation |
| PCAMBIA1300-RPT5A-R | acgacggccagtgccaagctt  GCCCCAAAGTTAAGCGACAC | Complementation |
| CR-Target-F | GGCAGATAGCTGCAACTAATCGCG | Knockout vector construction |
| CR-Target-R | AAACCGCGATTAGTTGCAGCTATC | Knockout vector construction |
| pCambia1381Z-GUS-F | tatgaccatgattacgaattc  AACGCAATTAATGTGAGTTAGCTCA | GUS assay |
| pCambia1381Z-GUS-R | tggctgcaggtcgacggatcc CGCTAGGGATTTTGCTTCGA | GUS assay |
| GFP-RPT5A /RPT5AV318E-F | cgctctagaactagtggatcc  ATGTCGTCGCCGCCGCCC | Subcellular localization |
| GFP-RPT5A /RPT5AV318E-R | gataagcttgatatcgaattc  AGCGTAATAATTTAAACTGGACTTCTTT | Subcellular localization |